

Proposal Information

Project Title: Aligning Library Services with Data-Intensive Humanities Research: Modeling Support for Open Scholarship through Data Storytelling and Digital Publishing on the U.S.-Mexico Borderlands

Amount Requested: \$750,000

Grant Start Date: April 1, 2020

Duration (in months): 36 months

Program: Scholarly Communications

Description of Proposed Work (1-2 paragraphs):

The University of Arizona Libraries (UAL) is requesting \$750,000 for a three-year initiative (April 1, 2020 through March 31, 2023) to create a library service model for data-intensive humanities scholarship. Project activities are founded on the need for early engagement with scholars, responsive and iterative service design, and a clear articulation of the modes of partnership that librarians can provide as members of collaborative research teams. Following on the success of prior Mellon investments, such as the University of Calgary's *Academic Research and University Libraries: Creating a New Model for Collaboration*, we propose to adopt the strategy of utilizing internal, competitive seed grants. Through funding and engaging with research projects focused on the U.S.-Mexico borderlands, our goal is to 1) establish new roles for librarians within collaborative research, with an emphasis on services that facilitate data analysis, curation, and dissemination in the humanities, 2) develop new library services around data storytelling and digital publishing, and 3) position the library as an essential partner that is fully integrated in faculty research workflows. This project will build out humanities-oriented services grounded in UAL expertise in areas such as scholarly communication, open access, data management and curation, data science, and GIS.

Under the leadership of Principal Investigator Shan Sutton and Co-Principal Investigators Megan Senseney and Verónica Reyes-Escudero, this project is designed to support and leverage University of Arizona (UA) strengths while developing a model that can be replicated at other academic libraries in support of data-intensive humanities research. Our institution, situated in the Sonoran Desert 65 miles from the U.S.-Mexico border, is uniquely positioned to develop this model through research projects on the U.S.-Mexico borderlands. UAL's Special Collections is one of the leading archival repositories of primary source collections on the U.S.-Mexico borderlands, with a dedicated Borderlands Curator, and the University of Arizona Press, which is part of UAL, is a premier publisher of scholarly monographs on U.S.-Mexico borderlands topics. The UA received Hispanic Serving Institution (HSI) designation in 2018, and the UA strategic plan features the Border Lab initiative, designed to "make the UA the leader in the field of border studies by creating new knowledge and transnational collaborations and thus position the

university as a top destination for students and faculty pursuing border-related scholarship in global, binational and regional contexts." We propose to disburse seed grants that complement the storytelling mission of the Mellon-funded *Fronteridades* project by developing data-intensive, born-digital research projects that can be disseminated as open research to ensure unfettered global access. In designing a competitive call for proposals, UAL will demonstrate values of diversity, equity, and inclusion through a "default to open" mindset and an emphasis on research that fully represents the diverse populations of borderlands communities and postcolonial research methodologies. As a result, this initiative will produce new data-driven humanities research that engages both academic and popular audiences while establishing a portfolio of data-focused library services at UAL that can inform the development of similar models at other academic libraries.

Proposed Activities and Rationale:

Rationale

Library Services

As the scholarly ecosystem of research and publication evolves, so too must library services in order to support emerging forms of research in the humanities. Achieving library service integration with the research enterprise requires library engagement throughout the research lifecycle, from conceptualization to dissemination. Academic librarians have traditionally played roles in faculty research that focused on provisioning access to information resources, but with the advent of digital technologies, librarians' roles in digital scholarship have dramatically expanded. In a recent article, Vandegrift observes just how significantly digital scholarship has transformed the academic library, leading to services that are "omnipresent in the research lifecycle, data focused, infrastructure aware, and essential to the community" both within and beyond the university.¹ Emerging library services are integrated throughout the research process, and library workers are increasing their focus on computational processes and skills while also facilitating a more outward and visible orientation toward research.

Academic library service portfolios now accommodate data management and curation, data visualization, data science, Software Carpentry, GIS, augmented and virtual reality, digital preservation, and digital publishing.² In spite of marketing and communication strategies to inform researchers about these new roles, libraries continue to operate in a "challenging communication space," and many faculty members remain unaware of how librarians can collaborate across research workflows through digital scholarship services and related expertise.³ Outreach efforts on the part of librarians are also tempered by the knowledge that service portfolios are continuing to grow despite ongoing financial constraints and fiscal uncertainty throughout the landscape of higher education, which suggests the need for a strategic approach to

¹ Vandegrift, Micah. 2018. "Designing Digital Scholarship Ecologies." *LIS Scholarship Archive*. January 17. doi:10.31229/osf.io/93zvb.

² For a recent treatment of how digital scholarship has affected library service development, see the collected essays in Mackenzie, Alison, and Lindsey Martin, eds. 2016. *Developing Digital Scholarship : Emerging Practices in Academic Libraries*. U.S. Chicago: Neal Schuman, an imprint of the American Library Association.

³ Cox, John. "Communicating new library roles to enable digital scholarship: A review article." *New Review of Academic Librarianship* 22, no. 2-3 (2016): 132-147.

service provision that fits within the known capacity of our financial and human resources. As libraries have worked to develop digital scholarship models, tensions have emerged between strategies that focus on ad hoc service provision and those that emphasize full collaborative partnership.⁴ For most libraries the full collaborative partnership model is simply not scalable as more researchers look to libraries for support. Vinopal and McCormick address the tensions of scale and sustainability by proposing a tiered service model for digital scholarship that establishes a suite of baseline services and identifies selective strategies for deeper collaborative engagement.⁵ Following this approach, Senseney, Koehl, and Nay also recommend reconsidering collaborative engagement to include a typology of library-faculty research partnerships that may shift from transactional to consultative to collaborative within and across projects.⁶ This proposal is designed to carefully calibrate a service portfolio that balances outreach and capacity. A competitive awards process stands to increase campus awareness, leverage administrative and community support, and balance service and collaboration commitments such that the UAL sustains capacity to engage with scholars throughout the research lifecycle.

