Museums for America

Sample Application MA-253043-OMS-23
Project Category: Collections Stewardship and Access

Georgia O'Keeffe Museum

Amount awarded by IMLS: $243,570
Amount of cost share: $249,585

The Georgia O'Keeffe Museum will explore new ways to engage the public in learning about the art and life of Georgia O'Keeffe, one of the most important artists of the 20th century. A user-friendly searchable browser will provide free access to all known artworks by the artist, including 1,009 works in the O'Keeffe's collection, as well as 498 works held by an additional 145 organizations, with related images, exhibition histories, archival materials, and other data associated with the artist's catalog. The project will bring greater meaning and context to the collections held by the museum and institutions across the country, and presents opportunities for future research, collaboration, and engagement.

Attached are the following components excerpted from the original application.

- Narrative
- Schedule of Completion
- Digital Product Plan

When preparing an application for the next deadline, be sure to follow the instructions in the current Notice of Funding Opportunity for the grant program and project category to which you are applying.

Georgia O'Keeffe Museum
Narrative: *Access O'Keeffe*: *Reimagining a Digital Catalogue Raisonné*

<u>**Project Snapshot**</u>
The Georgia O'Keeffe Museum's **Access O'Keeffe** project will explore new ways to engage the public in learning about the art and life of one of the most important artists of the 20th century. The Museum will provide free access to all known artworks by Georgia O'Keeffe as a user-friendly searchable browser with related images, exhibition histories, archival materials, and other data associated with the artist's catalogue raisonné. Visual descriptions will be written for all artworks to increase accessibility for audiences with low or no vision. In addition to the Museum's own collection, representing 1,009 artworks[1], the Museum will develop relationships with 145 organizations to share artwork information for the 498 artworks in those collections. Information regarding other O'Keeffe artworks (e.g., those held in private collections, lost, or destroyed) will be sourced from the 1999 print edition of the *Georgia O'Keeffe Catalogue Raisonné* as well as through relationships with private collectors. The resulting product will offer new ways to explore an artist's full body of work through data visualization and other research tools. The project can serve as a model in the field for developing sustainable update protocols for aggregation of materials across organizations at scale served as a web browser tool for search and discovery and as linked data for computational uses.

<u>**Project Justification**</u>

Addressing Museums for America Objectives: The Georgia O'Keeffe Museum seeks support through the Institute of Museum and Library Services Museums for America grant program to support **Access O'Keeffe**, a project to reimagine the possibilities of a digital catalogue raisonné. A catalogue raisonné is comprehensive listing of all known works of an artist and associated information that generally includes a catalogue number, date completed, dimensions, collection, exhibition history, and provenance. Recognizing the limitations of a printed catalogue, the Museum will create a new integrated online interface of O'Keeffe artworks expanding access for the public to engage with and learn. This includes the O'Keeffe Museum's own 1,009 O'Keeffe artworks, 498 in the collections of 145 organizations, 537 in private collections, and 110 that have been determined lost or destroyed[2]. The project will provide online access to robust information connecting related archival materials and revealing new and existing relationships between works across institutions while also linking back to online collections records at the home institutions. The O'Keeffe requests $243,570 to support this project over two years. Through this work, the Museum will advance the goals of this IMLS grant program, specifically:

Goal 3, Collections Stewardship and Access: Advance the management and care of collections and their associated documentation.
- **Objective 3.1:** Support cataloging, inventorying, and registration; collections information management; and collections planning.
- **Objective 3.3:** Support database management, digital asset management, and digitization.

In 2022, the O'Keeffe completed an initial planning process funded by a National Endowment for the Humanities Digital Humanities Advancement Grant to investigate how a digital catalogue raisonné can support new forms of art historical research, as well as computational research. A

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[1] All artwork and object numbers are approximate since these can be counted in a variety of ways. For example, one canvas with a drawing on each side is one object, but counted as two catalogued artworks. A sketchbook could be counted as one object or as the number of pages with drawings or both.
[2] This number is drawn from the 1999 print edition of the *Georgia O'Keeffe Catalogue Raisonné* where 132 artworks are listed in Appendix 2 which had not been examined but were known to have existed. As of November 2022, 22 of these artworks had emerged in the organizational collections. The remaining 110 will be represented in **Access O'Keeffe**.

key finding from this research was that audiences who use Museum resources prioritize access to the full breadth of O'Keeffe artworks so that they could quickly answer questions such as: *How many watercolors did the artist produce between 1917 and 1920? Did artworks from the New York period use the same color palette? Who currently owns Jimson Weed?* or *What was the checklist of the artist's 1943 retrospective at the Art Institute of Chicago?* This audience research as well as other key planning initiatives, described in further detail below, have informed the goals and design of this project.

