NATIONAL
ENDOWMENT
FOR THE
HUMANITIES

Sample Application

Program: Digital Humanities Start-Up Grants

Note: The attached sample application was awarded a grant during a previous competition. Note that resumes, letters of support, coversheets, and other pieces of the application that contain personal contact information have been removed.

Jefferson's Travels: Statement of Significance and Impact

The Jefferson's Travels Project is a joint undertaking of the Virginia Center for Digital History and the Thomas Jefferson Foundation to develop a highly interactive web-based tool that uses Thomas Jefferson's travels as initial content. A specially constructed interactive browser (the HistoryBrowser) provides for fast and easy navigation along the time and place dimensions, and offers an opportunity to explore Mr. Jefferson's life by examining primary source documents and information.

The HistoryBrowser encourages primary source documents to speak more directly to the audience by providing visualizations of the relationships, chronologies, and causal events. They will often contain word-based narrative, in written or oral forms to help connect the resources, but the browser allows for a new form of storytelling, using guided visualizations. These visualizations use new methods of interpreting and presenting historic inquiry, such as animation over time, charts, maps, data, and interactive timelines to graphically show the relationships between multiple kinds of information. A prototype of the HistoryBrowser can be found at www.primaryaccess.org/hub.

This will be tested within the context of an upper-level digital history seminar at the University of Virginia, (http://www.virginia.edu/woodson/courses/hius401-f) where the resources will be identified, annotated, and databased by the seminar participants. All materials will be vetted for accuracy by UVA faculty members and Thomas Jefferson Foundation scholars. The resulting interactive website will be available for K-20 students, teachers, historians, and scholars, and will be prominently featured on both the Monticello (www.monticello.org) and VCDH (www.vcdh.virginia.edu) websites.

Table of Contents

List of Participants

Bill Ferster, University of Virginia
Scot French, University of Virginia
Andy Mink, University of Virginia
Chad Wollerton, Thomas Jefferson Foundation

Enhancing the humanities through the use of emerging technologies

"Thomas Jefferson would have been fascinated by the Internet. Its global reach, speed, interconnectivity and potential for communication and education would have kept him at his writing desk for long hours."

Jim Horn, then-Saunders Director, International Center for Jefferson Studies

We are seeking funding for a Level II Digital Humanities Start-Up Grant of $49,931 to develop an innovative web-based tool called the HistoryBrowser which will make the digital resources of a number of museums, libraries, and archive accessible to historian, scholars, K-20 students, and teachers. The HistoryBrowser encourages discovery by dynamically visualizing resources, maps, and data and encourages historical inquiry. The tool will be tested within the context of an upper-level digital history seminar at the University of Virginia, where the resources surrounding Thomas Jefferson's travels will be identified, annotated, and databased by the seminar participants.

Science fiction not withstanding, people exist in only one place at any given time. This offers a useful pair of concrete dimensions to ground the complex and often abstract web of historical inquiry. *Jefferson's Travels* is an interactive look at Thomas Jefferson's life organized around where he was, and when. A specially constructed interactive browser (the HistoryBrowser) provides for fast and easy navigation along the time and place dimensions, and offers an opportunity to explore Mr. Jefferson's life by examining primary source documents and information, many of which from the Thomas Jefferson Foundation itself.

This new Internet-based browser facilitates a new form of historical narrative when the story can be told not just through words, but by interactive visualizations showing relationships using primary source documents and data vetted by historians. Traditional historical narratives

rely on the powerful tool of the written word to argue their nuanced interpretations. The arguments made in the text and footnotes are made with the support of primary source documents and information, carefully researched and referenced.

Digital historical narratives attempt to let the primary source documents speak more directly to the audience by providing visualizations of the relationships, chronologies, and causal events. They will often contain word-based narrative, in written or oral forms to help connect the resources, but the browser allows for a new form of storytelling, using guided visualizations. These visualizations use new methods of interpreting and presenting historic inquiry, such as animation over time, charts, maps, data, and interactive timelines to graphically show the relationships between multiple kinds of information.

