

**NATIONAL ENDOWMENT
FOR THE HUMANITIES**

SAMPLE APPLICATION NARRATIVE



JISC/NEH Transatlantic Digitization Collaboration Grants
Institution: Folger Shakespeare Library and University of Oxford

**Folger Shakespeare Library and University of Oxford
Joint Application to the National Endowment for the Humanities (NEH)
and Joint Information Systems Committee (JISC)
Transatlantic Digitization Collaboration**

Shakespeare Quartos Archive

Project Description and Significance

The University of Oxford and the Folger Shakespeare Library propose a transatlantic digital collaboration to create the *Shakespeare Quartos Archive*, a freely-accessible, high-resolution digital collection of the seventy-five pre-1641 quarto editions of William Shakespeare's plays. The one-year project will also produce an interactive interface and toolset for the detailed study of the quartos, with full-functionality applied to all thirty-two copies of one play, *Hamlet*, held at participating institutions. Contributing content to this multi-institutional project will be the Bodleian Library of the University of Oxford, the British Library, the University of Edinburgh Library, the Folger Shakespeare Library, the Huntington Library, and the National Library of Scotland.

Shakespeare's earliest printed quarto editions provide essential information concerning the textual and theatrical history of his plays. In the absence of surviving manuscripts, the quartos offer the closest known evidence of what Shakespeare might actually have written, and what appeared on the early modern English stage. Scholars, teachers, editors, and theater directors, therefore, seek to examine these books for historical evidence and for significant variations in text. Due to their rarity and fragility, the earliest quartos are often not accessible to those who need to study them. The *Shakespeare Quartos Archive* makes the earliest quartos freely available for in-depth study to students of Shakespeare from all across the globe.

The *Shakespeare Quartos Archive* will expand the British Library's "Shakespeare in Quarto" website into the first complete online collection of pre-1641 Shakespeare quartos. Joined to this resource will be a prototype of an interactive interface and toolset aimed at facilitating scholarly research, performance studies, and new pedagogical applications derived from detailed examination and comparison of the quartos. Tools and functions will include the ability to overlay text images, compare images side-by-side, search full-text, and mark and tag text images with user annotations. The interface prototype will be fully functional for one play, *Hamlet*. To this end, digitized images of all thirty-two pre-1641 copies of *Hamlet* held by participating libraries will undergo full-text transcription and encoding. The prototype will be assessed using professionally-facilitated experimentation and evaluation by graduate students and faculty at the Shakespeare Institute at the University of Birmingham, and by secondary school teachers participating in the NEH-funded *Teaching Shakespeare Institute* at the Folger Shakespeare Library.

The *Shakespeare Quartos Archive* will continue to be accessible as a freely-available Web resource beyond the initial grant period. Growth plans include eventual application of full-level *Hamlet* functionality to all plays in quarto, while expanding available online facsimiles by seeking involvement from new partner institutions with relevant holdings.

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Narrative

The performance of William Shakespeare's plays on the stage made him famous. The printing of his plays made him immortal. The earliest Shakespeare quartos are over four hundred years old and are the rarest, most fragile body of printed literature available to Shakespeare scholars.¹ Sold as paperbacks and often read to pieces, they are among the most ephemeral books of the age and survive in relatively low numbers. Those that do survive represent the first recorded testimony to Shakespeare's genius. They are living artifacts telling the story of how Shakespeare's *Hamlet*, *Henry V*, *King Lear*, *A Midsummer Night's Dream*, and *Romeo and Juliet*, to name just a few, first circulated in print.

Over the centuries these unassuming treasures have been bought and sold, auctioned, bequeathed, inherited, and sold again. Generations of collectors have held them in private collections, then donated or sold them to public institutions, rare book libraries, or other individuals. This pattern of trade over four centuries has dispersed the body of Shakespeare quartos all over the world. Today, six institutions in the United Kingdom and United States stand out as the main repositories of the pre-1641 quartos: the Bodleian Library of the University of Oxford, the British Library, the University of Edinburgh Library, the Folger Shakespeare Library, the Huntington Library, and the National Library of Scotland (see Appendix C for a complete census of surviving quartos).