Digital and Data Storytelling

The project team contends that digital and data storytelling provide a useful framework for interrogating how academic libraries can build a mature and sustainable portfolio for digital scholarship. Digital storytelling is often broadly cast, with definitions such as “telling stories with digital technologies.”⁷ Digital stories can be expressed in virtual reality environments, multimodal authoring platforms, podcasts, or video; they are born-digital objects intended for digital dissemination and consumption. Data storytelling further incorporates data analysis, which is frequently based on numeric or categorical data but may extend to other forms of evidence. These data are often embedded in the form of graphics, visualizations, or dynamic interactions.⁸ In both cases, the emphasis on storytelling leverages the “dynamic triangle” of the storyteller, the audience, and the story itself to share information meaningfully and persuasively.⁹ Digital and data storytelling require information gathering, synthesis, and dissemination using a range of digital scholarship methods and techniques.

Interpreting data and communicating findings are fundamental to the contemporary research process, and visual displays of quantitative data have been a key component of research

⁴ Keener, Alix. “The Arrival Fallacy: Collaborative Research Relationships in the Digital Humanities.” *Digital Humanities Quarterly* 9, no. 2 (2015). <http://www.digitalhumanities.org/dhq/vol/9/2/000213/000213.html>

⁵ Vinopal, Jennifer, and Monica McCormick. “Supporting Digital Scholarship in Research Libraries: Scalability and Sustainability.” *Journal of Library Administration* 53, no. 1 (January 1, 2013): 27–42. <https://doi.org/10.1080/01930826.2013.756689>.

⁶ Senseney, Megan, Eleanor Dickson Koehl, and Leanne Nay. “Collaboration, Consultation, or Transaction: Modes of Team Research in Humanities Scholarship and Strategies for Library Engagement.” *College & Research Libraries* 80, no. 6 (September 2019). <https://doi.org/10.5860/crl.80.6.787>.

⁷ Alexander, Bryan. *The New Digital Storytelling: Creating Narratives with New Media*. Revised and updated edition. Abc-clio, 2017.

⁸ Riche, Nathalie Henry, Christophe Hurter, Nicholas Diakopoulos, and Sheelagh Carpendale, eds. *Data-driven storytelling*. CRC Press, 2018.

⁹ McDowell, Kate. “Storytelling: Practice and process as non-textual pedagogy.” *Education for Information Preprint* (2018): 1-5.

communication since the seventeenth century.¹⁰ Well-designed data storytelling can aid in making complex social problems more tractable and readily comprehensible. One notable example from the turn of the twentieth century is W.E.B. Dubois' data portraits for *L'Exposition des Nègres d'Amérique* at the 1900 Exposition Universelle, a set of 63 visualizations that illustrated the conditions of black life in America for an international audience. This demonstration of public sociology combined data visualization with the display of photo albums and curated objects that, taken together, told a tangible story of racial progress in America and served to counteract the predominant imperial narratives of Anglo-Saxon superiority that shaped so many exhibits within this and other world's fairs of the period.¹¹

With the emergence of big data and data-driven decision making, both the private sector and mission-driven organizations have embraced data storytelling as a means of integrating visualizations into a persuasive narrative framework.¹² Digital and data storytelling are regularly being used to advance the work of social justice, creating opportunities for interdisciplinary collaborations among scholars, technologists, and artists.¹³ When data represent people, the humanities and humanistic social sciences must be centered in these collaborations. While projects grounded in the work of the humanities are essential for telling informed and ethical stories based on data-intensive research, there remain significant barriers to engagement. For scholars in the humanities, many aspects of digital and data storytelling fall outside their disciplinary training and research expertise.

Academic libraries hold potential for reducing barriers to digital and data storytelling. As an interdisciplinary hub for the campus community, libraries provide a suite of digital services that have often been treated as discrete offerings but can also be brought together into a comprehensive support network under this storytelling framework. Digital and data storytelling – and the modes by which scholars publish and disseminate these stories – are well aligned with the academic library's research and service mission. Soliciting projects focused on digital and data storytelling creates an opportunity for the library to assess its service portfolio across the entire research lifecycle. Under the umbrella of storytelling, UAL can cover project design, data collection, analysis, communication, and curation for preservation and possible reuse. Libraries can offer their expertise in project management, data curation, data science and digital scholarship, and scholarly communication in support of scholars seeking to bridge the technical gaps that may otherwise inhibit a mode of inquiry before it has begun. UAL's commitment to the

¹⁰ Tufte, Edward R. *The Visual Display of Quantitative Information*. Cheshire, Conn.: Graphics Press, 1983.

¹¹ Du Bois, W. E. B., Aldon D Morris, and Mabel Wilson. *W.E.B. Du Bois's Data Portraits : Visualizing Black America : The Color Line at the Turn of the Twentieth Century*. Edited by Whitney Battle-Baptiste and Britt Rusert. First ed. Amherst, Massachusetts: W.E.B. Du Bois Center at the University of Massachusetts Amherst, 2018.

¹² The emphasis on persuasion in both sectors is discussed convincingly in Denbo, Seth. "Data Storytelling and Historical Knowledge." *Perspectives on History* (blog). American Historical Association. April 1, 2015. <https://www.historians.org/publications-and-directories/perspectives-on-history/april-2015/data-storytelling-and-historical-knowledge>.

