

# **Building the Miranda Digital Asset Platform (2016-2020)**

Folger Shakespeare Library

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# Introduction

## Purpose and intended audience

The Miranda Digital Asset Platform offers a unified, publicly accessible location to search, browse, and view Folger digital materials. Miranda offers access to a variety of media – sound files, video clips, image files, metadata records, and datasets – and provides a foundation for publications and other computer applications.

This white paper offers an overview of the Miranda project and platform. The intended audiences for this paper include cultural heritage institutions that have some flexibility in determining the future of their online collections display and distribution platforms. Institutions with functions and collections that cross the boundaries of GLAM categories (galleries, libraries, archives, and museums) may also find this particularly useful.

The experiential knowledge we share in this document may also be useful for our colleagues at other cultural organizations who might be interested in comparing or adapting elements of our work. Institutions that cannot devote the time and money necessary to customize the experience of their collections may not be able to implement the solutions described here, but hopefully can learn from Miranda's example.

However institutions may choose to make use of Miranda and this white paper, we hope that our work will lead other teams to make smart decisions about their collections, their data, and how they put their material forward to users.

If you have specific questions or would like to connect with our team, please email [miranda@folger.edu](mailto:miranda@folger.edu).

## The problems Miranda solves

Since opening in 1932, The Folger Shakespeare Library has grown from serving only scholars to welcoming a broad community of visitors and users: researchers, teachers, students, artists, theater audiences, and general enthusiasts. Miranda is essential to the Folger's efforts to provide for this increasingly varied set of users that includes, but expands far beyond, the traditional university researcher. Each of these users, whether they visit the Folger in person or online, interacts with our collections in their own ways and accesses our resources for their own reasons. Some of them, no matter their background or the context of their engagement with the Folger, access the same resources or perform similar activities.

Therefore, as a special collections library with a unique audience, the Folger Shakespeare Library has specific needs for searching and displaying digital items and records that are quite different from a library that mainly deals with modern, mass-produced materials. Miranda provides the following solutions for our needs:

**Simplifies access points across the Folger's online resources.** Prior to Miranda's creation, our digital resources were spread across several platforms. While the Folger's cataloging sets the recognized standard for special collections libraries, these materials are largely inaccessible to remote users beyond catalog records. Users access podcasts and sound through a variety of platforms; images through LUNA, our digital image collection; and transcription and tabular data projects, such as *Digital Anthology of Early Modern English Drama (EMED)* and *Early Modern Manuscripts Online (EMMO)*, from standalone project sites.

The Miranda platform gathers these publicly available items into one searchable place, and supplements them with new material, such as a [1908 silent \*Taming of the Shrew\*](#) and [music from our Consort](#). Before the Miranda platform's development, users needed to know to seek out podcasts of Folger materials; now, a student seeking visuals for a presentation on *King Lear* may find podcasts covering the background on the [Boydell Shakespeare Gallery](#) or *Lear's* influence on modern media in "[How \*King Lear\* inspired \*Empire\*](#)" with the same search as engravings, paintings, and photographs of actors.

The Miranda platform gathers these publicly available items into one searchable place, and supplements them with new material, such as a 1908 silent *Taming of the Shrew* and [music from the Folger Consort](#), our performing group of early modern music. Before the Miranda platform's development, users needed to know to seek out podcasts of Folger materials; now, a student seeking visuals for a presentation on *King Lear* can find podcasts covering the background on the [Boydell Shakespeare Gallery](#) or *Lear's* influence on modern media in "[How \*King Lear\* inspired \*Empire\*](#)" with the same search as engravings, paintings, and photographs of actors. In 2019, the Folger received almost 2.5 million online visitors. In order to better serve our online audience, Miranda brings our digital assets together in one central location that can be accessed directly from common search engines.

**Reconciles the diversity and similarity of collection items.** Much of our collection is comprised of physical materials. The Folger collects a full range of materials from the early modern world, and Shakespeare in performance from his time to the present. This means the Folger's diverse collection ranges from sixteenth-century shopping lists and military manuals to statues of eighteenth-century actors and DVDs of Japanese adaptations of *Macbeth* from the twentieth century. We also have an expanding number of born-digital items, like our

*Shakespeare Unlimited* podcast, that need to be gathered and made available to audience alongside the rest of the collection.