The University of Oxford and The Folger Shakespeare Library propose a transatlantic collaboration to turn these internationally significant holdings into a single online collection, the *Shakespeare Quartos Archive*. We aim to present high-resolution reproductions and full-text of surviving Shakespeare quartos in a technologically advanced interface, facilitating detailed examination, comparison, and study. The *Shakespeare Quartos Archive* will be freely available to scholars, teachers, students, actors, and Shakespeare lovers from all across the globe.

A JISC / NEH start-up grant is sought for Phase One of this project, to be undertaken by the University of Oxford (Richard Ovenden, UK project director) and the Folger Shakespeare Library (Richard Kuhta, US project co-director) with the Maryland Institute for Technology in the Humanities (MITH) of the University of Maryland (Neil Fraistat, US project co-director) in collaboration with the British Library, the University of Edinburgh Library, the Huntington Library, the National Library of Scotland, and the Shakespeare Institute (University of Birmingham). Phase One, a one-year initiative, will expand The British Library's "Shakespeare in Quarto" website into the multi-institutional *Shakespeare Quartos Archive*, a complete, digital

¹ Measuring between 19 and 30 cm, quartos are the second largest books (behind folios). They are made by folding a single large sheet of paper twice to produce four leaves or eight pages. As printing conventions became standardized in the sixteenth century, the quarto became the chosen format for single play texts.

collection of the seventy-five pre-1641 quarto editions of Shakespeare's plays. The British Library will provide the bulk of the required digital images, with fourteen editions supplied by the Folger Shakespeare Library, the National Library of Scotland, the University of Edinburgh, and the University of Oxford (See Appendix D for editions needed to complete Phase One of the *Shakespeare Quartos Archive*).

Phase One will also include development of a user interface and digital toolset prototype with research and teaching functions such as overlaying text images, comparing images side-by-side, searching full-text, and marking and tagging text images with curatorial and user annotations. Full functionality of this prototype will be applied to one play, *Hamlet*. Digitized images will be included of all thirty-two pre-1641 copies of *Hamlet* held by participating libraries, using existing images as well as new photography of six copies held at the Huntington Library. Full-text transcription and encoding will be undertaken by the Oxford Digital Library, using expertise gained as the UK partners of *Early English Books Online Text Creation Partnership*. Prototype design will be undertaken in collaboration with MITH (Neil Fraistat, Director), recognized internationally as a leading interdisciplinary center for developing and enriching digital tools for humanities scholars. Assessment will be based upon professionally-facilitated experimentation and evaluation by graduate students and faculty at the Shakespeare Institute, University of Birmingham (Kate McLuskie, Director), and by secondary school teachers participating in an NEH-funded *Teaching Shakespeare Institute*, Folger Shakespeare Library (Robert Young, Director).

To fund Phase One of the *Shakespeare Quartos Archive*, the Folger Shakespeare Library is requesting a total of \$119,598 from the National Endowment for the Humanities, and the University of Oxford is requesting a total of £59,994 from the Joint Information Systems Committee (see Appendix A for detailed budgets).

1) Significance and Assessment of Need

a) Historical and Cultural Significance of Pre-1641 Shakespeare Quartos

The study of the early quartos is essential to Shakespeare research. None of Shakespeare's manuscripts survive; therefore, the quartos (along with the 1623 First Folio, the first collection of Shakespeare's plays) are the closest known evidence of what Shakespeare might actually have written and what appeared on the early modern London stage.² Despite their importance, relatively few of the surviving quartos have been made available to researchers in facsimile, thus greatly restricting comprehensive study and comparison of these invaluable historical artifacts.

The most basic historical evidence contained within the quartos helps scholars date the composition and performance of Shakespeare's work. The title pages alone have helped scholars record when some plays were written, where they were performed, by what theatrical troupe, and how they were received. More obscure is the textual evidence found in variations between editions of the same plays or from copy to copy within the same print run. Take, for example, the following variation between the first two quarto editions of *Hamlet*:

² The exception being a surviving manuscript of the play *Sir Thomas More* which most scholars agree contains contributions in Shakespeare's hand (BL Harleian MS 7368).