The result is a rich narrative containing elements designed to communicate the author's interpretation of the historical inquiry by using interactive visualizations. A historic map provides geographic context, and a timeline would highlight on the map where he was on any given day. Clicking on map brings up information, such as letters, diary entries, newspaper accounts, images of items purchased, drawings of the area, the weather of that day, or census information. Secondary sources can be displayed, along with text, audio or video narratives, and animations of relevant data charts.

The Jefferson Library at Monticello has over 1,600 excellent resources, the University of Virginia's special collections, the Library of Congress, the Smithsonian and an almost limitless number of other historical and academic sites provide a rich array of information and resources about Thomas Jefferson's life and environment.

The use of visualization in digital history projects is not new. Ed Ayers' and Will Thomas' Valley of the Shadow project used animations of battles to great effect some years back.

Animated arrows graphically show troop movements over time. The HistoryBrowser builds on this legacy by providing authors the ability to develop time based projects that seamlessly blend maps, letters, images, text, data visualization, audio clips, and interviews into an engaging coherent presentation that allows viewers to see and interactively explore the evidence underpinning the curator's narrative.

About the HistoryBrowser

The HistoryBrowser is an interactive data-driven Flash application, accessible from any Internet-connected computer, and offers a new way to browse the web of history (see www.primaryaccess.org/hub). It is not a tool simply geared toward the delivery of information visually-- rather it is a tool for *manipulating* data in a visual manner so that new questions can be asked of that information. The difference is the same as that between watching a documentary and creating one: the user's questions decide what visualizations the HistoryBrowser's powerful tools will generate. The user's questions drive the exploration of data in powerful new ways, exposing patterns and connections buried in the data they may never have expected. The purpose of the HistoryBrowser is to create a digital microscope of sorts for humanists, to allow social scientists to probe information with the same depth and effectiveness as researchers in the hard sciences.

There are three important aspects that make the HistoryBrowser unique among other web-based techniques for visualization:

1. **Ease of Creation-** The HistoryBrowser can be easily configured by non-programmers to create complex dynamic visualizations that were previously only possible by employing highly skilled (and expensive) computer programmers to develop single purpose displays. The HistoryBrowser is content independent, and is a generalized tool capable of

representing a wide array of visualizations through the development of simple scripts that link resources and data into compelling, interactive, and instructive visual investigations.

2. **Dynamic generation-** The value of connecting data and graphics has long been established in Geographic Information Systems (GIS), but current GIS systems have limited abilities to dynamically generate visualizations over the Internet. In contrast, the HistoryBrowser's visualizations are dynamically generated in real time in response to live data and requests for different views of that data and is not a static presentation of information.

3. **Access -** Resources can come from anywhere on the web, such as the Library of Congress and other archives. Data can come from the census and a wide range of personal, public and academic sources, and dynamically visualized.

Historians have long been awash in discrete piles of data representing particular moments in time: census returns every decade, electoral returns every two years, diaries that represent the daily happenings of someone's life. Each of these historical records are, in effect, isolated snapshots of a unique time and place. For most historians, the use of such data has usually been limited talking about those datasets in isolation (such as information from a particular census year) or relating discrete aspects (such as comparing the census returns with electoral returns for a certain county). It has proven even more difficult to for us to imagine the evolution of change over time that combinations of those datasets represent, leaving us again to examine these moments in time individually.

The HistoryBrowser frees the historian from such restrictions by allowing the user to manipulate multiple sets of data simultaneously, rendering complex visualizations of historical information spread across time that can reveal relationships and historical processes embedded in the datasets which would not otherwise be apparent.

Like all good historical tools, the HistoryBrowser is foremost driven by questions. Let us imagine there is a historian of slavery, for example, who wishes to understand why slaveholders in nineteenth-century Texas established their plantations in certain parts of the region rather than in others. Using the HistoryBrowser, he or she could take existing census data of slave and slaveholder populations to create a map of where people lived in the region and how those populations changed over the years. The ability to plot such information across both time and space provides a visual index of the multiple census returns, providing a way for the historian to examine the geographic spread of that data.