¹³ See, for example, the Cline Center for Advanced Social Research at the University of Illinois (<https://clinecenter.illinois.edu/>), the Data Justice Lab at Cardiff University's School of Journalism, Media and Culture (<https://datajusticelab.org/>) and the Civic Media Hub at Bournemouth University (<http://www.civicmedia.io/>).

open movement also ensures that the stories this project facilitates and supports are disseminated to the widest possible audience.¹⁴

The U.S.-Mexico Borderlands

The project team proposes to explore data and digital storytelling at the University of Arizona by focusing on the regional stories embedded in U.S.-Mexico borderlands. From the time the U.S.-Mexico border was delineated in 1848, through the Treaty of Guadalupe Hidalgo, and again through the Gadsden Purchase in 1854, the borderlands have been a bicultural and binational place all their own. Author Tom Miller frames the 2,000 mile-long and twenty miles wide area as a “Third Country” in his book *On the Border*.¹⁵ It can certainly be an in-between place for its residents and communities who have for generations straddled life on the border. The border offers a rich cultural history which has long been an inspiration for humanistic scholars and literary authors such as Chuck Bowden, Denis Chavez, Patricia Preciado Martin, Luis Alberto Urrea, Rudolfo Anaya, and Leslie Marmon Silko. In *La frontera de cristal (The Crystal Frontier)*, Mexican author, Carlos Fuentes, writes about the intersections between people on both sides of the border and the interdependence for trade, culture, work, and daily life.¹⁶ A common refrain for people from the border - which is explored in Fuentes’ book - is that “we didn’t cross the border, the border crossed us.” This refrain signals the deep roots border communities have in this contested region of the United States. There is a unique sentiment of belonging and knowing the challenges that the border presents as well as a sense of place along the border that is reflected in the work of all of these authors. Conversely, the rhetoric in today’s discourse about the border - especially around immigration - necessitates a deeper and interdisciplinary examination of the region. Research on commerce, public health, gastronomy, ecology, language, gender, politics, reporting on the border, anthropology, visual culture, and many others would be compelling data-intensive digital stories which would support the Mellon Scholarly Communications Program’s commitment to “realize the potential of digital technologies in furthering the collective understanding of societies and cultures around the world.”¹⁷

Recent U.S.-Mexico border studies research acknowledges the imperative to take humanistic approaches when working with communities, especially but not exclusively with those considered “vulnerable.” As scholars employ more culturally relevant and ethical methodologies, this approach intersects well with oral history best practices, which many scholars employ while conducting research along the border. A recent study on border research, *TERRAINS, New Directions in Border Research Methodology, Ethics, and Practice*, acknowledges, as the title implies, the importance of raising methodological and ethical questions when researching in

¹⁴ The Open Knowledge Foundation describes the open movement as working “towards solutions of many of the world’s most pressing problems in a spirit of transparency, collaboration, re-use and free access. It encompasses open data, open government, open development, open science and much more. Participatory processes, sharing of knowledge and outputs and open source software are among its key tools” (<https://opendatahandbook.org/glossary/en/terms/open-movement/>). The UAL places a particularly strong emphasis on open access, open data, and open education.

¹⁵ Miller, Tom. *On the Border : Portraits of America's Southwestern Frontier*. Tucson, Ariz.: University of Arizona Press, 1985.

¹⁶ Fuentes, Carlos. *La Frontera De Cristal : Una Novela En Nueve Cuentos*. México, D.F.: Alfaguara, 1995.

¹⁷ <https://mellon.org/programs/scholarly-communications/>

binational or transnational contexts.¹⁸ Academic librarians and archivists in Special Collections are poised to provide guidance on cultural research methodologies as well as conducting research within an ethical framework. At the University of Arizona over seventy faculty members, from a variety of disciplines, currently engage in border research. Among the various disciplines represented are Geography, Area Literary Studies, Anthropology, and American Indian Studies. There are also cross-disciplinary convergences among faculty in Art, Journalism, Speech and Language, Spanish and Portuguese, Religious Studies, and many others.

In addition to its inherent cross-disciplinary nature, the study of the U.S.-Mexico borderlands has the opportunity to make significant contributions to diversifying representation in the digital humanities, which has been heavily critiqued over the past decade for centering the research and concerns of white, anglophone scholars.¹⁹ Communities along the U.S.-Mexico borderlands have long been culturally diverse, with a complex history of colonial and political contestation, where sovereign nations have long been the storied rather than the storytellers of their own existence in academic studies and spaces. Data-intensive research in this realm will substantially involve Hispanic and Indigenous communities and perspectives, and will contribute to the diversification of digital humanities scholarship in the process. The call for seed grant proposals will encourage the inclusion of Mexico-based colleagues on the research teams, and will also indicate that UAL is especially interested in proposals that work with and/or amplify the voices of underrepresented and marginalized communities.

At the core of a humanistic approach to research is understanding the human condition as scholars investigate to better understand communities and cultures. Border studies research naturally calls for working in a binational/transnational sphere. This provides researchers with opportunities to exercise postcolonial and culturally competent research methodologies. Indigenous research methodologies, for instance, call for working within cultural protocols, values, and behaviors: the core of humanistic research. Focusing on the U.S.-Mexico borderlands expands humanistic approaches to research by necessitating the employment of postcolonial and critical race research methods. Accordingly, this project will directly support diversification of the field by illustrating how these methods can be utilized in data-intensive research as well as dissemination through data storytelling and digital publication to advance humanities scholarship on historical and contemporary aspects of the border region.

This expansion will enable humanities scholars to gain new perspectives on the various ethnographies of the U.S.-Mexico borderlands and also on data-focused research methodologies that build upon previous work on this region. For example, in 2018, the *Torn Apart/Separados* project demonstrated the use of data storytelling as a means of understanding both the infrastructure and the impact of a “zero-tolerance” policy for asylum seekers arriving at the U.S.-Mexico border, and the *United Fronteras* project is actively collecting and mapping “works that leverage digital components to document the borderlands from multiple perspectives.”²⁰ These initiatives exemplify the appetite for digital scholarship on the borderlands, and multiple border

¹⁸ Deeds, O’Leary, Whitefore, Deeds, Colin M, O’Leary, Anna Ochoa, and Whitefore, Scott. *Uncharted Terrains : New Directions in Border Research Methodology, Ethics, and Practice*. The University of Arizona Press. 2013.