To be, or not to be, that is the question:
Whether tis nobler in the minde to suffer
The slings and arrowes of outragious fortune,
Or to take Armes against a sea of troubles... (*Hamlet* Q2 1604/5)

To be or not to be, I there's the point,
To Die, to sleepe, is that all? I, all:
No, to sleepe, to dreame, I, mary, there it goes (*Hamlet* Q1 1603)

The two quotations above reveal two very different versions of what may be Shakespeare's most famous soliloquy. As a matter of fact, the first two quartos of *Hamlet* present two very different plays, most easily demonstrated by the fact that a performance of the 1603 *Hamlet* (Q1) takes approximately two and half hours, while a performance of the 1604/5 *Hamlet* (Q2) takes approximately four hours. While perhaps the most dramatic example, the *Hamlet* quartos are by no means remarkable in this regard. In many cases, the early quartos of Shakespeare present significant variations, both from edition to edition and copy to copy, and from the texts printed in Shakespeare's First Folio.

Variation among the quartos presents some of the most controversial questions in all of Shakespearean scholarship. Scholars have asked some of the following questions: Are quarto play texts based on memorial reconstructions of audience members or actors? Are they based on "foul papers" supplied by playing companies? Do differences between editions constitute authorial revisions? Detailed examination of the quarto texts is the key to finding answers to these questions.

Textual Editing and the History of the Book: Understanding the variants between the early editions is also essential in the creation of modern editions of Shakespeare's works. Textual scholars charged with the task of producing a modern edition of a Shakespeare play face the immense challenge of deciding what text or texts to use as the foundation of their edition. Normally they produce a modern version based in great part on one early edition, while incorporating what they feel are the best variant readings from the remaining editions. In order to study the variants, textual editors engage in a letter-by-letter examination of all known early editions, a process called collation. Collation was first done by putting the texts side by side, then by using the optical technology of collating machines and equipment. The *Shakespeare Quartos Archive* will serve as the ultimate collator, allowing users to overlay copies or set them side by side, with variant lines automatically highlighted.

The ability to examine and manipulate high-resolution digital facsimiles will also be an invaluable aid to scholars studying the quartos from the critical point-of-view of the History of the Book. Meticulous examination of typographical elements such as type and decorative ornaments provides evidence as to how the books were produced. Likewise, evidence such as bindings, manuscript notes, and wear and tear reveals how contemporary readers interacted with books. Phase One of this project will produce transcriptions of the full-text and manuscript marginalia of all thirty-two pre-1641 *Hamlet* quartos held by participating institutions, making the texts available to an audience unfamiliar with sixteenth- and seventeenth-century fonts and

handwriting, while compatible with text-to-speech readers to ensure accessibility for users with disabilities.

Teaching and Performance: Students of Shakespeare read the plays in modern editions that have gone through centuries of regularization, modernization, and annotation. Using the *Shakespeare Quartos Archive*, teachers will have the ability to augment modern editions with facsimiles of the original editions, exploring how readers first encountered Shakespeare. Complementing the image collation tool, the *Hamlet* transcriptions will enable different versions of this text to be viewed simultaneously for comparison with bitmaps identifying where any given point in the electronic text appears on an image. Teachers and students will explore how the reading experience changes when there is a lack of regularized spelling and punctuation, the absence of act and scene divisions, and, perhaps most importantly, the lack of critical annotations.

The *Shakespeare Quartos Archive* also responds to burgeoning interest in the world of Shakespearean theater. At universities, scholars engaged in performance study are reexamining the early quartos for evidence of how the plays may have first been performed. The *Shakespeare Quartos Archive* will offer an unprecedented level of study. In theaters, directors are performing from the early editions. The *Shakespeare Quartos Archive* will provide directors and actors with access to the original editions through an interface that allows them to create their own prompt books marked up with their own notes.

b) Comparison with Existing Resources at Participating and Other Peer Institutions

Whereas institutions participating in the *Shakespeare Quartos Archive* and other third parties have made some of the pre-1641 Shakespeare quartos available online, the *Shakespeare Quartos Archive* differs from other existing resources in a number of ways, including scope and depth of coverage, image quality, and functionality.