Deliverables:

Aggregation of Artwork Data and Images: *Access O'Keeffe* will provide the public with an online searchable portal that provides access to the full body of artwork created by Georgia O'Keeffe between 1901 through the 1980s:

- **1,009 (47%) of works are in the O'Keeffe Museum's collections** and have been recently digitized as high-resolution images meeting 4-star Federal Agency Digital Guidelines Initiative (FADGI) standards.
- **498 (23%) of works are controlled by one of 145 other museums and institutions** with whom the Museum will develop contributor agreements; 76.3% of these 498 artworks are published on the contributor's website, allowing the *Access O'Keeffe* records to link back and provide traffic to the home collection.
- **537 (25%) of works are held in private collections**, with corresponding information lacking in publication and accessibility to the public. For the private collectors with whom the Museum does not have relationships, the 1999 catalogue raisonné information will be used and attributed.
- **110 (5%) of works are designated as lost, destroyed or not accessible** at the time of the publishing of the 1999 catalogue raisonné. 132 of these works are listed in Appendix 2 of the publication, though 22 have since surfaced and are in public collections. These objects have associated research, exhibition histories and other important information.

The O'Keeffe will hire a Research Associate (RA) to build relationships with organizations to establish data contributor agreements and workflows supported by technical partners, Design for Context (DfC). We will contract with DfC to complete the project's user experience and technical scope of work. The RA will complete research to identify and link relationships between art, archive, and library resources. All published artwork information and linkages will be available as linked open data using the Linked Art target model. The Museum currently publishes its *Collections Online* (artwork, archive, and historic home collections) using these standards and formats.

Technical partners will work with the Museum to develop sustainable workflows for ingest of contributed data and verification systems around broken links or non-compliant data. Data ingest methods will be designed with sustainability and ease-of-implementation from the standpoint of both the contributor and the O'Keeffe team. Initial planning around data ingest has considered workflows around data ingest via: 1) an API for organizations that have this option available; 2) EXCEL or CSV template; 3) Web form for individual artworks. Option 3 may be the most used as 83% of the 145 organizations have fewer than 5 O'Keeffe artworks in their collections and may be most user-friendly for private collectors.

Innovative Design: The Museum will collaborate with DfC to create a design and user experience that focuses on various means to search and sort the full body of the artist's work. Features will include:

- **Transparency** regarding data sources and latest update date

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- **Visual descriptions** of all 2,154 Georgia O'Keeffe artworks released as public domain to be accessible to users of *Access O'Keeffe* or for other uses
- **Data visualization** and data portal options allowing advanced search and discovery of resources as well as uses of the information in a variety of formats
- **Relevant connections** through links to the Museum's archival and personal property collections, adding a rich context into the relationship between Georgia O'Keeffe's art and life

Sustainable Data Systems: A system of sustainable data update mechanisms will be developed with technology choices supporting
- **Flexibility** to adapt to new requirements
- **Stability** to reduce ongoing maintenance demands
- **Standards-based** data formats to support future data portability and interoperability

With DfC, the O'Keeffe will define procedures and technology support to reconcile data variations, analyzing which elements require specific harmonization to standards and vocabularies (such as ULAN, AAT, LCNAF). Emphasis is on making this compliance as easy on the contributor. Decisions and approaches will be documented to support the long-term sustainability of *Access O'Keeffe.*

Advancing the O'Keeffe's Strategic Plan: The mission of the Georgia O'Keeffe Museum is to celebrate the art, life, and independent spirit of Georgia O'Keeffe. The project advances several goals in our current strategic plan, including:
- Create a remarkable visitor experience
- Strengthen the collection and programs
- Grow a culture of learning and participation
- Expand our commitment to the community
- Align internal resources and systems to support accomplishment of Museum priorities

Interwoven through these goals is a commitment to expand methods for engaging our audiences through digital experiences that make our mission more accessible locally, nationally, and globally. Our work in this area began well before the pandemic, but the importance of accessible online learning platforms became even more clear when the O'Keeffe had to close to the public for more than a year. Our audience has grown substantially since 2020, revealing the ongoing interest in all things O'Keeffe. Informed by our strategic goals, *Access O'Keeffe* builds on work completed during the last six years that has readied the Museum to pursue this critical new phase of collections access:

2016: The O'Keeffe received an IMLS grant to develop a digital infrastructure to allow access across the collections. Using linked open data principles, the O'Keeffe planned for a new *Collections Online* portal to enable connections across a web of resources.