¹⁹ Risam, Roopika. "Navigating the global digital humanities: Insights from black feminism." *Debates In The Digital Humanities* (2016).

²⁰ <http://xpmethod.plaintext.in/torn-apart/volume/1/>; <https://unitedfronteras.github.io/>

research scholars at the University of Arizona are well prepared to incorporate data and digital storytelling into their research. These scholars' research techniques, paired with the deep integration of library services facilitated by the seed grants, will help other humanities scholars understand how such methodologies can be applied to their own work across the domain.

Seed Funding

The project team proposes a strategy for aligning library services with data-intensive humanities research by offering two rounds of seed grants to faculty interested in using digital methods to pursue data-focused border studies research. Campus-level competitive award programs have potential benefits for researchers and service units alike, some of which may be measured through evidence of expanding campus networks, sustained post-project collaboration, and successful follow-on awards. Institutions seeking to facilitate greater interdisciplinary, cross-campus collaborations have successfully modeled how seed grant funding helps realize strategic priorities and often leads to next-phase initiatives that bolster the long-term research trajectory of awardees.²¹ Competitive award programs also create bounded opportunities for service units to identify and build capacity for a new suite of services by identifying a broad set of needs and interests through the application process while selecting only the most promising proposals for funding.²² Risk is distributed across multiple avenues of inquiry, and the institution can withstand the stress of new initiatives by tightly scoping guidelines and terms of funding. The Andrew W. Mellon Foundation has a strong history of supporting regranting initiatives to explore opportunities for experimental platforms and software services, interdisciplinary and multi-institutional research collaborations, and the development of novel library services. The University of Calgary in particular has demonstrated how a regranting program can facilitate greater awareness and incorporation of these emerging library service areas into scholars' active research. This is demonstrated by the number of awardees who included library colleagues as research team members on subsequent national-level grants applications.²³

Proposed Activities

To develop a replicable model for library services alignment, the University of Arizona Libraries (UAL) proposes a three-year project utilizing seed grants to develop a library service portfolio that:

- 1) Establishes new roles for librarians within collaborative research, with an emphasis on services that facilitate data analysis, curation, and dissemination in the humanities;
- 2) Develops new library services around data storytelling and digital publishing; and
- 3) Positions the library as an essential partner that is fully integrated in faculty research workflows.

²¹ See, for example, Demes, Kyle W., Gail C. Murphy, and Helen M. Burt. "Catalyzing Clusters of Research Excellence: An Institutional Case Study." *Journal of Research Administration* 50, no. 1 (2019): 108–22.

²² See, for example, the use of seed grants in piloting a digital humanities center at the University of Kansas Libraries: Rosenblum, Brian, and Arienne Dwyer. "Copiloting a Digital Humanities Center: A Critical Reflection on a Libraries–Academic Partnership." In *Laying the Foundation*, edited by John W. White and Heather Gilbert, 7:111–26. Digital Humanities in Academic Libraries. Purdue University Press, 2016.

<https://doi.org/10.2307/j.ctt163t7kq.10>.

²³ <https://library.ucalgary.ca/libraryresearchplatform/project>

Specifically, the project will support data-intensive, humanities-based research on the U.S.-Mexico borderlands, with an emphasis on digital and data storytelling projects that are openly published online to ensure inclusive access to all research outputs. While development of this suite of services would be accomplished through engagement with research on the U.S.-Mexico Borderlands, the resulting library service model could be replicated by other academic libraries to support data-intensive humanities research on any topic.

Project Awards

Data-intensive, humanities-based research on the U.S.-Mexico borderlands will be supported through seed grants awarded in two competitive cycles. Each cycle will award four grants of up to \$60,000 each to UA-based research teams. The teams will have twelve months to complete their research. After a call for proposals is issued in each cycle, UAL will host mandatory proposal development workshops for potential applicants to strategize on project design and receive feedback on their concepts in preparation for final submission of the proposals; a draft copy of the workshop agenda is included as Appendix B. As part of the final submission package, project teams will also be asked to complete a form that outlines the library services required for the project and includes confirmation from relevant librarians that 1) they were actively consulted during the proposal development phase and 2) they agreed that the project plan was feasible.

All projects will be required to designate a full-time UA faculty member as Primary Investigator, and the research focus must be on the U.S.-Mexico borderlands. Successful proposals will significantly integrate two or more components of the following library services, which have been designated as resources for grantees:

- Working with data and digital resources
 - Digital project planning
 - Digitization consultation
 - Data curation and cleaning
 - Software Carpentry
 - Digital preservation planning
- Storytelling with data and digital resources
 - Data Visualization
 - GIS
 - Multi-modal digital storytelling
 - Oral history
 - Image processing and manipulation
 - Augmented Reality/Virtual Reality
 - Digital content accessibility and User Experience
- Digital publishing
 - Copyright, Fair Use, and Licensing
 - Rights and reuse of special collections
 - Digital publishing platforms and hosting
 - Jupyter Notebooks
- Open data and data sharing
 - Curation services

- Consultation services
- Repository services

UAL will also provide support to ensure that all research outputs are made openly accessible. Applicants will be encouraged to build inclusive research teams, and the project team is eager to support multi-institutional and community projects that include colleagues based in Mexico as well as projects that thoughtfully integrate graduate students and postdoctoral associates as research collaborators. Funds may be used toward personnel costs, external services and consultants, limited equipment and software, support for travel and project dissemination, and events and meetings that are required for the success of the project. Per the Andrew W. Mellon Foundation guidelines, indirect cost recovery, tuition remission, and funds for personal equipment or machines would not be allowable. A draft call for proposals, with detailed budget guidance and evaluation criteria, is included as Appendix A.