Scope and Depth of Coverage: Digital reproductions and full text of early modern texts, including pre-1641 Shakespeare quartos, are included in *Early English Books Online (EEBO)*, *Internet Shakespeare Editions (ISE)* at the University of Victoria, and The Schoenberg Center for Electronic Text & Image's *English Renaissance in Context (ERIC)* at the University of Pennsylvania. The *Shakespeare Quartos Archive* will be unique in featuring a complete, digital collection of pre-1641 Shakespeare quarto editions. Its *Hamlet* prototype will offer multiple copies of each edition, rather than access to single copies of each edition. Collating multiple copies of single print runs is an important aspect of the editorial process, and one not available in existing resources.

Image Quality: This archive will be based on high-resolution digitization of the quarto collections at participating institutions. Imaging is complete at most of the participating institutions, is scheduled for completion in 2008 at the Folger Shakespeare Library, and will begin at the Huntington Library under this grant proposal. The *Shakespeare Quartos Archive* will present high-resolution, zoomable color images that will surpass anything seen by the naked eye, and certainly exceed anything that can be examined on *EEBO*, which provides scanned black and white images from microfilm.

Encoded Text: Transcriptions encoded in TEI P5 will be added to every copy of every quarto edition of *Hamlet* held by the six content-providing institutions, to enable full-text and limited-field searching, electronic text collation, and to widen access. The integration of richly encoded texts will be a unique feature, separating the *Shakespeare Quartos Archive* from other related projects. The level of text encoding will be deeper, and the provision of editorial sophistication that this affords will be rich. The encoding team will draw on the years of experience gained as the lead UK partner for the Oxford-Michigan *Early English Books Online Text Creation Partnership* (*EEBO TCP*: <http://www.lib.umich.edu/tcp/eebo/>). The *Archive* will interface with this existing resource by linking back to images and encoded texts in related works in the *EEBO* and *EEBO TCP* resources.

Functionality: The *Shakespeare Quartos Archive* will be interactive in a way that most of the best web-based scholarly resources are not. Phase One of the project will produce a prototype of an interactive interface that addresses the special needs of teachers, researchers, and scholars. Functionality and tools will include:

- Ability to overlay text images, compare any number of images and transcriptions side-by-side, zoom with a "magnifying glass," link page images to texts, search for words/features in images, collate differences in quartos, and statistically display such stylistic characteristics as line length, word use, and syntactical complexity.
- Web 2.0 innovations to make the test site interactive, e.g., teacher creation of exhibits for classrooms, user creation and sharing of notes and tags, and faceted browsing.
- Tag clouds, e.g., to highlight/display hierarchies of word frequencies, and to describe physical copies.

Further, the *Shakespeare Quartos Archive* will interface with existing resources by linking back to bibliographic descriptions in the *English Short Title Catalogue* (*ESTC*) (<http://estc.bl.uk>).

See below, Section 3 and Appendices F and G, for more detail about these functionalities, both as envisaged for the *Shakespeare Quartos Archive* and as implemented by MITH for the *Our Americas Digital Archives Project*.

c) **Significance for Access and Preservation Goals of Participating Institutions**

Access: The definition of library access has changed dramatically over the past decade. Libraries once focused primarily on local users or users-in-residence, but they now utilize the ubiquitous nature of the Internet to provide access to anyone with access to the Web. From the point-of-view of special collections libraries, digitizing unique materials and putting them online is a proven way to provide access to the most people, creating opportunities for researchers and students who otherwise do not have the chance to examine the original objects.

The *Shakespeare Quartos Archive* responds to this new challenge by providing free access to a complete digital collection of pre-1641 Shakespeare quartos editions. In the case of these early Shakespeare publications, the challenge of access extends beyond geographic limitations. Early Shakespeare editions are often restricted to local library users due to their rarity and value. Digitizing the earliest Shakespeare quartos and making them freely available for study facilitates global access while providing participating institutions with a research tool that can, for most scholars, substitute for access to original copies. Additionally, the *Hamlet* prototype will

demonstrate an innovative toolset for online scholarship, teaching, and editing. Using this interactive interface, for the first time scholars, students, and actors will be able to simultaneously read and compare multiple copies of each early edition of *Hamlet*.