2019: The O'Keeffe launched the beta version of the *Collections Online* browser and continues to grow this published collection of objects, particularly expanding access to archive collections and digital images. Since launch, there have been more than 885,000 page views by close to 200,000 users, with 14.82% increase in unique users in 2022 over 2021.

2019-2021: The O'Keeffe completed a project to digitize our fine art collection, also funded by an IMLS grant, producing 1,572 images, as well as a representative sampling of her personal property. The images comply with FADGI standards. It is important to note that this project exposed significant errors in color accuracy in the existing printed catalogue raisonné.

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2020: The O'Keeffe published an extensive documentation site, *Museum Linked Data Browser: The Georgia O'Keeffe Museum Collection*, to further expand access to the collections' dataset. This site is an investment in making the collection application programming interface (API) more accessible. Additionally, the website shows how the data is modeled for each area (art, archives, library, and people).

2021-2022: The O'Keeffe completed a high-level census of updated information for each of the works in the original catalogue raisonné. Discussions between the Museum project team and the National Gallery of Art and Barbara Buhler Lynes, the original publisher and author of the printed catalogue raisonné, provided clarity on how the original authors support our decision to launch *Access O'Keeffe*. Please see attached letter of support from the National Gallery of Art. User interviews and workshops focused on the challenges and opportunities of a digital catalogue raisonné as generative research and potential accessibility barriers. The Museum also catalogued and published records for than 600+ historic exhibitions from 1915-1997 listed in the 1999 catalogue raisonné. *Access O'Keeffe* will expand upon this offering and add context to artwork information contributed by other organizations.

Responding to Need, Problems, and Challenges: A catalogue raisonné is a critical tool for researching and understanding the full body of work of an artist. However, because information surrounding an artist and their work evolves over time, printed catalogues raisonné inevitably become outdated. The 1999 *Georgia O'Keeffe Catalogue Raisonné* is a tremendous source of information. The catalogue is a hefty two-volume tome that weighs nearly 20 pounds with more than 1,000 pages. As with any catalogue in print, the text does not reflect the past twenty years of active research, exhibitions, and changes in artwork ownership. The Museum and the National Gallery of Art hold the copyright on the 1999 catalogue raisonné and the National Gallery of Art agrees that it is in alignment with their mission for the Georgia O'Keeffe Museum to move forward with *Access O'Keeffe*.

Access O'Keeffe will address the shortcomings of a printed catalogue raisonné by creating a new model for what is possible through a digital platform. We are inspired by Van Gogh Worldwide and its 29 current contributing organizations, and PHAROS: the international consortium of photo archives with 14 contributors. We will continue to learn from both of these projects as we embark on *Access O'Keeffe.* In general, existing digital catalogues raisonné seem to fall into two categories: either abiding by print principles that the research has an end publication date, or they look more like a collections online. *Access O'Keeffe* will look more like the latter, but include transparency around the recency of data, links to source organization records when available, data visualization tools, and a data endpoint. The O'Keeffe endeavors to rethink the catalogue raisonné as a tool for ongoing generative research.

Target Audiences: *Access O'Keeffe* will be designed with two key audiences in mind:
- **Researchers:** Tools will serve the specific needs of independent researchers, museum professionals developing exhibitions and publications, and internal staff serving a variety of requests from additional audiences.
- **Educators & Enthusiasts:** The resource will also serve educators and individuals, including the growing audience of national and global O'Keeffe enthusiasts who seek information about the artist's life and work.

