

Purdue University with researchers from Howard University and DePaul University:
Understanding the Health Information Seeking Behaviors of Black Americans: A Cultural Perspective

Purdue University, in collaboration with researchers from Howard University and DePaul University, requests \$99,850 in IMLS Laura Bush 21st Century Librarian Program funding for a 24-month planning grant. *Understanding the Health Information Seeking Behaviors of Black Americans: A Cultural Perspective* seeks to understand the health information-seeking behaviors and needs of Black Americans, with a direct interest in planning for the development of a continuing education course or courses that improve cultural sensitivity, inclusion, and equity for library workers. This planning grant falls under the IMLS category of lifelong learning and is intended to lay the groundwork for developing the skills and expertise of in-service and pre-service library professionals—including library school students, health sciences librarians, academic librarians, public librarians, and special librarians--by facilitating self-directed learning opportunities. From this project, researchers from the three universities will complete an exhaustive, systematic literature review to compile and synthesize findings related to the information-seeking behaviors amongst Black Americans and will work collaboratively with library workers to discern ideal course attributes and design criteria through a participatory approach. The project is in its Exploratory maturity phase.

Statement of Need

Seeking trusted and meaningful health information can increase an individual's health knowledge. Such knowledge can improve a person's communication with their health care providers, improve preventive behaviors, and improve one's overall ability to care for themselves.^{1 2 3} The health information-seeking behaviors of specific groups of Black Americans—e.g., African American women managing blood pressure⁴, aged African American women⁵, and Black Americans seeking cancer screening information⁶—have been individually documented in research studies. Findings from these studies suggest that, in addition to race and ethnicity, health information-seeking behaviors are influenced by characteristics such as education, cultural traditions, digital literacy skills, gender, and socioeconomic factors.

¹ Wiltshire, J., Cronin, K., Sarto, G. E., & Brown, R. (2006). Self-advocacy during the medical encounter: use of health information and racial/ethnic differences. *Medical care*, 100-109.

² Murray, E., Lo, B., Pollack, L., Donelan, K., Catania, J., White, M., ... & Turner, R. (2003). The impact of health information on the internet on the physician-patient relationship: patient perceptions. *Archives of internal medicine*, 163(14), 1727-1734.

³ Ramanadhan, S., & Viswanath, K. (2006). Health and the information nonseeker: a profile. *Health communication*, 20(2), 131-139.

⁴ Jones, L. M., Veinot, T. C., & Pressler, S. J. (2018). Cell phone information seeking explains blood pressure in African American women. *Western journal of nursing research*, 40(5), 617-632.

⁵ Gollop, C. J. (1997). Health information-seeking behavior and older African American women. *Bulletin of the Medical Library Association*, 85(2), 141.

⁶ Liu, J., King, A. J., Margolin, D., & Niederdeppe, J. (2020). Information Seeking and Scanning about Colorectal Cancer Screening among Black and White Americans, Ages 45–74: Comparing Information Sources and Screening Behaviors. *Journal of Health Communication*, 25(5), 402-411.

In their concept analysis of health information-seeking behavior, authors Margaret Zimmerman and George Shaw Jr. discuss how people are often unsure of how to act on the health information they have acquired, especially when that information is from online sources. They highlight the need for interventions tailored to specific community groups and for librarian-led workshops, community partnership activities between librarians and health care providers, and library sessions with community members and stakeholders.⁷

Concerns over one's ability to act on the health information they receive and calls for community-based interventions are echoed by the World Health Organization's 'Call for Action: Managing the Infodemic', a global movement to "promote access to health information and mitigate harm from health misinformation among online and offline communities". WHO defines an infodemic as a flood of information that spreads alongside an epidemic or public health crises--some information is accurate, some is considered misinformation or disinformation. Infodemic management should include the support, development, and application of solutions that provide the knowledge and tools that individuals and communities need to promote accurate information (upstream interventions) and to minimize and mitigate the harm of misinformation and disinformation (downstream interventions).⁸ Infodemic management efforts are especially crucial for Black Americans and their communities, who suffer disproportionately from epidemic diseases.^{9 10}

Library workers play an important role in the infodemic management response and in the creation of upstream and downstream community-focused interventions that support information-seeking behaviors. However, the reporting of findings across a wide range of disciplines combined with a lack of accessible learning opportunities related to this specific topic makes it difficult for library professionals to make evidence-based decisions about how to best respond to the health-information seeking needs of Black patrons.