The HistoryBrowser, however, allows the historian to bring in other relevant information that will shed more light on these particular census returns. By relating the census to known information about the geology of the region, The HistoryBrowser can render maps of increasing depth and complexity that demonstrate the relationships between datasets (such as whether slaveholders established plantations in areas with the best soil types, regional elevations, and local water systems). The same could be done with electoral data (allowing the historian to see visualizations of the relationships that existed between slave and slaveholder populations and how people voted in a given election) or any other set of information that could shed light on the question at hand.

The HistoryBrowser goes beyond those tasks, however, by allowing the historian to transform their multiple datasets into any number of different visualizations, such as charts or graphs, and then ask new questions of the data based on those visualizations. Because the information used by The HistoryBrowser is fully dynamic, historians can use its visualizations to determine what particular information is most relevant to their question and then ask the HistoryBrowser for that information.

Long Term Project Goals

The long term goals of the project are to: 1) Enhance the digital scholarship by making a wide variety of resources and data available using an easy to use browser capable of visualizing relationships between the elements. 2) Continue to develop the HistoryBrowser to be able to present the kinds of data and visual relationships requested by scholars, and finally. 3) Encourage other digital seminars, scholars and historians to extend Jefferson's Travels time period, or create completely new topics by providing training and support. 4) Scaffold and support the use of the Jefferson's Travels by historians, scholars, and teachers.

Scope of Activities

1. Create a highly interactive website highlighting Thomas Jefferson's travels containing primary and secondary sources, images, data, maps, digital narratives about portions of the journey. This will be done within the context of an upper level digital history seminar at the University of Virginia, where the resources will be identified, annotated, and databased by the seminar participants. All materials will be vetted for accuracy by UVA faculty members and Thomas Jefferson Foundation scholars.

2. Further develop the presentation platform that website will be based (The HistoryBrowser) and allow for the generative inquiry as well as guided narration from any Flash-enabled web browser. Links to the Jefferson's Travels website will be prominently displayed on the VCDH and Monticello websites.

3. Actively develop material to scaffold the Jefferson's Travels project to make it easily accessible for K-20 instructors to effectively use the site in the classroom

Major Issues Addressed by the Project

The project takes some innovative approaches to solve some of the problems common to digital history websites. The following reflects some of the issues encountered and the solutions we have chosen to address them:

1. Digital history sites are usually custom programmed using staff with highly specialized skill sets, and therefore tend to be rigid in the kind of visualizations they can offer. Jefferson's Travels uses the HistoryBrowser, which employs a simple XML-based script to display visualizations. The cost for experimentation and change is low, so novel solutions to visualization of resources and data can be quickly tried.

2. The content of digital history websites typically requires expensive researchers to identify, annotate, and database the massive number of resources. By using a small number of highly capable students under the direction of historians and Jefferson scholars in the context of a digital history course, a large amount of high quality content can be quickly added to the project. This provides students with valuable real world experience and offers them a first chance at digital publication.

3. Unlike most interactive historical visualization projects, Jefferson's Travels is a not based upon a single database reflecting information and resources from only one archive, but is composed of many disparate sources of information with a unified user experience. Primary source resources include letters, diaries, political cartoons, photographs of physical artifacts, maps, drawings and other artworks. Data resources could include transcribed newspapers, weather information, topography, financial data, and census data. By making arrangements with the holders of these digitized documents, the project

increases the range of resources available without the time consuming and expensive need to database them on our servers.

Open Source Software

The project will be developed under and open source model, meaning that the use of the Flash application will be freely available under a GNU General Public license (GPL), as outlined by the Free Software Foundation (http://fsf.org), which offers complete access to the source code that it was made from and encourages others to build on it and extend it.