Ultimate Beneficiaries: This project will impact the target audiences of researchers and educators. Those in these audiences are generally creating content for the general public, and therefore we believe the impacts will be far-reaching. As noted above, the interest in Georgia O'Keeffe has continued to grow, due in part to recent traveling exhibitions in the United States

and Europe. In addition, we envision that *Access O'Keeffe* can serve as a model for the museum field as more institutions seek to create effective systems for multi-institutional online collections access by theme, artist, or other aggregation. This process for creating *Access O'Keeffe* will strengthen data validation systems due to the increase in the number of data sources and frequency of regular scans for correct links back to contributor systems. In addition, the project will help strengthen relationships with contributor organizations.

Project Workplan

Project Activities:

- **Launch & Contracting** (September-November 2023): The project deliverables and schedule will be finalized with DfC. Recruiting and hiring of the Research Associate. (Activities 1-5 on schedule of completion)

- **Data Acquisition & Validations** (November-December 2023): A deep dive into the existing data inventory will define patterns of source data structures and completeness, as well as possible rates of change. This will inform how the O'Keeffe standardizes methods of exchange with collaborating institutions. A transformation specification will be drafted, a preliminary CSV ingest will be built to help the project team view and check for inconsistently formatted data, and the data pipeline specification and update procedures will be finalized. The process of gathering alt text and visual descriptions will begin. (Activities 6-7)

- **Interface Reconceptualizing** (October 2023): Using the foundation provided by the existing O'Keeffe *Collections Online*, the project team will refine the capabilities needed for a flexible multi-institution digital catalogue raisonné. During this phase, we will refine the interface to incorporate different levels of information provided by contributing organizations. Navigation will be adapted to allow more contextual and user-driven paths, making different research methods similar. This work will also prepare designed guidelines and initial specifications to inform the formal design and development tasks.

- **Design** (December 2023-January 2024): Design work will draw on prior reconceptualizing outcomes, as well as recommendations from ongoing user research and accessibility assessments. (Activity 8)

- **Collaboration & Data Collection** (February 2024-June 2025): The RA, with support from members of the project team, will begin connecting with the holding organizations and establish a customer relationship log. Value-added research and documentation for incoming objects will begin, as well as image licensing arrangements and ingest. Data ingest, documentation, and research cataloging will occur, as well as the addition of alt-text and short descriptions. (Activities 8-10, 13-14, 16)

- **Harmonization** (February 2024, September 2024): This phase will define procedures and technology support to reconcile variations and identify how best to manage harmonization examples identified in the data. Decisions will be made and documented regarding reconciliation, metadata management, and approaches to manage versions, submission schedules/dates, data changes, and other key information. (Activity 12)

- **Development & Quality Assurance** (April-November 2024; March 2025; and June-July 2025): Technical development and testing will take place, led by DfC with feedback from the O'Keeffe project team. Data modeling will evolve to accommodate changes from Linked Art open data community and the IIIF image community. A soft launch for internal and contributing organizations will take place. A student intern will be recruited to focus on linked open data. (Activities 17-20)

▪ **Launch & Promotion** (August 2025)**:** *Access O'Keeffe* will be launched and promoted widely through the O'Keeffe's communications channels. (Activity 21)

Potential Risks and Mitigation: Risks that have been identified for *Access O'Keeffe* include a scenario where one of the holding institutions doesn't respond to or agree to sharing metadata or images. After exhausting other solutions for collaboration, the content and image from the 1999 catalogue raisonné will be used and noted as such. Another risk is the high number of organizations we seek to collaborate with. This is why the Museum will dedicate the RA position to the project. Relationship management will be a key aspect of their role so that the collaboration provides significant benefits for the contributor in terms of value-added research, information validation, and ease of access to the results of the project. Relationship correspondence will be tracked in a relationship management system so that it can continue and be understood after the grant period and in the case of staff turnover at contributing organizations. A significant amount of the project director's time will be dedicated to working with the RA to ensure progress, as well as continuity and succession planning since that position is grant funded. To ensure that data updates are manageable by the small digital experience team, the proposed standard update frequency is annually. Data validation and broken link scans will alert the team of changes which can be dealt with immediately.