Project Design

Researchers from Purdue University, Howard University, and DePaul University will collaborate to conduct a systematic literature review and engage library workers in the planning process via a participatory approach that includes stakeholder interviews, survey assessments, and an environmental scan. To ensure its successful execution, the project will engage three experienced library workers--Bethany S. McGowan, MLIS/MS as project director; Jahala D. Simuel, MIS/MLS as a project consultant; and Mark A. Puente, MA/MLIS as a project advisor; in collaboration with a health and wellness participatory design researcher, Christina N. Harrington, Ph.D. as a project consultant. A graduate assistant, likely a doctoral student in Health

⁷ Zimmerman, M. S., & Shaw Jr, G. (2020). Health information seeking behaviour: a concept analysis. *Health Information & Libraries Journal*, 37(3), 173-191.

⁸ World Health Organization. (2020). Call for Action: Managing the Infodemic. <https://www.who.int/news/item/11-12-2020-call-for-action-managing-the-infodemic>

⁹ Krishnan, L., Ogunwole, S. M., & Cooper, L. A. (2020). Historical insights on coronavirus disease 2019 (COVID-19), the 1918 influenza pandemic, and racial disparities: illuminating a path forward. *Annals of internal medicine*, 173(6), 474-481.

¹⁰ Tai, D. B. G., Shah, A., Doubeni, C. A., Sia, I. G., & Wieland, M. L. (2020). The disproportionate impact of COVID-19 on racial and ethnic minorities in the United States. *Clinical Infectious Diseases*.

Communication or a similar field, will also join the project team. The project will leverage existing connections with professional library associations and grassroots organizations and will work to establish new connections--via social media, outreach at conferences, and interpersonal network introductions--to gather the perspectives, concerns, and needs of public librarians, health sciences librarians, academic librarians, special librarians, and library school students.

We recognize the ongoing limitations that restrictions related to the COVID-19 pandemic may pose to our project's execution, however, we are confident that the majority of our tasks can be completed virtually or while safely socially distanced, if necessary. For other tasks, i.e., visiting the archives at the Moorland-Spingarn Research Center, we will closely monitor the situation and adjust our plans as needed. Our project's two-year timeline affords us some flexibility in responding to potential COVID-19 disruptions.

This is an exploratory planning project. If funded and successfully executed, findings from this planning phase will be used to inform the design, development, and launch of a course or series of courses on how library workers can support the health information-seeking needs of Black Americans. This project's objectives are to 1. synthesize findings from existing studies and archival artifacts to understand how cultural and societal norms influence information-seeking behaviors amongst Black Americans via a systematic literature review, and 2. assess library workers' interest in and perceived needs for a course focused on understanding the health information-seeking behaviors of Black Americans via a social listening and community engagement campaign.

Because the issues we are seeking to understand are complex and ill-defined, we will utilize the Hasso-Plattner Institute Design Thinking Model¹¹ to reframe the problem in human-centric ways, generating ideas through brainstorming sessions and adopting a hands-on approach to engage project stakeholders. This exploratory planning phase focuses on completing the Understand and Observe stages, the first two stages of a 5-stage design thinking model. The Ideation, Prototype and Testing stages are outside the scope of this planning project.

The Understand stage focuses on gathering existing information about a topic through secondary research. For this project's Understand stage, we will focus on the execution of Objective 1, the completion of a systematic literature review.