This project design builds upon the success of prior Mellon investments, most notably the University of Calgary's *Academic Research and University Libraries: Creating a New Model for Collaboration*.²⁴ Several modifications to the regranting program are intended to address known challenges encountered in their model. For example, the Calgary grants were for six-eight months, which proved challenging for some research teams in terms of balancing research with the competing demands of the academic year. The project team proposes twelve-month grant periods beginning in January to afford the research teams a full year to complete their projects. This approach also enables the research teams to take advantage of the entire summer break in the heart of the grant period to focus on more time-intensive elements of their research. The introduction of a mandatory proposal development workshop is modeled after the success of a series of workshops created by Dr. Bill Hart-Davidson at Michigan State University to scaffold the grant writing process for scholars interested in submitted applications for the Mellon-funded *Humanities Without Walls* initiative. The form confirming consultation with the relevant library staff is modeled after the University of Miami Libraries' pre-submission review attestation used in the Mellon-funded CREATE grants program.²⁵ Miami found the attestation useful to ensure that researchers were having active consultations with library and museum staff, and that through these conversations library and museum staff could set realistic expectations of working with collections and services.

Library Services

This project leverages library expertise across a variety of domains to articulate a portfolio of data and digital services that can be fully integrated into the research lifecycle of UA faculty in the humanities and humanistic social sciences. Through the seed granting initiative, we intend to expand and triangulate around three core strengths: 1) significant expertise in supporting data-focused research, 2) a growing cohort of campus researchers engaged in digital and data-

²⁴ UAL Principal Investigator Shan Sutton served as a member of the external review team for the University of Calgary Mellon grant, and gained a deep understanding of that project's successes and challenges to inform the design of this proposal.

²⁵ The University of Miami Libraries form is here: <https://www.library.miami.edu/assets/create-grant/docs/CREATE-Pre-submission.pdf>. UAL project personnel Sarah Shreeves was the Associate Dean for Digital Strategies at the University of Miami Libraries and was involved in the development of this process.

intensive humanities scholarship, and 3) extensive archival and published holdings on the U.S.-Mexico borderlands in our Special Collections.

UAL's Office of Digital Innovation and Stewardship is composed of three functional units that provide a variety of campus-level services around computational research methods and analysis, scholarly communication, and digital preservation. We work collaboratively across library departments and other campus units to provide a range of services oriented toward digital scholarship and data science. Working with project applicants and awardees, we propose a service framework organized around four key phases in the lifecycle of a research project:

- 1. Working with data and digital resources.** As applicants create and gather evidence, our librarians are prepared to engage with awardees around digital project planning, digitization consulting, data curation and cleaning, Software Carpentry and other forms of computational skill building, and digital preservation planning.
- 2. Storytelling with data and digital resources.** As applicants plan how to represent and interpret their project findings, library colleagues can partner on data visualization, geospatial mapping, strategies for multi-modal digital storytelling, oral history, image processing and manipulation, augmented and virtual reality, and user experience and accessibility.
- 3. Publishing project outcomes.** In requiring project awardees to create open access deliverables, the Libraries are committed to providing services that ensure team members have access to guidance on copyright, fair use, and licensing along with training on a selection of hosted digital publishing platforms.
- 4. Sharing project data.** Applicants will also be encouraged to share the component parts of their research projects through the Open Science Framework, our hosted campus and data repositories, and a variety of related tools that support computational reproducibility through code sharing.

Digital scholarship in the humanities is a current area of growth at the University of Arizona, as evidenced by the Confluentcenter for Creative Inquiry, a robust department of Public and Applied Humanities, the establishment of the Center for Digital Humanities in 2018 and the Public History Collaborative in 2019, and recent faculty hires from various disciplines in the humanities who specialize in data-intensive research.²⁶ The School of Information also has a research portfolio focused on various forms of digital scholarship with humanistic elements, including the use of digital archives, virtual reality, and data visualizations. UAL has affirmed its commitment to digital scholarship through the transformation and expansion of the iSpace into the CATalyst Studios, a multidisciplinary hub for research and learning that encourages students and faculty to re-envision their research through the use of cutting-edge technologies and collaboration with interdisciplinary experts.²⁷ CATalyst Studios is scheduled for a January 2020 opening, and it will include a dedicated data studio, AR/VR studio, maker studio, and a set of technology-rich

²⁶ <https://confluentcenter.arizona.edu/>; <https://pah.arizona.edu/>; <https://digitalhumanities.arizona.edu/>; <https://history.arizona.edu/public-history-collaborative>

²⁷ <https://new.library.arizona.edu/catalyst>

learning environments to foster data-intensive research and teaching. Library services associated with this initiative will fully leverage CATalyst Studios, and it will host all of the proposal development workshops. The data studio's large-scale data visualization wall will also be used to showcase the stories produced by project awardees in a rotating digital exhibition.

UAL's Special Collections department is one of the premier repositories of archival and published sources on the U.S.-Mexico borderlands.²⁸ These collections document the region's culture and history, from the colonial period to the present. Materials within these collections include letters, diaries, photographs, maps, family papers, business and government records, and newspapers from Mexican and Mexican-American communities. These sources provide a wide range of information on Native Americans and their ancestors, the impact of Spanish and Mexican settlement, and the influx of people into the region during the 19th century. Of special note is the Documented Border digital archive, an interdisciplinary effort whose goal is to advance understanding and awareness about the U.S.-Mexico borderlands and its peoples during a period of unprecedented societal change.²⁹ Taken together, the voluminous analog and digital content in Special Collections lends itself to "collections as data" research projects on the U.S.-Mexico Borderlands.³⁰

The primary needs of the project that require support of the Mellon Foundation are funding for the faculty seed grants and a dedicated project coordinator located within the Libraries. The University of Calgary project demonstrated the benefit of having a full-time project coordinator, rather than relying on having an existing library employee reallocate their duties to take on project management. UAL conceives of this project as a library-wide initiative; we anticipate that members of our staff and faculty will engage in service provision and portfolio development as a key component of their current scope of duties, and the long-term sustainability of our post-project service portfolio depends on our ability to proceed in the absence of future funding. For this reason, the project team is not requesting additional funding to support the contributions of our permanent staff. The team also recognizes that support from the Mellon Foundation not only allows this project to proceed from a financial perspective, it also raises the visibility of this work within the local UA community and across higher education as part of the Mellon Foundation's larger commitment to advancing scholarly communications and humanities-based research.