Preservation: Although the primary mission of the *Shakespeare Quartos Archive* is to provide free access to surviving early quarto editions of Shakespeare's plays, the process of reformatting the quartos into high-resolution digital images yields a secondary, but perhaps greater result: the preservation of the originals by providing an alternative for scholars who in the past would have needed to handle the books. These items remain rare, fragile, restricted books, and while digitization may well increase requests for their use, this project will permit institutional participants to make sure the added "handling" is handling of the electronic surrogate. The *Shakespeare Quartos Archive* is expected to increase "use" exponentially, but this need not mean that the original texts will be handled any more often, or by anyone but qualified scholars (though we hope this project will encourage more qualified scholars to visit our collections). The value of digitization is that it greatly expands the universe of users, where rare materials are made available to many more people, but in another form. One curve, rate of increase (access), is much steeper than the other (handling). Libraries that have digitized their early quartos for the *Shakespeare Quartos Archive* will have the option to redirect their users online and minimize the amount of use their quartos receive. Moreover, once a digital facsimile is created additional reproductions can be made without having to go back to the original, further saving the quartos from unnecessary handling.

2) History, Scope, and Duration

a) Origin and Groundwork

In 2002, Folger Librarian Richard Kuhta first proposed and took a leadership role in establishing the "Shakespeare Quarto Digitization Project," which, in collaboration with Octavo Corporation, digitized quartos held at the Bodleian Library, the British Library, the National Library of Scotland, and the University of Edinburgh, while preparing for digitization at the Folger Library (see Appendix C for an inventory of completed quartos).

Imaging: Much of the important image-creation groundwork has been laid, with digital photography complete at four of the participating institutions, scheduled for completion in 2008 at the Folger, and scheduled to begin at the Huntington as part of this grant proposal. An important aspect of this grant will be to consider how best to schedule and integrate the photography yet to be started at the Huntington Library. This planning will provide a useful model for eventual extension of the *Shakespeare Quartos Archive* to additional institutions and private collectors.

Cataloging and Metadata: Detailed bibliographic descriptions are complete for all copies that have been digitized. In addition, collecting, creation, and linking of additional copy-specific metadata will be planned and implemented for a single play, *Hamlet*, in Phase One (for example, establishing act, scene, and line numbering on a copy-by-copy basis, linking character names with spoken lines, etc.).

Full text: Full searchability of all quarto texts is a long-term goal of this project. While innumerable full-text editions exist in print and online, the uses to which the *Shakespeare Quartos Archive* can be put will depend in part on important editorial decisions regarding full text. A projected outcome for Phase One is a proof-of-concept provision of full, encoded text for all reproduced copies of pre-1641 *Hamlet* quarto editions.

b) Scope and Outcomes

In the long run, the *Shakespeare Quartos Archive* is intended to provide access to high-resolution digital images and full text of all plays in quarto held by the Bodleian Library of the University of Oxford, the British Library, the University of Edinburgh Library, the Folger Shakespeare Library, the Huntington Library, the National Library of Scotland, and other partners to be added in the future. Funding is sought in this proposal for Phase One, a one-year initiative scheduled to begin in April 2008. The scope of Phase One will include the following:

1. Digital photography of all six *Hamlet* quartos held by the Huntington Library.
2. An image database containing a single copy of all of the seventy-five quarto editions of Shakespeare published before 1641, plus every copy of the pre-1641 editions of *Hamlet* held at participating institutions.
3. Prototype of an interactive interface with full-level functionality applied to one play, *Hamlet*, as a proof of concept.
4. A publicly-facing wiki used by experts associated with the project to develop new interpretative material about the quartos for a wider audience. This will be hosted by the British Library and will supplement the existing essay and related material currently available on the "Shakespeare in Quarto" website.
5. A White Paper describing the above while providing a critical evaluation of functionality, usability, and possible additional scholarly/educational uses of the *Shakespeare Quartos Archive*. Assessment will be based upon professionally-facilitated experimentation and evaluation by graduate students and faculty at the Shakespeare Institute (University of Birmingham), and by secondary school teachers participating in an NEH-funded *Teaching Shakespeare Institute* (Folger Shakespeare Library).
6. Establishment of a formal board of advisors to be made up of representatives from all participating institutions, tasked with establishing policies on such issues as sustainability and admission of new partner institutions.