The Observe stage focuses on a qualitative research approach that includes using interviewing, surveying, and observation techniques to collect insights related to users' needs. Empathy is highlighted as a crucial component of this process. For this project's Observe phase, we will focus on the execution of Objective 2, conducting a social listening and community engagement campaign.

We will rely on justice-oriented theoretical practices as we (a) plan for the improvement of relationships and community within libraries, with particular focus on improving the relationship between library workers and Black patrons seeking health information; (b) honor library

¹¹ Tschimmel, K. (2012). Design Thinking as an effective Toolkit for Innovation. In *ISPIM Conference Proceedings* (p. 1). The International Society for Professional Innovation Management (ISPIM).

workers' lived experiences and existing attitudes by including a thoughtfully diverse audience of library workers in professionally-designed social listening and community engagement campaign (c) utilize systematic review findings to introduce library workers to patron perspectives of searching and viewing the world, and (d) provide a vision for equitable, evidence-based patron support services.¹²

This project will require Institutional Review Board (IRB) approval, which we will secure in advance by working closely with the Purdue University IRB Office.

Project success will be measured against four categories of performance measurements:

1. Effectiveness: how well outputs and outcomes match the project's indicators of success.
2. Efficiency: how well project design and project activities optimize available resources and minimize costs
3. Quality: how well the project meets the audience's expectations
4. Timeliness: if projects are being completed correctly and on time

Project Objective 1: Synthesize findings from existing studies and archival artifacts to understand how cultural and societal norms influence information-seeking behaviors amongst Black Americans and communities of Black Americans.

McGowan, Simuel, Harrington, and a graduate assistant will spend 18 months (August 2021-January 2023) conducting a systematic literature review to reveal similarities and differences in themes and findings across multiple studies and disciplines. A systematic review aims to identify, select, and synthesize all research published on a particular research question or topic. Systematic reviews adhere to a strict design based on pre-specified and reproducible methods, and typically take between 12 and 24 months to complete. We will use the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA), an evidence-based minimum set of items for reporting in systematic reviews, to guide our methodological approach.

We have already checked Prospero--the international prospective register of systematic reviews and the Cochrane Library of Systematic Reviews to ensure that no similar systematic reviews exist or are currently in progress. We have also registered our systematic review protocol in Prospero, tentatively titled 'Evaluating the Health Information Seeking Behaviors of Black Americans: A Systematic Review', CRD42020193349. The systematic review will be executed as follows:

- a. Development of a clear and precise research question. *August 2021*. The research question will be structured and refined using the PICO framework model, or a similar research question model, to create a comprehensive and answerable research query. The PICO framework is used in evidence-based practice to frame healthcare-related questions and to facilitate literature search strategies. The PICO acronym stands for: P—patient,

¹² Conklin, H. G., & Hughes, H. E. (2016). Practices of compassionate, critical, justice-oriented teacher education. *Journal of teacher education*, 67(1), 47-60.

problem, or population; I—intervention; C—comparison, control, or comparator; O—outcome(s).