Campus Support

The project's topical focus on the U.S.-Mexico border leverages the University of Arizona's location 65 miles from the border, as well as its overarching institutional commitment to research and engagement in this area. The university received Hispanic Serving Institution (HSI) designation in 2018, and its strategic plan features the Border Lab initiative, designed to "make the UA the leader in the field of border studies by creating new knowledge and transnational collaborations and thus position the university as a top destination for students and faculty

²⁸ <http://speccoll.library.arizona.edu/collections/borderlands>

²⁹ <http://speccoll.library.arizona.edu/collections/documented-border-collection>

³⁰ One interdisciplinary group of scholars is already exploring strategies to make the Mexican and Mexican-American Press collection more computationally amenable for text analysis projects with upper-division undergraduate students.

pursuing border-related scholarship in global, binational and regional contexts." The Border Lab is supported by a current Mellon-funded project, *Fronteridades: Nurturing Collaborative Intersections in the U.S.-Mexico Borderlands*. This project will complement *Fronteridades* by supporting data-intensive scholarship and data storytelling that further extends the *Fronteridades* focus on collecting and sharing narratives, stories, and art of people from (and crossing through) the border, along with creating opportunities for experiential learning in, on, and of the U.S.-Mexico border.

The project team has received commitments from several campus leaders to serve as members of the proposal review board that will review seed grant applications, provide recommendations on their approval to the project's principal investigators, and offer feedback to the principal investigators on ways to improve the project in general after each round of reviews. Across funding rounds, the committee may further expand to include additional perspectives from the campus faculty. Provost Liesl Folks and Senior Vice President for Research and Innovation Elizabeth Cantwell are keen to furnish letters of support indicating strong advocacy for this project and its alignment with the new University of Arizona strategic plan, as well as endorsing the project in the campus communications that will call for grant applications from UA faculty members.

The University of Arizona Marketing and Communications unit will partner with the project management team and UAL's marketing and communications staff to promote project activities to the higher education community and the general public. These activities are within the normal scope of operational responsibilities of these units, and will not require external grant funding. The project team anticipates that the academic library community will be particularly interested in our delivery of a replicable model for early engagement and active research participation in data-intensive humanities research, which will be prepared as a suite of open access materials that include, among other deliverables, curricula from our proposal development workshops. Project team members will also prepare and disseminate scholarship that identifies opportunities, strategies, and recommendations for responsive service development and an articulation of the role of libraries in the collaborative research enterprise.

Project Organization

Project Team

Shan Sutton (PI), Dean of University Libraries and Katheryne B. Willock Endowed Chair, will be responsible for all aspects of project oversight with particular emphasis on managing strategic decision making and advising project team members on the integration and sustainability of the project's model in the UAL service portfolio as well as its replicability and scalability at other institutions.

Megan Senseney (Co-PI), Head of the Office of Digital Innovation and Stewardship (ODIS), will serve as operational and functional lead for activities related to the Libraries' digital services portfolio. She will be responsible for managing the creation of the proposal development workshop series, assessing capacity for ODIS engagement with awarded projects, and designing and conducting project evaluation and assessment. Her focus will be on incorporating services growing out of seed granting projects into the ODIS portfolio and identifying components of the projects that may be replicated at other institutions.

Verónica Reyes-Escudero (Co-PI), Katheryne B. Willock Head of Special Collections, will serve as content lead for activities related to archival materials and research on the Borderlands. She will collaborate with Senseney on the proposal development workshop series, and she will manage capacity for Special Collections engagement with awarded projects. She will also coordinate with awardees to identify materials stemming from funded research that are candidates for accession into the Special Collections' permanent holdings. Having served as Borderlands Curator for fifteen years prior to becoming head of the department, Reyes-Escudero also maintains deep ties to the borderlands research community. She will coordinate across our project and other initiatives such as the *Fronteridades* project. She will provide archival content expertise to awardees as a consultant for seed grant projects with an emphasis on ensuring an ethic of care in project design and conduct.

Sarah Shreeves (Key Personnel), Vice-Dean of Libraries, will chair the review committee and manage the review process. She will work with the project coordinator to ensure that proposals going forward to the committee meet the minimum requirements and to clarify any outstanding questions. She will convene the review committee, manage its discussions and decision making process, and communicate with the principal investigators and project coordinator about any issues coming out of the review process.

A dedicated **Project Coordinator** will be hired at 1.0 FTE to oversee regranting activities related to applicant recruitment, event coordination, proposal review, funding disbursement, ongoing engagement with research teams, and financial and narrative reporting. The project coordinator will also be responsible for administering the Libraries' Domain of One's Own account and tracking on project deliverables for seed grant awardees and the project team. A position description for the project coordinator is included as Appendix C.³¹

Key Contributors

While our staff funding requests are limited to the hire of a dedicated project coordinator, it is important to reiterate that this project is conceived as a library-wide endeavor. Due to the nature of our project design, we anticipate that library staff and faculty will participate in many aspects of the project, and managing staff capacity internally is a key component of ensuring our outcomes are sustainable. To operationalize as many components of the project work as possible, we seek to account for staff participation in seed grants as part of our assessment and evaluation activities. We anticipate deep engagement from librarians across multiple departments within the Libraries, including Special Collections, the Office of Digital Innovation and Stewardship, and Research and Learning. As the scope of potential seed grant projects becomes clear, we also anticipate potential roles for the University of Arizona Press (which is administered through UAL) and members of the Health Sciences Library.