The Folger holds an astonishing range of Shakespeare-related items with similar titles and descriptions, which can make it difficult to find a specific item. The Folger has thousands of items with “Hamlet” in the title. In Miranda, records for digitized and born-digital materials and metadata descriptions of physical collection items must all clearly present information specific to individual copies of a given work so that users can differentiate among apparently similar records. We need to give users an easy way to search and sort results so that those looking for the 1664 Second Folio of Shakespeare’s complete works can find it quickly, without wading through the Ardens, Nortons, and other modern scholarly editions. Many scholars seek specific copies of works in our collection because of their annotations, information about their former owners, or quirks of their physical makeup. Even among more modern, often mass-produced works, we need to ensure that the unusual items are not buried under an avalanche of the expected. For example, the Folger collects *Hamlet* in every available translation, including [Urdu](#) (1976), [Romanian](#) (1965), and [Klingon](#) (2000). Whether looking for metadata records or seeking digital images of our materials, Miranda’s users need to be able to sort through many apparently similar titles based on information that is not typically included in online library interfaces. The diversity and similarity of the items in the Folger’s collection strongly influenced the development of the Miranda platform.

**Accounts for known and unknown searches and browsing.** The Folger has a variety of options for users who know precisely what they are looking for. Hamnet, our online catalogue, allows users to search traditional library metadata. The Folger’s finding aids database provides nuanced ways to search descriptions of certain portions of our archival materials. In addition to serving users with specific objectives, parameters, and information to help them search, Miranda aims to assist users who are not quite sure what they are looking for. This type of user may be unfamiliar with the collection, may not have ready access to a specific reference number, or may not have detailed knowledge about specific items related to their interest. Miranda was developed to support both known searches and unknown explorations.

For both groups of users, Miranda was designed to improve and modernize the search and browse experience by making results available through common search engines, displaying high-resolution images alongside descriptive metadata, and making connections to curated content.

**Provides narrative context for the collection items that help users navigate information.** Over the past few decades, servicing patrons at libraries has become less about ensuring that they have access to specific resources and information and more about helping them sift through the information that exists. To that end, Miranda combines narrative explorations of and introductions to the collections with the collection items themselves.

# Project approach

The development process was the result of three primary choices: 1) establishing a sprint/scrum structure with a dedicated project manager; 2) using a phased (prototype/alpha/beta) approach to the timeline; and 3) leaving adequate room for experimentation and exploration.

## Timeline

Dates	Milestones/Tasks
September 2016- August 2017	<ul style="list-style-type: none"> <li>• Developed Miranda prototype</li> <li>• Convened <i>Digitizing the Stage 2017</i> conference with the Centre for Digital Scholarship, Bodleian Libraries, Oxford University</li> </ul>
October 2017- May 2018	<ul style="list-style-type: none"> <li>• Completed interface updates to prototype version for better user experience</li> <li>• Extended the Miranda system architecture to include more advanced storage solutions in Amazon Web Services</li> <li>• Performed the first full import of bibliographic records and digital images</li> <li>• Revised and extended the data schema to better reflect our collection items and to be more understandable to users</li> <li>• Commissioned documentation for the Behind the Scenes portal</li> </ul>
May 2018	<ul style="list-style-type: none"> <li>• Launch of alpha version</li> <li>• Co-hosted <a href="#">IIIF 2018 conference</a> in Washington, D.C. with the Library of Congress</li> </ul>
August 2018	<ul style="list-style-type: none"> <li>• Wrapped development on first version of the WordPress multisite installation for the Story sites</li> </ul>
September 2018	<ul style="list-style-type: none"> <li>• Convened <a href="#">Advancing the Miranda Platform workshop</a> at the Folger with the Folger Institute</li> <li>• Launched prototype Story site (<a href="#">Churchill's Shakespeare</a>)</li> </ul>
June 2018- January 2019	<ul style="list-style-type: none"> <li>• Made improvements to usability,</li> <li>• Built functionality for digital media consumption, MyShelf features, Advanced Search, and Featured search results</li> <li>• Integrated the Mirador IIIF viewer</li> <li>• Expanded behind-the-scenes aspects of the platform such as hosting infrastructure and administrative functions</li> </ul>
January 2019	<ul style="list-style-type: none"> <li>• Wrapped second round of WordPress multisite development</li> <li>• Launch of beta version</li> </ul>
July 2019	<ul style="list-style-type: none"> <li>• Convened <a href="#">Digitizing the Stage 2019 conference</a> with the Centre for Digital Scholarship, Bodleian Libraries, Oxford University</li> </ul>