- b. Data gathering. *September 2021 – December 2021*. Data gathering will include the development of a robust search strategy that utilizes digital and print resources. Systematic review search strategies must strive to comprehensively and systematically identify all publications and manuscripts related to a research question or topic. Search quality will be improved by the strength of two database experts, McGowan and Simuel, and by access to library databases and archives from three major research universities. We will work closely with archivists at the Moorland-Spingarn Research Center at Howard University, widely recognized as one of the world's most comprehensive repositories for the documentation of cultural artifacts related to Black Americans, to further identify content. Though currently closed to the public due to COVID-19 restrictions, the center is scheduled to reopen in August 2021.
- c. Study screening and coding. *January 2022 - June 2022*. After potentially relevant publications are identified, McGowan, Simuel, and Harrington will review the studies' Abstract section, or equivalent, to determine study eligibility based on pre-defined inclusion and exclusion criteria. On occasions where McGowan and Simuel disagree, Harrington will act as the final decision-maker. For studies and artifacts deemed potentially eligible at the abstract screening stage, a screening of the full-text will follow. For studies deemed eligible after the full-text review, McGowan and Simuel will work independently to extract and code study characteristics, and to extract outcome data from each study. The research team will discuss and compare these results. Included studies or artifacts must directly study the health information-seeking behaviors of Americans who self-identify as Black or African American. A graduate assistant will be hired at this stage to assist with data organization and management.
- d. Study quality assessment. *July 2022 – August 2022*. The National Institutes of Health (NIH) Study Quality Assessment Tools, or a similar study assessment tool, will be used to assess the risk of bias, to evaluate the study conduct, to appraise the study reporting, and to make an implicit judgment of the content and utility of the findings for theory development. The NIH Study Quality Assessment Tools are well-established as a means for helping researchers evaluate the quality of reporting for various types of studies. Assessments will be done at the study level for all studies deemed eligible for inclusion after the 'Study screening and coding' phase. McGowan and Simuel will lead the quality assessment. Harrington will resolve any disagreements between the two reviewers' judgments. Studies will receive a quality rating of Good, Fair, or Poor. The graduate assistant will assist with data organization and management.
- e. Study synthesis. *September 2022 – December 2022*. McGowan, Simuel, and Harrington will use NVivo to record, code, and compare data between studies and to execute a thematic analysis. NVivo is a qualitative data analysis software that structures and provides insights for unstructured data. The rationale for use of an automated analysis tool is to highlight any explicit and transparent links between conclusions and the text of study data. The statistical programming language R and/or Tableau will be used to visualize data. Study details will be analyzed manually and summarized in a narrative,

using Microsoft Excel and Word. The graduate assistant will assist with data analysis and visualization.

- f. Drafting and disseminating the review. *January 2023*. McGowan, Simuel, Harrington, and the graduate assistant will edit and publish the systematic review. We anticipate that the systematic review will be published in an open-access library science, information science, or health communication journal and shared on e-Pubs, Purdue University's institutional repository. We also plan to present preliminary and final review findings at regional and national conferences, namely the annual American Library Association conferences, the Joint Conference of Librarians of Color (JCLC), and the Medical Library Association (MLA) annual conferences. Virtual conference presentations will be considered if COVID-19 restrictions remain an influence.

For this objective, project success will be measured by the following:

1. Effectiveness: indicated by the publication of a completed systematic review
2. Efficiency: indicated by the use of available resources—e.g., the three universities' robust access to a variety of research databases, open-source software like the statistical programming language R and the citation screening tool Rayyan, university subscriptions to Tableau and NVivo, and travel funds provided by the project director's department to attend and present at conferences (namely the MLA annual conferences) --to minimize cost.
3. Quality: indicated by the systematic review being published on an open access platform where it will be freely and openly accessible, and by the review's adherence to PRISMA standards to regulate quality
4. Timeliness: indicated by adherence to the systematic review's dedicated timeline

Project Objective 2: Assess the interests and needs of librarians for a course focused on understanding the health information-seeking behaviors of Black Americans via a social listening and community engagement campaign.

The research team will work collaboratively with library workers to discern ideal course attributes and design criteria through a participatory approach. Research has established that engaging individuals that are the subject of a design engagement in the initial phases of concept ideation and conceptualization are tied to higher likelihoods of system adoption, innovative features that speak to population needs, and stakeholder buy-in to the process of creativity and development.^{13 14} We will seek participation from a range of library workers, including library

¹³ Davidson, J. L., & Jensen, C. (2013, June). Participatory design with older adults: an analysis of creativity in the design of mobile healthcare applications. In *Proceedings of the 9th ACM Conference on Creativity & Cognition* (pp. 114-123).