c) Duration and Sustainability

Funding is sought for a one-year planning and pilot project to run from April 2008 through March 2009, resulting in a freely accessible, online collection of the seventy-five pre-1641 quarto editions of Shakespeare's plays, and an interactive interface facilitating detailed study of multiple copies of the early *Hamlet* quartos. Participating institutions agree that this will only be the first phase of an ongoing project and are committed to the sustainability of the *Shakespeare Quartos Archive* beyond this Phase One pilot. In order to sustain and expand the *Shakespeare Quartos Archive* and *Hamlet* prototype, participating institutions are committed to raising needed funds through gifts from donors, institutional operating funds, grants from federal agencies, and foundation grants. Future funds may be applied for from grant-funding agencies such as the Andrew W. Mellon Foundation, the Institute of Museum and Library Services (IMLS), and the

Alfred P. Sloan Foundation, and programs under the Digital Humanities Initiative of the National Endowment for the Humanities.

3) Methodology and Standards

Project activities will conform to appropriate standards and accepted professional practices.

a) Preparation and Processing of Material

Starting in 2002, the Octavo Corporation digitized Shakespeare quartos held at the Bodleian Library, the British Library, the National Library of Scotland, and the University of Edinburgh. These images are 8 bit RGB color TIFF files, 300 ppi (pixels per inch), and include an industry standard color target and scale in every image. The digital photography currently in process at the Folger Shakespeare Library adheres to the same technical standards, as will the photography to be completed at the Huntington Library.

The proof-of-concept full-text transcriptions of the thirty-two *Hamlet* quartos will be richly encoded in XML by Oxford staff, following TEI P5 Guidelines for Electronic Text Encoding and Interchange, the established and internationally recognized standard for text encoding. A set of guidelines for the production of the transcribed and encoded texts will be developed in consultation with participating institutions and academic advisors. The depth and richness of the XML mark-up will be determined during these discussions, and will underpin the functionality of the proof-of-concept resource. This documentation will give precise details of how the project captured such features as illegible characters, italicised passages, marginalia, additions, omissions and deletions, variant name spellings, and abbreviations. We anticipate that this will prove invaluable to other scholarly text encoding projects. The texts will be transcribed accordingly and will be proofed repeatedly to ensure exceptional levels of accuracy. An illustration of how transcription and encoding might be applied to the project texts is attached in Appendix G.

Metadata relating to the full-text transcriptions and the methods used in creating them will be recorded in each text's TEI header. This will include a statement of responsibility, a description of the encoding practices, details of any amendments made to the text, and a description of the parent project, the *Shakespeare Quartos Archive*. All of this information can be easily extracted and mapped onto other standards such as Dublin Core. The full-text metadata will be linked to both the bibliographic metadata from the *ESTC* and participating institutions, and the metadata associated with the page images.

All the guidelines, as well as any revisions or additional decisions made during the course of the project, will be documented and incorporated into the Help pages of the project website. During the project, a publicly-facing wiki will be used by experts associated with the project to develop new interpretative material about the quartos for a wider audience. This will be hosted by the British Library and will supplement the existing essay and related material currently available on its "Shakespeare in Quarto" website.

b) Organization of and Access to Material

The *Shakespeare Quartos Archive* will make use of the best practices of Web 2.0 technologies to create an interactive digital collection. Users of the archive will be able to search, tag, and collect references to any combination of artifacts. As users interact with the resources in the archive, a folksonomy will be constructed. Folksonomies are systems of collaboratively produced and shared descriptors for online objects (images, texts, pages, links). They differ from hierarchical taxonomies, such as the *Library of Congress Subject Headings*, in that a community of users collectively generates the set of labels (or tags) for the shared data. Folksonomic searching has been popularly employed by sites like YouTube that allow users to tag and construct themed lists of videos described with metadata defined by the users. With this kind of technology, the computer could deduce, for example, based upon the communal activity of users, that a user searching for renaissance might also find resources tagged as early modern to be of use. This folksonomic method of tagging models the way in which the collected materials are actually used, supplementing the original metadata, which reflects the way in which the original catalogers expected the items to be used.

Faceted browse/search functionality will be incorporated in the *Shakespeare Quartos Archive's* infrastructure to facilitate information discovery. Most resources contain multiple types, or facets, of data. For example, one might wish to search for lines spoken by Hamlet immediately followed by a line spoken by Polonius in Act II. Library catalogs such as North Carolina State's and OCLC's Worldcat are winning acclaim for their faceted browsing interfaces, and a study by the Digital Library Federation found that DLF institutions identified faceted browsing as one of the services desired for finding digital objects. The *Shakespeare Quartos Archive* will apply such an interface to digital collections.