Project Management: *Access O'Keeffe* will be managed by Liz Neely, the O'Keeffe's Curator of Digital Experience, in collaboration with:
▪ Elizabeth Ehrnst, Head of Research Collections and Services
▪ Jennifer Foley, Deputy Director for Collections and Engagement
▪ Liz O'Brien, Digital Experience and Rights Manager
▪ Ariel Plotek, Curator of Fine Art
▪ Yaritza Martinez Pule, Curatorial Assistant
▪ Judy Chiba Smith, Registrar/Collections Manager

As part of this project, the Museum will hire a Research Associate as noted above. Please see position description. Our consultant for the project is Design for Context (DfC), a firm specializing in usability and user experience design. Please see DfC's proposed scope of work and budget outline, as well as their list of past projects that demonstrates their expertise in this area. This project will build on past successful collaborations with DfC.

Required Resources: The part-time Research Associate position is dedicated to this project, with a particular focus on relationship management, value-added research, collections information management, data validation, progress updates, and analysis of contributor feedback. We will also require the expertise of DfC in each phase of the project. In addition, *Access O'Keeffe* will contract with a service to write visual descriptions for the 2,154 O'Keeffe artworks to ensure ease of use for those with low or no vision.

Tracking Progress: Project planning meetings will take place throughout the grant period, including regular status review meetings for analysis, design, and development. During the active phase, weekly meetings will be schedule to track and report on progress against the project plan, with mitigation strategies developed as needed. Quality assurance will track, prioritize, and resolve errors.

Project Results

Intended Results: The results will provide free access to all known artworks by Georgia O'Keeffe as a user-friendly searchable browser and as linked open data with related images, exhibition histories, archival materials, and other data associated with the artist's catalogue

raisonné. Visual descriptions will be provided for all artworks to increase accessibility for audiences with low or no vision as will data visualizations with other data access options to better explore the artist's career. This will enable researchers, students, educators, scholars, and visitors to advance knowledge and understanding of this important artist and make connections to related exhibitions and archives. The project will strengthen connections between institutions, resulting in more effective relationships among museum professionals in both the short and long term. We endeavor to create dialogue with organizations that will continue beyond the grant period. *Access O'Keeffe* will also serve as a model for other organizations seeking to advance online collections access platforms for the public, ensuring the societal benefits of this federal investment.

Impact on Target Audiences: Our intended audiences of researchers, educators, and Museum visitors will benefit from a digital resource that is designed with their needs in mind, resulting in a product that is easy to navigate, rich in relevant content, and unique in terms of the access provided to full breadth of works by Georgia O'Keeffe. Stronger connections among the contributing organizations will be developed and supported by a commitment to tracking relationship management that will help with staff transitions. For the field, *Access O'Keeffe* will be one of the first examples of transforming data from various formats and sources into linked open data at scale with a large number of contributors.

Resulting Products: The overall resulting product will be *Access O'Keeffe*, a digital platform containing metadata about all 2,154 artworks by Georgia O'Keeffe, providing a searchable browser built for an excellent user experience to access these works, digital surrogate images served through IIIF (International Image Interoperability Framework), with research to best reveal context surrounding each work. Visual descriptions for each work will be created and shared for reuse in interpretive and scholarly materials. This data will also be available through a linked data endpoint with technical documentation.

Sustaining the Project: This project is designed to be sustainable beyond the period of performance. *Access O'Keeffe* will be built using existing systems, integrating enterprise data and collections management. Rather than a standalone product, *Access O'Keeffe* will be completely connected to the Museum's core collections and digital asset management systems. In addition, our project proposes a modest annual update, unless a more frequent update is requested. This will be a sustainable rate of update considering the size of the O'Keeffe's staff, as well as the likelihood that much of the data will not change. We will also have a maintenance agreement in place with technical partners, which will serve this tool, in addition to the data pipeline informing it. Automated workflows will be monitored through regular maintenance and updated as needed as API services change. Lastly, the RA will track relationship interactions to ensure that those relationships don't live with one individual.

Improving Collections Access: This project will greatly increase access to the O'Keeffe's collection, as well as artworks created by Georgia O'Keeffe and held at collaborating institutions. The artworks in the Museum's collections represent 48% of the total works created by the artist, and this project will position the collections in the broader context of O'Keeffe's full body of work. By making this a multi-institutional digital catalogue raisonné, researchers, educators, and visitors will have access to a fuller understanding of the work and life of O'Keeffe. Access O'Keeffe will drive traffic to other institutions by linking to records in contributor's online collections, creating a richer online learning and exploration process for the public. *Access O'Keeffe* will bring greater meaning and context to the collections held by our Museum and institutions across the country, and presents existing possibilities for the future of research, collaboration, and engagement.