¹⁴ Harrington, C. N., Wilcox, L., Connelly, K., Rogers, W., & Sanford, J. (2018, May). Designing health and fitness apps with older adults: examining the value of experience-based co-design. In *Proceedings of the 12th EAI International Conference on Pervasive Computing Technologies for Healthcare* (pp. 15-24).

school students, academic librarians, health sciences librarians, public librarians, and special librarians and will rely on the expertise of project advisor, Mark A. Puente, to refine a recruitment and outreach plan. In recruiting stakeholders, diversity will be sought in race, age, ethnicity, and gender. We will leverage existing relationships with professional associations such as the Black Caucus of the American Library Association and the African American Medical Librarians Alliance, and grassroots library organizations such as We Here, to support our outreach efforts. We also plan to use conference attendance and conference presentations--at ALA annual conferences, JCLC, and the MLA annual conferences--to identify and recruit participants. Christina Harrington will advise on the project's participatory design elements--especially those related to the execution of the social listening and engagement campaign--including survey development, stakeholder interview design, conducting stakeholder interviews, and the development of outreach strategies that encourage participation and engagement. In addition to the aforementioned collaborations with library organizations and conference participation, details about the project and calls for participation will be posted on relevant listservs, Slack channels, social media outlets, and newsletters. Stakeholder interviews will be conducted virtually, using Zoom or a similar conference meeting software.

The project team will spend 3 months (*February 2023 – April 2023*) planning, executing, and analyzing information from a participatory approach that includes stakeholder interviews, survey assessments, and an environmental scan. During stakeholder interviews we will guide library workers through co-design activities in which we collaboratively identify methods of interaction, ideal aesthetic elements for learning modules, and how our proposed course might integrate into existing systems. Our approach will also include asking participants about courses or learning experiences that they have completed and would recommend, which will inform an environmental scan. Information from the interviews and surveys will be used as a means to allow for external input, validation, and consensus-building.

Data from the community engagement campaign will be thematically analyzed and combined with systematic literature review findings to clarify how library workers could benefit from free, open, and accessible instructional opportunities related to the health information-seeking behaviors and needs of Black Americans.

The project team will spend 1 month (*May 2023*) conducting an environmental scan to gather information about existing programs and learning opportunities and to assess trends related to continuing education and learning opportunities for library workers. In addition to the information gathered from the stakeholder interviews and surveys, the environmental scan will include a SWOT analysis to analyze strengths, weaknesses, opportunities, and threats. Our project team will establish risks, assumptions, issues, and dependencies related to developing a new continuing education opportunity. We will also review how similar projects have been executed, including successes and failures. This information will be used to develop a guide for best practices. During this month, the project team will also develop persona narratives. Personas are fictional characters created to represent different types of users. When designing new products or experiences, personas can help the design team understand users' needs, experiences, behaviors, and goals. Our personas will include consider the following five traits: Individual

Characteristics, Social Environments, Resource Access, Convictions and Beliefs, and Barriers and Doubts.

The project team will spend 2 months (*June 2023 – July 2023*) drafting a research paper to summarize the results of the social listening and community engagement campaign. We will publish the research paper in an open access library science, information science, user experience design, or health communication journal and/or on ePubs. During that time, we will also draft a final report, which will summarize key findings from the social listening campaign, the environmental scan, and the systematic review. This document will be published on ePubs.

For this objective, project success will be measured by the following:

1. Effectiveness: indicated by the successful publication of a research study; indicated by the successful publication of a final project report
2. Efficiency: indicated by the use of available resources—e.g. institutional subscriptions to Zoom conferencing software, the Microsoft Office suite, and Qualtrics survey management software--to minimize cost.
3. Quality: indicated by both the research paper and the final project report being published on an open access platform where it will be freely and openly accessible, and by the project's adherence to the Hasso-Plattner Institute Design Thinking Model and justice-oriented theoretical practices
4. Timeliness: indicated by adherence to the dedicated timeline

Additional success indicators for this project objective include:

- Conducting a minimum of 10 stakeholder interviews, representing a diverse range of library workers
- Receiving and analyzing a minimum of 50 survey responses, representing a diverse range of library workers
- Designing at least 5 persona narratives, representing a diverse range of potential users
- A 'diverse range of library workers' could be defined as 10% participation from library school students, 20% participation from health sciences librarians, 20% participation from non-health sciences academic librarians, 30% participation from public librarians, and 20% participation from special librarians. We will also consider factors such as race, age, ethnicity, and gender and, if needed, reach out to specific library communities to gather data from underrepresented groups.