³¹ UAL is sensitive to the concerns of contingent personnel and will adhere to the Guidelines for Developing and Supporting Grant-Funded Positions in Digital Libraries, Archives, and Museums. The Guidelines are currently under development by the DLF Working Group on Labor in Digital Libraries, Archives, and Museums and available for comment at <https://tinyurl.com/dlflabor>. In particular, UAL commits to active mentorship, access to professional development funding, supporting participation in research and service activities within the profession and the institution, and ensuring that credit for contributions accrues to the project coordinator in the form of named recognition on project materials, co-authorship on disseminations, and presentation opportunities.

Review Board

Members of the review board were selected according to their expertise and engagement in one or more of the following areas: borderlands studies, humanities research methodologies, digital scholarship, and data-focused library services. The non-UAL members all hold administrative positions at UA, and their willingness to participate actively in the project illustrates broad commitment to its success from UA administrators.

In discharging their duties to review and discuss seed grant proposals, provide recommendations on the proposals to the principal investigators, and offer general input on the project to the principal investigators, we anticipate the total level of effort per board member would be approximately seventeen hours in each of the two review rounds. This estimate is based on an assumption of seven proposals per round, with two hours per proposal to review and discuss, and a final three hour meeting in each round to present the recommendations and make any other suggestions about the project to the principal investigators. UAL is not seeking grant funding to compensate review board members since they are all UA employees whose work on the board would be within the scope of their UA duties as a form of university service. As a cohort, the review board members reflect the expertise and diversity of perspectives required to assess the seed grant applications and advance the project's broader objectives.

Planned Technologies

The University of Arizona Libraries is planning to launch a Domain of One's Own pilot through Reclaim Hosting in 2020.³² Each project team will be provided a DoOO instance for demonstrating their digital outputs, which UAL commits to supporting for at least five years following project completion. Reclaim Hosting simplifies the process of web hosting by offering users single-click installation for a variety of open source tools and platforms through a control panel (cPanel). To complement a suite of industry standards like Wordpress and Drupal, Reclaim hosting has also developed one-click installations for popular digital humanities tools, including Scalar, Omeka, Mukurtu, and Pressbooks. The project coordinator will be responsible for managing Domain of One's Own and assisting project awardees with initial platform selection and setup. Awardees may also budget for more advanced web development support as part of their proposal.

The Libraries currently offer support services for data management, Python and R programming, user experience, and GIS using a model that alternates guided workshops with drop-in office hours for individual consultations. With the launch of the new CATalyst Studios, UAL is working cross-departmentally to explore a comprehensive workshop series that expands upon this model and is actively planning to increase local activity around data visualization and text mining in Spring 2020. UAL is a Gold Member Organization with The Carpentries, and several of our librarians are trained instructors.³³ While the Libraries' current support strategies serve to demonstrate the technologies we have already incorporated into our portfolio (e.g., Open Science Framework, RStudio, Jupyter Notebooks, StoryMaps, OpenRefine), we are also looking to expand upon these offerings as a direct result of our engagement with applicants and awardees.

³² <https://reclaimhosting.com/domain-of-ones-own/>

³³ <https://carpentries.org/>

As we collaboratively assess support for additional technologies, UAL will prioritize openness and accessibility as core values while gauging current and potential demand and scoping our capacity to absorb each technology into our service portfolio.

Outcomes and Benefits

By the conclusion of the active grant period, project participants will have produced a set of deliverables that include original, data-intensive research on the borderlands, the development of a robust and replicable service portfolio for academic libraries engaged in data-focused humanities research and digital scholarship, and an openly accessible white paper that encapsulates the outcomes of our project assessment.

1. **Borderlands Storytelling.** Over a period of two rounds of funding, project teams will produce eight digital products grounded in data and digital storytelling approaches. Taken together, this set of projects will form a series that challenges scholars and the general public to understand the U.S.-Mexico borderlands from multiple disciplinary and cultural perspectives. In addition to being openly available online, and presented together through the website of our umbrella project, each product will be submitted to United Fronteras for inclusion in a broader effort to map digital projects focused on the region.
2. **Service Portfolio Development.** Over the course of the project, UAL will develop and refine a service portfolio for data-focused humanities research and digital scholarship that integrates data and digital storytelling for humanities scholars. The portfolio will address tiers of service, staffing and capacity, foundational skills and core competencies, and an outline of current topics requiring coverage and expertise. The projects will also demonstrate how academic libraries can establish themselves as essential, fully integrated partners in faculty research workflows.
3. **Research and Dissemination.** The service portfolio outlined above will be the result of an active qualitative research effort. Additional findings are likely to emerge during analysis, and we plan on further dissemination through a white paper, conference presentations, and journal articles.

Short-term project success will be measured by the completion of these deliverables alongside indicators of positive feedback captured during assessment. Long-term benefits are unlikely to be documented within the project period, but would include evidence that the proposed service model is adopted or adapted by peer institutions, demonstration of sustained engagement among awardees and participating librarians, and receipt of next-phase funding to grow and expand the scholarship demonstrated through storytelling.

In focusing on data and digital storytelling, the project's goal is not simply to introduce approaches and methods from the many disciplines that comprise contemporary data science to scholars in the humanities. Rather, the project seeks to center scholarship in the humanities as a vital component of telling interpretive stories with data. Focusing on the people in and of the borderlands amplifies underrepresented voices in digital humanities and also increases the necessity of probing the ethical dimensions of data-intensive research in such communities. A service portfolio founded on these principles will ultimately benefit the practice of digital

scholarship in academic librarianship by fully integrating ethics and diversity considerations into the policies and routinized workflows that we propose for digital scholarship.