Applicant Name: Georgia O'Keeffe Museum

Project Title: Access O'Keeffe

Activity	Year Two: September 2023 - August 2024											
	S	O	N	D	J	F	M	A	M	J	J	A
1. Project Kickoff	▓											
2. Contracting technical partners	▓											
3. Recruiting and hiring of Research Associate	▓											
4. Onboarding and training of Research Associate		▓										
5. UI reconceptualizing (Collections Online to Catalogue Raisonné)		▓										
6. Set up data acquisition & validation workflows and documentation		▓	▓									
7. Round one of images sent for alt text and visual descriptions			▓	▓	▓	▓						
8. UX design concepts				▓				▓				
9. Collaboration with contributing organizations						▓	▓	▓	▓	▓		
10. Value-added research and documentation on incoming objects						▓		▓	▓			
11. Image licensing arrangements and ingest						▓	▓					
12. Harmonization and reconciliation of data ingest methods						▓	▓					
13. Data ingest, documentation, and research cataloging									▓	▓		
14. Add alt-text and short descriptions to DAMs and collections publishing									▓			
15. Technical development and testing									▓	▓	▓	▓
Continued activity for duration of grant:												
22. Project management meetings and reviews	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓

Applicant Name: Georgia O'Keeffe Museum

Project Title: Access O'Keeffe

Activity	Year Two: September 2024 - August 2025											
	S	O	N	D	J	F	M	A	M	J	J	A
Continued activities from Year 1:												
6. Set up data acquisition & validation workflows and documentation	▓											
9. Collaboration with contributing organizations	▓	▓	▓	▓	▓	▓	▓	▓	▓			
10. Value-added research and documentation on incoming objects	▓	▓	▓	▓	▓	▓	▓	▓	▓			
11. Image licensing arrangements and ingest	▓	▓	▓	▓	▓	▓	▓	▓	▓			
13. Data ingest, documentation, and research cataloging	▓	▓	▓	▓	▓	▓	▓	▓	▓			
14. Add alt-text and short descriptions to DAMs and collections publishing						▓	▓					
15. Technical development and testing	▓	▓	▓	▓	▓	▓	▓	▓	▓			
Continued activities for Year 2:	▓	▓	▓									
16. Round two of images sent for alt text and visual descriptions								▓	▓			
17. Linked Art linked open data documentation update			▓									
18. User documentation and example development							▓	▓				
19. Soft launch for internal and contributing orgs stakeholder review			▓	▓	▓							
20. Digital experience summer intern project with linked open data									▓	▓	▓	▓
21. Product launch and promotion											▓	▓
Continued activity for duration of grant:												
22. Project management meetings and reviews	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓

Georgia O'Keeffe Museum Digital Products Plan

TYPE: *Access O'Keeffe* will provide a searchable portal to all known Georgia O'Keeffe artworks and serve as a digital catalogue raisonné for the artist with basic catalogue information, exhibition histories and images of every artwork. As added value, artworks will be linked to other artworks and related archival materials. Links to records at contributing organizations allow for continued discovery offsite. Information will also be offered as linked open data for those desiring computational access. Researchers are the primary audience for this tool and this group has been further divided to identify specific needs of independent researchers, museum professionals (developing exhibitions or publications), and internal O'Keeffe staff serving a variety of audiences and requests. The secondary audiences are educators. The researcher and educator audiences are often creating exhibitions or publications for general audiences and therefore we believe the impacts to be larger than the size of the targeted audience. Behind the scenes, we will strengthen data validation systems since the number of data sources is substantially increasing and have regular scans for broken links as the interlinking with contributor systems is an important part of the ecosystem.

Python is used as the primary language for pipeline scripting, for its flexibility and ease of maintenance. Data formats align wherever possible with the Linked Art semantic model (RDF/JSON-LD), IIIF for images and their metadata, and underlying museum/archive/library common data formats. Cloud-based tools and repositories (AWS triple-store and IIIF repository hosting, Bonsai Elasticsearch services, GitHub code/build management, Netlify static website management, etc.) are used to create a maintainable continuous development environment. APIs from those tools are used to provide data and images that support other projects in the overall O'Keeffe ecosystem, such as the public website and digital publications. The front-end is a static-built website, incorporating JSON and JSON-LD, supported by Elasticsearch for dynamic features (search, lists). The browser application is built using React components and a Bulma responsive framework to provide reusable and accessible UI modules and minimize extensive custom code. Internally, the Museum uses: Vernon for artwork management, Extensis Portfolio for Digital Asset Management and ArchivesSpace for connecting archival content to related artworks.