August-October 2019	<ul style="list-style-type: none"> <li>Began transitioning and adapting project to new management and reduced team size after the departure of the Digital Project Manager, Digital Production Editor, and Data Transformation Associate</li> </ul>
January 2020	<ul style="list-style-type: none"> <li>Launched <a href="#">Rumors of Royalty</a> Story site</li> </ul>
March 2020	<ul style="list-style-type: none"> <li>Wrapped final grant-funded Miranda build featuring improvements to the Advanced Search experience, including subject-level searches</li> </ul>
August 2020	<ul style="list-style-type: none"> <li>Conducted final training with ParsonsTKO to transition Miranda maintenance and development to the Folger team</li> </ul>

### Benefits and challenges of a prototype → alpha → beta approach

Delivering the platform in multiple phases permitted us to know what we wanted out of the platform and what was possible to build. For example, we would not have been able to make continued adjustments to the search algorithm until too late in the project if we had released the platform as a single, final deliverable. Releasing Miranda in stages, with various updates to interface and functionality, permitted us to:

**Get a product in front of users and stakeholders as early as possible.** Putting a live site in front of users in the early stages of the project helped us avoid pitfalls that our assumptions about our users may have led us into. We obtained feedback from our target audiences early on and learned what does and does not work for them before we developed solutions.

**Fail fast and often.** Creating scope and processes that leave space to experiment and even fail was a manifestation of our commitment to getting user feedback early on. When we needed to change directions based on feedback from our users, we had the time to do so. As priorities shifted during the project, we were able to adapt.

**Embrace development and review cycles.** An iterative approach to development and review enabled us to re-evaluate our standards and goals for the product as we made progress on the goals and deliverables. Working within this kind of development cycles also meant we could apply lessons learned from users and our own experience immediately, rather than waiting to implement them at the beginning of new projects.

**Experiment with and explore new solutions.** While it is crucial to complete deliverables, it can be valuable to explore new and radical solutions to problems, even if those detours do not emerge into public view by the end of the grant period. We prototyped several versions of search, each of which grouped and presented our assets differently, to help us develop the best search experience for our data. Our experiments gave us a better understanding of the needs and limitations of our data as well as paths forward for future development.

## Stakeholders and advisers

For the duration of the grant, we met with key stakeholders and advisers to consult and correct our course as needed.

Miranda benefited from an external advisory committee that offered feedback on user interface, technological architecture, and the implementation of standardized metadata and taxonomies. The committee provided an intensive, detailed, and recurring source of feedback over the first year of the project, when we designed and built the foundational pieces of the platform. Advisers were chosen for their experience and involvement in building large-scale and innovative digital repository projects within cultural institutions. The members of the advisory committee included:

- Alan Galey, Associate Professor and Director, Collaborative Specialization in Book History & Print Culture, University of Toronto
- Elizabeth Grumbach, Assistant Director for the Institute for Humanities Research, Arizona State University
- Barry Houlihan, Archivist, NUI-Galway
- Erin McCarthy, Lecturer, The University of Newcastle, Australia
- Paul Taylor, Head of Collections & Interim Director of Cultural Engagement, Shakespeare Birthplace Trust

During the first year of the grant, we met monthly with stakeholders within the Folger, including representatives from our Education, Collections, Development, and Folger Institute divisions. Agendas for these meetings varied, but included, at various points, timeline updates, user testing, and product demos. To make the best use of Miranda team and stakeholder time, in year two of the grant these large stakeholder meetings were replaced with regular email updates, and individual stakeholders were consulted at relevant points during development. This conscious, deliberate involvement of staff at the Folger enabled our staff to contribute their expertise and experiences with different user groups, as well as their own perspective as users.

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## Institutional partners and advisers

Institutional partners supported project deliverables, including our workshops and conferences (described below) and interpretive content, in addition to the platform itself. They also provided key examples and advice along the way, even if they did not contribute to specific deliverables.