Sustainability

The project team is approaching sustainability from two perspectives: 1) preserving tangible product deliverables and 2) sustaining services as a core component of long-term library operations. UAL is committed to hosting all web-based project outcomes in their original form for a period of five years. Upon conclusion of the active grant period, projects will also be web archived and accessioned as part of the Libraries' digital collections, at which point they will be subject to our digital preservation policy and preserved through the APTrust repository.³⁴ The APTrust has a robust and transparent sustainability plan including succession planning, financial sustainability documentation, and a reserve fund that covers more than a year's worth of operational costs.³⁵ In addition, as part of our formal digital preservation policy, UAL has plans in place to steward content if APTrust were to fail. The project team will encourage project awardees to submit their data and research outputs to UAL's hosted repositories to capture and preserve as many aspects of each project as legally and ethically possible. In accordance with campus policies, materials submitted to either our campus or data repository are retained for a period of at least ten years, though UAL intends to retain materials indefinitely.

As discussed in the rationale and the section on key contributors, a key motivation of the project design is ensuring that the library-engaged aspects of the project can be absorbed into UAL's day-to-day operations and sustained beyond the funding period. While UAL will not have financial resources to continuously seed projects at the rate and frequency supported by Mellon, we will be able to leverage the outcomes of the project to adjust and enhance strategies for how library faculty and staff partner on digital projects through transaction, consultation, or collaboration. UAL will also use project outcomes to establish an open workshop series focused on data and digital storytelling for scholars in the humanities.

Throughout this project, UAL will be analyzing how to make the resulting model sustainable as both a library and university priority. UAL is committed to internally directing staffing and other resources to ensure sustainability, and library leadership will also engage with university and college administrators to establish their long-term support. Progress reports will be given by PI Sutton to the Deans Council, Provost, and Senior Vice President for Research and Innovation to proactively communicate the project's impacts. UA's new Senior Vice President for Research and Innovation, Elizabeth Cantwell, is especially interested in promoting data-focused forms of research across disciplines and establishing innovation hubs on campus. This Mellon-funded project dovetails well with the administrative priorities of the UA Office of Research, Innovation, and Impact, as well as with the growth of academic programs such as the UA Center for Digital Humanities. Through these kinds of alignment, UAL anticipates future collaborative opportunities that can result in additional resourcing to bolster its own commitment to the model's sustainability.

³⁴ <http://aptrust.org/>

³⁵ Succession plan: <https://libraopen.lib.virginia.edu/downloads/5425k9781> and Financial Sustainability and Business Principles and Practices: <https://libraopen.lib.virginia.edu/downloads/0c483j43w>. The reserve fund was communicated in email with Bradley Daigle, Partnerships and Content Lead. The budget is regularly reviewed by membership at the APTrust twice yearly meetings.

Proposal Details

Diversity and Inclusion and Anti-Discrimination

The University of Arizona pursues Inclusive Excellence as a campus vision, and we are governed by a set of Non-Discrimination and Anti-Harassment policies.³⁶ Within the Libraries, Diversity is highlighted as one of our five core values, and the Diversity, Social Justice and Equity Council (DSJEC) was established in 2016 to develop a sustainable and holistic approach to advancing diversity and inclusion for the Libraries through internal programming and assessment, advisement to leadership, and campus and community outreach.³⁷ Co-PI, Megan Senseney, serves as the current chair of DSJEC.

An intentional approach to diversity is fundamental to the design, implementation, and ultimate success of this project. Project leadership will work with the project coordinator to model project charters that articulate core values of diversity, equity, and inclusion; set expectations for upholding those values; and establish a process for managing grievances. Project leadership and members of the review board are guided by the goals of increasing representation of the many cultural perspectives that are found in the borderlands, and our proposal evaluation rubric will include explicit efforts to articulate the role of underrepresented and marginalized communities in the project (as researchers, subjects, and/or participants) and the degree to which applicants have addressed the ethical dimensions of their project design.

Intellectual Property

The project will be subject to the Foundation's intellectual property policy, and UA anticipates establishing a formal IP agreement with the Foundation.³⁸ For all overarching project reports and disseminations, the team commits to making materials freely and openly available under a Creative Commons Attribution license (CC-BY). Through the regranting program, the project team intends to consult closely with awardees on intellectual property, licensing, data sharing, and reuse. The team is attuned to the reality that projects focused on the borderlands may engage with indigenous materials that are subject to traditional knowledge considerations and the implications of data sovereignty.³⁹ We are also sensitive to potential risks and implications related to local populations including but not limited to undocumented immigrants. We will require awardees to document and share as many components of their research as ethically possible through open frameworks and repositories supported by the Libraries (including the Open Science Framework and Figshare for Institutions). The rights to any resulting publications (e.g., peer-reviewed journal articles) will be subject to negotiation with publishers, and UAL will work with project participants to retain rights to maintain and share open access versions of all grant-funded content. In conjunction with the University of Arizona Open Access Policy, the

³⁶ <https://diversity.arizona.edu/vision-our-campus>; <https://diversity.arizona.edu/diversity-policies-statements>

³⁷ <https://new.library.arizona.edu/about/diversity>

³⁸ <http://mellon.org/grants/grantmaking-policies-and-guidelines/grantmaking-policies/intellectual-property-policy>

³⁹ We are guided in our thinking about indigenous data sovereignty by the work of Stephanie Carroll Rainie and her colleagues at the University of Arizona Native Nations Institute (<https://nni.arizona.edu/programs-projects/policy-analysis-research/indigenous-data-sovereignty-and-governance>).

Libraries will work closely with authors to deposit final accepted manuscripts from resulting journal articles into our campus repository under an open license.⁴⁰

⁴⁰ <https://new.library.arizona.edu/research/open-access/policy>