Diversity Plan

Inclusive service to diverse populations is a fundamental tenant of the visions of Purdue, Howard, and DePaul universities. This planning project directly addresses issues related to race and ethnicity, specifically issues related to the health of Black Americans.

The project team includes academic library workers, health sciences library workers, and a health communication & design researcher. To ensure that the perspectives of non-academic and

non-health sciences library workers are captured, we will leverage existing relationships with a broad range of library organizations and associations. These include, but are not limited to, the American Library Association--notably the Black Caucus of the American Library Association and the Public Library Association, the Special Library Association, the Medical Library Association—notably the African American Medical Librarian Alliance, and the grassroots library organization We Here and its publishing collective up//root. Our environmental scan will include the identification of other potential partners and collaborators and will include the development of a recruitment and outreach plan specifically and professionally designed to reach a diverse audience of library workers. We will be inclusive in welcoming input from people of various races, ethnicities, gender and sexual identifications, geographic regions, demographics of communities served, and types of libraries and will be intentional about reaching out to communities who participation might be underrepresented in our study.

Our use of the Hasso-Plattner Institute Design Thinking Model, combined with a reliance on justice-oriented theoretical practices, will ensure our research accurately and empathically captures the thoughts, ideas, and feelings of a diverse range of library workers.

Broad Impact

Understanding the Health Information Seeking Behaviors of Black Americans: A Cultural Perspective seeks to clarify the health information-seeking behaviors of Black Americans and seeks to understand how the lived experiences and existing attitudes of library workers influence interest in and preferences for continuing education opportunities focused on promoting cultural sensitivity, inclusion, and equity.

This planning grant will fund the execution of a systematic literature review and a social listening and community engagement campaign. This project's objectives are to 1. synthesize findings from existing studies and archival artifacts, and 2. engage library workers in a social listening and community engagement campaign. The project goals are to 1. reveal similarities and differences in themes and findings across multiple studies and disciplines as related to the health information-seeking behaviors of Black Americans; and 2. allow for external input, validation, and consensus-building from a diverse range of library workers.

Calls from library and information science researchers emphasize the need for information-seeking support interventions tailored to specific community groups, and their calls are echoed by prominent health organizations such as the WHO. This project seeks to lay the foundation for the formation of evidence-based continuing education opportunities that train library workers to design such interventions. The necessity for such interventions is highlighted in the wake of the COVID-19 crisis, which disproportionately impacted Black Americans, and by the ongoing infodemic crisis.

We plan to disseminate our project findings by multiple publications--publishing the systematic review, publishing the results of the social listening and community engagement campaign as a research study, present preliminary and finalized study findings at relevant conferences, and publishing a final project report. All print publications and presentations generated from this project will be openly and freely accessible on Purdue ePubs, the institutional repository for Purdue University.

Understanding the Health Information Seeking Behaviors of Black Americans: A Cultural Perspective

Purdue University

Schedule of Completion

Year 1: August 2021 - July 2022	August 2021	September 2021	October 2021	November 2021	December 2021	January 2022	February 2022	March 2022	April 2022	May 2022	June 2022	July 2022
Systematic Review: Develop and refine the research question												
Systematic Review: Data gathering, including search strategy development and the identification of multidisciplinary studies and archival artifacts												
Systematic Review: Visit the Howard University Moorland Spingarn Center												
Systematic Review: Study screening and coding												
Attend the 2022 American Libraries Association Annual Meeting												
Systematic Review: Study quality assessment												



DIGITAL PRODUCT FORM

INTRODUCTION

The Institute of Museum and Library Services (IMLS) is committed to expanding public access to digital products that are created using federal funds. This includes (1) digitized and born-digital content, resources, or assets; (2) software; and (3) research data (see below for more specific examples). Excluded are preliminary analyses, drafts of papers, plans for future research, peer-review assessments, and communications with colleagues.