These partners included, but are not limited to:

- Aoyama Gakuin University: Supplied images of a copy of the *Biblia Latina*, one of their collection items, to help us prototype how we might store, deliver, and present non-Folger collection material on our platform.
- AusStage Database: Partner on the *Macbeth on Stage* Story site.
- Jadavpur University (Kolkata, India) Centre for Advanced Studies in English & School of Cultural Texts and Records: Partner on the *Shakespeare and Bengal* Story site. Contributed two datasets of material related to print and performance of Shakespeare in India to the Miranda platform.
- Centre for Digital Scholarship, Bodleian Libraries, Oxford University: Co-sponsor of the 2017 and 2019 *Digitizing the Stage* conferences, held in Oxford.
- The Getty Research Institute: Offered advice and experience about the construction and development of digital platforms.
- Huntington Library: Offered advice for developing solutions to multi-faceted institutional questions posed by a Miranda build.
- Medici Archive Project: Partner on the *Rumors of Royalty* Story site.
- Stanford University Libraries: As a key member of the International Image Interoperability Framework, Stanford offered excellent advice for displaying and delivering media on Miranda and remains an essential convener of DH conversations.
- Victoria & Albert Museum: Partner on the *Macbeth on Stage* Story site. Our teams also exchanged media gallery plugins for use on our respective platforms to better feature our collections online.

## Outreach and collaboration

We hosted and attended a variety of conferences through the duration of the grant. Conferences and workshops underwritten by the Miranda grant have helped us maintain the Folger's role as convener of early modern scholarship within the digital humanities. Our attendance of these and other events ensure we remain tapped into essential conversations about DH and special collections. On-site discussions with international colleagues help maintain connections and prompts spontaneous and fruitful discussion.

### Digital Rough Magic: The Miranda Workshop

In September 2018, the Folger hosted [an international workshop](#) that brought together a variety of participants from early modern studies, digital humanities, and libraries and archives for a “backstage” look at Miranda. Participants got a chance to explore its future development and potential outcomes. Conversations centered around the context of current tools and the trajectory of digital scholarship with a keen eye towards efficacy and practical use. Participants took part in small, collaborative working groups and provided guidance to the Folger for current and future development. The working groups considered the role of platforms like Miranda in early modern studies and digital humanities from a variety of perspectives, with a special focus

on display and manipulation of audiovisual materials, transcription and annotation, textual analysis, and data management and support.

## Digitizing the Stage conferences

In July 2017, the Folger partnered with the Centre for Digital Scholarship at the Bodleian Libraries, Oxford University, to host an international conference titled [\*Digitizing the Stage: Rethinking the Early Modern Theatre Archive\*](#). The conference was funded in part through the 2016-2017 Mellon Foundation DAP prototype grant and was the first international conference convened by the division of Digital Media and Publications. Its success prompted a second iteration in July 2019.

The second iteration of *Digitizing the Stage* highlighted digital explorations of the early modern stage in historical and contemporary performance. The Folger and the Centre for Digital Scholarship welcomed approximately 65 participants from a broad range of institutions across the United Kingdom, Europe, North America, Australia, and Japan, including many returning delegates from the 2017 conference.

The day before the conference's official opening, representatives from the Folger and the Bodleian led approximately 20 participants through a pre-conference workshop. This hands-on mini-bootcamp for planning and executing digital humanities projects guided participants through the practical challenges involved with and approaches required for their successful execution. Topics included building a project plan, Agile and Waterfall management methods, user research, and risk management.

## Staff and resources

To build the platform, we drew on the expertise of the core team of full-time Folger staff members and the input of other staff, vendors, and institutional and individual advisors. The core team for the bulk of the grant period consisted of:

- **Eric M. Johnson, Director of Digital Access.** Leads the Digital Media and Publications division and was the project's principal investigator. He provided senior-level oversight and guidance and identified and resolved significant project challenges and risks.
- **Gabrielle Linnell** oversaw the day-to-day development and associated activities for Miranda as the **Digital Project Manager**. She was responsible for project management, the budget, organizing events and logistics, meeting milestones, and mitigating risks.
- **Stacey Redick** is the Folger's **Digital Strategist**, and she oversees user experience for Folger digital projects, including Miranda. She ensures that Folger digital initiatives serve their key audiences while complying with best practices for interaction design.
- **Meaghan J. Brown** coordinated data for ingest into Miranda as the **Digital Production Editor**. She wrangled Intellectual Property concerns for the project and liaised between several project areas and scholars who were contributing to them.
- **Mike Poston, Data Architect**, oversees the data schema and structures that power Miranda.