AVAILABILITY: All digital assets created over the course of the award period will be available on *Access O'Keeffe*, available to the public as a website and a linked open data endpoint with technical documentation. The code will remain is in a private repository because we do not have the bandwidth to support an open-source tool. Variations of the infrastructure are used by other clients of our technical partners, including Philadelphia Museum of Art (the Duchamp Research Portal) and Nelson-Atkins Museum of Art (Missouri Remembers). While the technical partners and the O'Keeffe Museum believe in open-source projects, we also believe that it can be problematic without resources for intentional community management. Additionally, most of the code base is data-centered and therefore customized to each institution.

Technology choices have been made to support flexibility to adapt to new requirements, stability to reduce ongoing maintenance demands as cultural institutions often have limited resources for IT support, standards-based data formats for future data portability, and commonly used software tools that match available skills when additional people are needed. Many aspects of the existing technologies will be used and enhanced for the proposed project. Data transformation and management pipelines make up a large part of the software.

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ACCESS: The proposed platform will contain metadata about artworks as well as digital surrogate images of those artworks. Contributor agreements will be made such that metadata sourced and published will be licensed to the public under the CC0 1.0 Universal (CC0 1.0) Public Domain license as we believe this is the best way to allow for a healthy research ecosystem of metadata. Data may have benefited from the information in the *Georgia O'Keeffe Catalogue Raisonné* published by the National Gallery of Art and the Georgia O'Keeffe Foundation (which merged with the Georgia O'Keeffe Museum in 2006) in 1999. This information is seen as factual and as such the National Gallery of Art, and the Georgia O'Keeffe Museum, treat access to this data and its updates in alignment with of our missions. (See letter of support from the National Gallery of Art.) Many digital surrogate images of Georgia O'Keeffe artwork are under copyright. Copyright and licensing information for images will be available to users on the new browser using standardized descriptions from RightsStatements.org, which is a service that provides simple and standardized terms to summarize copyright status. The museum will seek to share the best digital surrogates from contributing institutions but limit the size of the images available such that details can be seen and examined for personal use and scholarship, but not at a size adequate for commercial uses.

The Museum has mechanisms and guidelines in place to flag information that is sensitive for cultural, religious, or individual privacy reasons in correspondence, artworks, and other collections. These guidelines seek to ensure sensitivity and respect for the concerns of cultures and communities impacted by the use or display of such materials.

SUSTAINABILITY: All digital assets will be maintained on institutionally managed file servers using The O'Keeffe's Digital Asset Management system (DAM), and these data have incremental nightly backups. The organization has had a maintenance agreement for 3 years with the technical partners where we are able to address bug fixes and core upgrades. This maintenance will continue to serve this digital product and the data pipeline serving it. We assess this agreement on an annual basis and will continue to do so.

Data arrangements will be developed and made with contributors. In the unlikely event that a potential contributor decides not to be part of an agreement, the Museum will try to understand the source of the issue and use 1999 catalogue raisonné data if an agreement cannot be made. Data arrangements will outline a yearly update of the data unless the contributor wants a more frequent update. Contributed images will be requested and provided under fair use. The O'Keeffe Museum holds claim to copyright of most Georgia O'Keeffe artworks and therefore organizations have been open to providing images of artworks on request.

Data ingest methods will be designed with sustainability and ease-of-implementation from the standpoint of both the contributor and the O'Keeffe team who will ingest, transform, and validate data updates. The team will create several data transfer workflows and aim to limit this to 3-4 types of transfers with initial planning around getting data via: 1) an API for organizations that have this option available; 2) EXCEL or CSV template; 3) Webform for individual artworks. Option 3 may be the most used as 83% of the 145 organizations have fewer than 5 O'Keeffe artworks in their collections. Option 3 will also likely be the most user-friendly for private collectors. Each of options will have documented workflows for transformation, validation, and publishing in Access O'Keeffe.