We will also make use of the popular visualization tool, the folksonomic tag cloud, to allow users to quickly get a sense of patterns in the archive. A tag cloud is a graphical cluster of keywords in which a word's frequency of occurrence is visualized dynamically by its font size. The tag cloud might be populated with the most frequently occurring words in a particular quarto or in the archive in general. On the other hand, a folksonomic tag cloud might show the most frequently occurring words employed by users to describe a particular scene. A teacher, might, for instance, annotate the first scene with the sentence "Two guards meet the ghost for the first time." Another teacher might write "Barnardo and Francisco encounter the ghost." The word "ghost," used in both descriptions, would appear larger than the words "encounter" or "meet."

The encoding methodology and the interface described in the previous section outline the nature of the metadata creation and file organization in the project. The work itself will be submitted to Google and other appropriate search engines and will be linked from high-traffic institutional websites of the British Library, the Bodleian Library, and the Folger Shakespeare Library. The British Library's "Shakespeare in Quarto" site will be re-branded as a multi-institutional repository, and will link seamlessly to the proof-of-concept *Hamlet* interface, which will be hosted on University of Oxford servers.

In keeping with a commitment to open-source technology and software, the newly-developed *Hamlet* interface will be created at MITH using a combination of MySQL, Apache Web Server, JavaScript, and PHP.

c) **Storage, Maintenance, and Protection of Data**

While the prototype is being developed at MITH, work will be backed up by the University of Maryland's backup service hosted by IBM Tivoli's Storage Manager. Once the site goes live, storage and backup will be the responsibility of the server administrators at University of Oxford, who will be hosting the public site.

All the electronic texts created at Oxford will be created, managed, and preserved in accordance with current best practices and standards in digital data management and preservation. As the texts are created, regular backups will be taken of the data to minimize the impact on productivity of any accidental data loss or corruption. In addition, periodic archival snapshots of the entire corpus of textual data will be taken and loaded into Oxford's digital preservation infrastructure.

The publicly available quarto images on the British Library's servers will be supported in line with its technical standards and will be backed up on a weekly basis using Symantec Netbackup and also Symantec Backup Exec System Recovery Server, with incremental backups at least twice-weekly. Preservation copies of quarto images in its collection will be stored in the Library's Digital Object Management system.

4) **Workplan** (see also Workplan/GANNT Chart, Appendix B)

Project Planning and Management

April 2008: Participating institutions finalize project plan and timetable. Work begins.

September 2008, March 2009: Project board meetings.

May 2008: Project Wiki available on the British Library's website.

January-March 2009: Project board produces white paper and final report.

New Digitization/Data Creation

April 2008: Folger Shakespeare Library completes the imaging of its contributed quartos.

May 2008: The Huntington Library begins the imaging of its six *Hamlet* quartos.

April-December 2008: Participating institutions agree upon and apply cataloging/metadata standards.

Upload of Additional Image Sets to British Library's "Shakespeare in Quarto" Website

May 2008: Images delivered to the British Library from the Bodleian Library of the University of Oxford, the National Library of Scotland, and the University of Edinburgh Library.

July-October 2008: Images delivered to the British Library from the Huntington Library and the Folger Shakespeare Library.

April-December 2008: British Library, ingest and mounting of additional images.

December 2008-February 2009: Curatorial design and branding changes to transform "Shakespeare in Quarto" into the multi-institutional *Shakespeare Quartos Archive*.

Text Transcription and Encoding of Pre-1641 *Hamlet* Quartos

April 2008: Bodleian Library, consultation on transcription and encoding.

April-June 2008: Bodleian Library, creation and delivery of test quartos.

June 2008-March 2009: Bodleian Library, text transcription and encoding of quartos.

October 2008-March 2009: Bodleian Library, revisions to encoding following evaluation.

April 2008-March 2009: Bodleian Library, documentation of encoding guidelines.

October 2008-March 2009: Bodleian Library, production of online help re: encoding.