- **Elizabeth Corbett-Nicholson, Data Transformation Associate**, transformed data into Miranda and other data-related tasks.
- **Sophie Byvik, the Digital Projects Associate**, worked on coordinating and logistics for the various pieces of Miranda project. She also coordinates Miranda interpretive content with the Digital Strategist. After Gabrielle Linnell's departure in August 2019, Byvik took over Miranda project management duties.
- **Sarah Hovde, cataloger**, and **Emily Wahl, Metadata Librarian**, both members of the Folger's Cataloging team, worked closely with the Miranda team to design the platform's data schema and taxonomies.

We engaged the technology firm ParsonsTKO to plan and create the Miranda prototype and final version of the platform. This collaboration permitted us to maximize Folger staff resources, outsourcing labor we would need only for the duration of the grant. Our commitment to sustainable, openly available services means that our partnership with ParsonsTKO does not preclude switching primary vendors in the future or contracting with additional vendors, since the architecture was designed to avoid permanently tying us to particular solutions or vendors. The sustainability of the architecture means we can swap out a portion of it and/or discontinue our relationship with the vendor supporting it.

## Seven major lessons we learned while building Miranda

1. Test with a variety of users, early and often.
2. Users want navigation pathways to dive into a collection, not just a great search mechanism.
3. Import early and with real data and media. You will learn more about what is working -- and what is not.
4. Because software developers and library professionals often think about search in divergent ways, it can be difficult to build a search experience using an off-the-shelf solution that works well with catalog data.
5. Although it required a substantial amount of effort, a unique data schema designed for Miranda makes it possible to combine heterogenous objects in the same system, and also to add new data sources.
6. External partner management requires considerable staff time and effort. In-person meetings are also beneficial, and perhaps even essential, to these kinds of collaborations.
7. Producing interpretive content requires a fully capable editorial team and a complete technical apparatus to run effectively.
8. Internal collaboration is essential to producing interpretive content – had the Miranda team not worked closely with members of the Collections division, the project would not have achieved its goals.

# Next steps and future developments

During the final phase of the grant period, the Miranda team saw the departure of the Digital Project Manager, the Digital Production Editor, and the Data Transformation Associate when the funding for their positions came to an end. Miranda development will continue via the permanent members of the Digital Media and Publications team, to whom site maintenance will shift. The main vendor, ParsonsTKO, will continue to support the team as we transition to Folger ownership of the code and development environments. This will make the platform even more sustainable because we will not need to rely on external vendors. We maintain a robust product backlog with feature requests from various sources, which, along with user testing, will drive future development.

There are two upcoming opportunities for interweaving Miranda more tightly with the other resources at the Folger, digital and physical. Firstly, the current renovation of the Folger's main building at 201 East Capitol St. offers an opportunity to continue to transform our audiences' experience of the Folger's collection, not least because the digital sphere will be the primary, if not sole, point of access for this material for the duration of the construction period (currently set to end in 2022). The reopening of the building will coincide with the 400th anniversary of the publication of the First Folio, the first printed collection of Shakespeare's plays. The materials in Miranda will support the digital components of the Folger's renewed exhibition program.

Secondly, Digital Media and Publications has already inaugurated the renewal of the [Folger Shakespeare Editions](#), which will rejuvenate the way we present Shakespeare's texts and information about his life and work, both digitally and in print. The new Folger Shakespeare site will pull in Miranda content liberally as textual annotations and more, which will connect our audiences to the Folger's collections as they engage Shakespeare's works, thereby deepening their experience of both.

## Conclusion

With Miranda, the Folger now has a digital collections platform that maximizes the serendipity of the search experience, drawing together disparate data types and resources while extending access through common search engines and interpretive content. The platform also provides a solid foundation for further interpretive content and improvements to the search experience as well as experimentation with new ways to present and interact with our catalog data.

We hope that fellow institutions who face similar problems in their digital sphere – diverse and disparate data sources, a variety of access points, users from all walks of life – find inspiration in Miranda for transforming their audience's experience with their collection.

# Appendices

The Miranda [data scheme](#) and a sample of the platform's JSON, as well as its [genre and format taxonomies](#), can be found on the [project developer portal](#).