The digital products you create with IMLS funding require effective stewardship to protect and enhance their value, and they should be freely and readily available for use and reuse by libraries, archives, museums, and the public. Because technology is dynamic and because we do not want to inhibit innovation, we do not want to prescribe set standards and practices that could become quickly outdated. Instead, we ask that you answer questions that address specific aspects of creating and managing digital products. Like all components of your IMLS application, your answers will be used by IMLS staff and by expert peer reviewers to evaluate your application, and they will be important in determining whether your project will be funded.

INSTRUCTIONS

If you propose to create digital products in the course of your IMLS-funded project, you must first provide answers to the questions in **SECTION I: INTELLECTUAL PROPERTY RIGHTS AND PERMISSIONS**. Then consider which of the following types of digital products you will create in your project, and complete each section of the form that is applicable.

SECTION II: DIGITAL CONTENT, RESOURCES, OR ASSETS

Complete this section if your project will create digital content, resources, or assets. These include both digitized and born-digital products created by individuals, project teams, or through community gatherings during your project. Examples include, but are not limited to, still images, audio files, moving images, microfilm, object inventories, object catalogs, artworks, books, posters, curricula, field books, maps, notebooks, scientific labels, metadata schema, charts, tables, drawings, workflows, and teacher toolkits. Your project may involve making these materials available through public or access-controlled websites, kiosks, or live or recorded programs.

SECTION III: SOFTWARE

Complete this section if your project will create software, including any source code, algorithms, applications, and digital tools plus the accompanying documentation created by you during your project.

SECTION IV: RESEARCH DATA

Complete this section if your project will create research data, including recorded factual information and supporting documentation, commonly accepted as relevant to validating research findings and to supporting scholarly publications.

SECTION I: INTELLECTUAL PROPERTY RIGHTS AND PERMISSIONS

A.1 We expect applicants seeking federal funds for developing or creating digital products to release these files under open-source licenses to maximize access and promote reuse. What will be the intellectual property status of the digital products (i.e., digital content, resources, or assets; software; research data) you intend to create? What ownership rights will your organization assert over the files you intend to create, and what conditions will you impose on their access and use? Who will hold the copyright(s)? Explain and justify your licensing selections. Identify and explain the license under which you will release the files (e.g., a non-restrictive license such as BSD, GNU, MIT, Creative Commons licenses; RightsStatements.org statements). Explain and justify any prohibitive terms or conditions of use or access, and detail how you will notify potential users about relevant terms and conditions.

A.2 What ownership rights will your organization assert over the new digital products and what conditions will you impose on access and use? Explain and justify any terms of access and conditions of use and detail how you will notify potential users about relevant terms or conditions.

A.3 If you will create any products that may involve privacy concerns, require obtaining permissions or rights, or raise any cultural sensitivities, describe the issues and how you plan to address them.

SECTION II: DIGITAL CONTENT, RESOURCES, OR ASSETS

A.1 Describe the digital content, resources, or assets you will create or collect, the quantities of each type, and the format(s) you will use.

A.2 List the equipment, software, and supplies that you will use to create the digital content, resources, or assets, or the name of the service provider that will perform the work.

A.3 List all the digital file formats (e.g., XML, TIFF, MPEG, OBJ, DOC, PDF) you plan to use. If digitizing content, describe the quality standards (e.g., resolution, sampling rate, pixel dimensions) you will use for the files you will create.

Workflow and Asset Maintenance/Preservation

B.1 Describe your quality control plan. How will you monitor and evaluate your workflow and products?

B.2 Describe your plan for preserving and maintaining digital assets during and after the award period. Your plan should address storage systems, shared repositories, technical documentation, migration planning, and commitment of organizational funding for these purposes. Please note: You may charge the federal award before closeout for the costs of publication or sharing of research results if the costs are not incurred during the period of performance of the federal award (see 2 C.F.R. § 200.461).