K-20 Outreach

Instead of simply changing the way we present and store information, technology has fundamentally changed the landscape of teaching in two critical ways: accessibility and authorship. Databases create online warehouses for a seemingly limitless quantity of primary sources on key historical topics; the Internet gives users all over the world access to these documents with a click of the mouse. Educators are now able to access these documents, integrate them into daily classroom instruction, and give their students the opportunity to learn material by exploring, uncovering, and drawing conclusions from primary sources. In particular, history students can immerse themselves in the same academic approach that a university scholar uses to research and publish historical content: by identifying a historical problem, discovering primary sources of that event, and drawing conclusions based on that evidence.

In addition to learning the material, students develop skills necessary to function as independent learners, of analyzing and synthesizing primary data, and for presenting their findings. Students are able to combine their real world exploration with access to the data, evidence, and documents that help them interpret and draw conclusions of these experiences. When students are given the opportunity to explore primary sources, the class itself transforms to

a highly collaborative, problem-based classroom in which the individual student contribute to the direction, the pace, and the outcome of their study. Technology creates more opportunities for teachers and students to access information, but with that access comes the responsibility of redefining the classroom to emphasize, reward, and expect a different type of learning. By becoming historians-in-training, students are more engaged in the material, participate a more interactive learning environment in the class, and ultimately master the content more effectively.

Technology can also serve as a tool for higher order thinking by revealing and displaying patterns that allow a deeper understanding than would be otherwise possible. In particular, the ability to visual the temporal and the spatial elements of history gives teachers the resources to display data in provocative and specialized ways. As "curriculum gatekeepers", teachers naturally identify themes and topics within their proscribed state-mandated curriculum that lend itself to the time and pace required to mirror the inquiry-based world of the historian. In these moments of their curriculum, educators understand that the impact and relevance of these benchmark topics necessitate a more interactive and hands-on approach in their instruction.

Our belief is that "Jefferson's Travels" will serve as a best practice demonstration model for the process of using historical GIS to facilitate an inquiry-based culture in the classroom. By leveraging the wealth of resources of Monticello, the content will contribute to both the scholarly understanding of Jefferson's life and times as well as the teaching strategies of using these episodes to inform the larger narrative of American history. Using professional development programs already in place through VCDH Outreach, we plan to showcase HistoryBrowser and allow teachers to identify, create, and utilize other compelling episodes in American history. "Jefferson's Travels" will serve the dual capacity of accessing specific and nuanced content to emphasize the efficiency that the tool provides teachers of secondary and university level students.

Our approach will be distinctive and appealing for while there are numerous and growing digital archives on the web there are few sites aimed at doing experiential education for the study of the past. More importantly, traditional GIS software is bulky and expensive, and full-scale implementation is problematic. HistoryBrowser addresses the practical issues of classroom application, thereby allowing teachers to focus on the instructional use and historical value of the tool.

History and duration of project

The concept of using student generated was inspired by Ed Ayers' History Engine VCDH project that harnesses the collective intelligence of college students to individually contribute portions of historical research into a single geographic and temporally coded data base that includes scholarly references to primary and secondary source documents pertaining to a particular time and place. The project has been piloted at the University of Virginia for the past two years and is being adopted by a number of other universities around the country (see www.vcdh.virginia.edu/historyengine).

Professor French conducted a pilot during the Spring of 2007 and followed up with course during the following Fall semester entitled "Jefferson's Travels Digital History Seminar," which provides students a unique opportunity to study Thomas Jefferson's 1786 journey to England and develop a state-of-the-art interactive website working closely with the Thomas Jefferson Foundation which will contribute to the digital historical literature base for scholars, historians and educators, and provide students with their first publication.

In his role a Director of Technology for VCDH, Ferster developed a prototype of the HistoryBrowser to further the online visualization needs of a number of ongoing historical projects, including the Texas Slavery Project (www.vcdh.virginia.edu/TSP) and the upcoming

DelMarva Project. A number of other academic institutions have expressed interest is using the browser once it has been completed. A prototype of the HistoryBrowser can be found at www.primaryaccess.org/hub.