Development of *Shakespeare Quartos Archive's Hamlet* Interface

May & November 2008: MITH, download of images from the British Library, Huntington Library, and Folger Library.

April-August 2008: MITH, develop and test prototype functionality.

August 2008-March 2009: MITH, revise and refine prototype.

May 2008-February 2009: British Library, integration of *Hamlet* interface with "Shakespeare in Quarto" website.

Usability Testing and Evaluation

July-August 2008: Participating institutions, initial test and evaluation.

September 2008-January 2009: Professionally-facilitated end-user testing and evaluation at the Shakespeare Institute, University of Birmingham.

September 2008-January 2009: End-user testing and evaluation at an NEH-funded *Teaching Shakespeare Institute*, Folger Shakespeare Library.

January-March 2009: Participating institutions, final review and acceptance testing.

5) Nature of Collaboration and Staff

The strengths of the collaborating institutions complement each other. The Folger Shakespeare Library is uniquely positioned to provide US leadership of the *Shakespeare Quartos Archive*, with a leadership role in collaborative quartos digitization efforts completed to date, as the repository of the largest collection of pre-1641 Shakespeare quartos in the world, and supporting an international community of scholars. The Maryland Institute for Technology in the Humanities (MITH) is a collaboration among the University of Maryland's College of Arts and Humanities, University Libraries, and Office of Information Technology and was made possible by a major Challenge Grant from the National Endowment for the Humanities. Since its founding in 1999, MITH has provided an internationally-recognized leadership role in creating innovative digital applications for humanities scholarship. The Oxford Digital Library is actively engaged in evaluating and implementing internationally agreed standards for digital library elements, including TEI tagging and transcription, and has been a member since 2002 of the EEBO Text Creation Partnership.

The core project team in the United States includes co-directors Richard Kuhta (Librarian, Folger Shakespeare Library) and Neil Fraistat (Director, Maryland Institute for Technology in the

Humanities), who will devote ten and fifteen percent respectively of their time to the Shakespeare Quartos Archive. Jim Kuhn (Head of Collection Information Services, Folger Shakespeare Library), will provide fifteen percent of his time and will coordinate file transfers, testing, reporting, meeting arrangements, and other collaboration requirements. Doug Reside (Assistant Director, MITH) will provide ten percent of his time and will supervise two grant-funded staff positions: a Web Programmer and a Web Designer for programming and interface design. The core project team in the United Kingdom includes project director Richard Ovenden (Associate Director, Bodleian Library, Oxford University Library Services) and Michael Popham (Head, Oxford Digital Library, Oxford University Library Services), who will coordinate UK collaborations and will supervise a Text Encoder. A professional usability testing firm will be hired to conduct prototype evaluation at the University of Birmingham. All other work will be done by existing staff at participating institutions. Vitas for existing staff members, and job descriptions for new staff positions and contractors may be found in Appendices H and I.

Two face-to-face meetings among the principals and other cooperating institutions, along with regular conference calls and frequent communication via email, private listserv, and wiki, will help facilitate the collaborative process.

6) Dissemination

A wiki and a project website will be created within 30 days of funding, to provide for consultation with the academic community, and to disseminate information to scholars and to the public during the project about the standards and choices in use. At completion of Phase One, the *Hamlet* proof-of-concept prototype will be migrated to servers at the University of Oxford and integrated into a new, multi-institutional, version of "Shakespeare in Quarto," with updated expert commentary and comprehensive help pages.

Conclusion

As the earliest printed works of Shakespeare, the quartos are among the rarest and most fragile treasures available to qualified scholars, and stand alongside the iconic First Folio as the key to understanding the works and words that still resonate in theaters and classrooms today. From the eighteenth century to modern times, the quartos have always been recognized as providing unique textual and theatrical information, but a pattern of trade over four centuries has scattered these playtexts all over the world, making them difficult to see and almost impossible to compare. The proposed *Shakespeare Quartos Archive* is a transatlantic collaborative initiative to bring these fugitive texts together digitally, and make them freely available to users of all ages. The first full online set of all pre-1641 editions of the plays in quarto will be joined with a state-of-the-art interface providing access to every copy of each *Hamlet* edition held by participating institutions. These resources will place these rarest of Shakespearean treasures in the hands of a world-wide community of scholars, teachers, and students.