Metadata

C.1 Describe how you will produce any and all technical, descriptive, administrative, or preservation metadata or linked data. Specify which standards or data models you will use for the metadata structure (e.g., RDF, BIBFRAME, Dublin Core, Encoded Archival Description, PBCore, PREMIS) and metadata content (e.g., thesauri).

C.2 Explain your strategy for preserving and maintaining metadata created or collected during and after the award period of performance.

C.3 Explain what metadata sharing and/or other strategies you will use to facilitate widespread discovery and use of the digital content, resources, or assets created during your project (e.g., an API [Application Programming Interface], contributions to a digital platform, or other ways you might enable batch queries and retrieval of metadata).

Access and Use

D.1 Describe how you will make the digital content, resources, or assets available to the public. Include details such as the delivery strategy (e.g., openly available online, available to specified audiences) and underlying hardware/software platforms and infrastructure (e.g., specific digital repository software or leased services, accessibility via standard web browsers, requirements for special software tools in order to use the content, delivery enabled by IIIF specifications).

D.2. Provide the name(s) and URL(s) (Universal Resource Locator), DOI (Digital Object Identifier), or other persistent identifier for any examples of previous digital content, resources, or assets your organization has created.

SECTION III: SOFTWARE

General Information

A.1 Describe the software you intend to create, including a summary of the major functions it will perform and the intended primary audience(s) it will serve.

A.2 List other existing software that wholly or partially performs the same or similar functions, and explain how the software you intend to create is different, and justify why those differences are significant and necessary.

Technical Information

B.1 List the programming languages, platforms, frameworks, software, or other applications you will use to create your software and explain why you chose them.

B.2 Describe how the software you intend to create will extend or interoperate with relevant existing software.

B.3 Describe any underlying additional software or system dependencies necessary to run the software you intend to create.

B.4 Describe the processes you will use for development, documentation, and for maintaining and updating documentation for users of the software.

B.5 Provide the name(s), URL(s), and/or code repository locations for examples of any previous software your organization has created.

Access and Use

C.1 Describe how you will make the software and source code available to the public and/or its intended users.

C.2 Identify where you will deposit the source code for the software you intend to develop:

Name of publicly accessible source code repository:

URL:

SECTION IV: RESEARCH DATA

As part of the federal government's commitment to increase access to federally funded research data, Section IV represents the Data Management Plan (DMP) for research proposals and should reflect data management, dissemination, and preservation best practices in the applicant's area of research appropriate to the data that the project will generate.

A.1 Identify the type(s) of data you plan to collect or generate, and the purpose or intended use(s) to which you expect them to be put. Describe the method(s) you will use, the proposed scope and scale, and the approximate dates or intervals at which you will collect or generate data.

A.2 Does the proposed data collection or research activity require approval by any internal review panel or institutional review board (IRB)? If so, has the proposed research activity been approved? If not, what is your plan for securing approval?

A.3 Will you collect any sensitive information? This may include personally identifiable information (PII), confidential information (e.g., trade secrets), or proprietary information. If so, detail the specific steps you will take to protect the information while you prepare it for public release (e.g., anonymizing individual identifiers, data aggregation). If the data will not be released publicly, explain why the data cannot be shared due to the protection of privacy, confidentiality, security, intellectual property, and other rights or requirements.

A.4 What technical (hardware and/or software) requirements or dependencies would be necessary for understanding retrieving, displaying, processing, or otherwise reusing the data?

A.5 What documentation (e.g., consent agreements, data documentation, codebooks, metadata, and analytical and procedural information) will you capture or create along with the data? Where will the documentation be stored and in what format(s)? How will you permanently associate and manage the documentation with the data it describes to enable future reuse?

A.6 What is your plan for managing, disseminating, and preserving data after the completion of the award-funded project?

A.7 Identify where you will deposit the data:

Name of repository:

URL:

A.8 When and how frequently will you review this data management plan? How will the implementation be monitored?