The HistoryBrowser can be likened to an "empty vessel." A tool that is intrinsically content free, but can be used in a wide variety of projects through the partnership with scholars and historians. We anticipate the funds requested to be sufficient to deliver a stable and effective version of the tool, and its continued development will be fueled by its application in a number of ongoing and proposed projects, both internal and external to VCDH

Staff

Bill Ferster will serve as director and co-principal investigator of the project and will oversee the technical aspects primarily involving the HistoryBrowser Flash application and database. He will commit 50% of his time to the effort. Dr. Ferster has been creating award-winning technology for over 30 years, founded three successful high-technology companies, won an EMMY award for Technical Achievement, and has developed PrimaryAccess (www.primaryaccess.org), a technically sophisticated Flash-based and database-driven tool for K-12 students to create digital documentaries.

Scot French will serve as co-principal investigator of the project and will be responsible for the historical aspects. Professor French has been involved with similar digital history projects and has successfully conducted a pilot of the Jefferson's Travels course over the past two year. His published works include analyses of Jefferson's writings on race and slavery (The Rebellious Slave: Nat Turner in American Memory, 2004) and Jefferson's relevance to later generations ("The Strange Career of Thomas Jefferson: Race and Slavery in American Memory, 1943-1993," co-authored with Edward L. Ayers, in Jeffersonian Legacies, 1994).

VCDH is uniquely suited to develop this project. It is one of the early pioneers in developing digital history projects, with a number of award winning projects including *The Valley of the Shadow*, *Virtual Jamestown*, and *Race and Place.*

Methods

1. **Resource identification and databasing.** Through the use of a seminar digital history course, 4th year history majors will identify primary and secondary resources about Mr. Jefferson's journey, tag them, and enter them in a relational database (French).

2. **Development of visualization display technology**. A data-driven Flash application (HistoryBrowser) will be developed to present visually sophisticated data-driven presentations of historical data and resources (Ferster).

3. **Design of visualizations and narratives.** A series of narratives, movies, animations, and narratives will designed and implemented, based on discussions in the digital history seminar (Ferster, French).

4. **Integration with Monticello and VCDH websites.** The final project will be prominently linked to the VCDH and Monticello websites (Ferster,Wollerton).

5. **Development of K- outreach materials**. VCDH will actively develop material to scaffold the Jefferson's Travels project to make it easily accessible for K-12 and college instructors to effectively use the site in the classroom (Mink).

Project Evaluation

The effectiveness of the project will be formatively assessed by the ability to present visually compelling and persuasive visualizations to the broad audience of historians, scholars, and teachers. This will be accomplished by regular publication of the developing project site to

interested persons actively recruited by the project staff. A project blog will be actively written to and monitored for comments, so a lively conversation can be engendered.

An external summative evaluation will be conducted by Daniel J. Cohen, Director of Research Projects at the Center for History and New Media (CHNM) at George Mason University. CHNM is one of the leading centers for digital history scholarship.

Final product and dissemination

The result of this project will be a highly interactive website hosted on the VCDH servers. The site will make the rich array of resources, narratives, documents and data identified freely available to scholars and teachers. The Adobe Flash player required to view it is freely available on all major computer platforms and is currently installed on over 99% of US computers.

The Jefferson's Travels site will be prominently linked to the VCDH website's main page (www.vcdh.virginia.edu) , which attracts over 350,000 visitors per year, as well as the more popular Thomas Jefferson Foundation's website (www.monticello.org) with over 2.4 million visitors per year.

Ferster, French, and Mink will make presentations at humanities and educational conferences where presentations will be given to encourage use of the project by scholars and educators, and actively contribute to the literature. Instructors at other academic institutions will be encouraged to contribute to the project, extending the time period covered, or develop new projects on any historical topic.

Work plan

1. Continued development of browser modules for display of advanced History Browser visualizations (Ferster).

2. Identification, inclusion, editing, and research of historic content used on site (French).

3. Develop database structure to hold identified resources (Wollerton).

4. Development of Jefferson's Travels website and linking to VCDH and Thomas Jefferson Foundation websites (Ferster, Wollerton).

Development of outreach materials to scaffold the classroom use of Jefferson's Travels by K-12 teachers (Mink).