

Statement of National Need

According to the [CDC](#) 1 in 4 U.S. adults—61 million Americans—have a disability that impacts major life activities. Improving access to libraries and archives for people with disabilities is a core goal in the IMLS Strategic Plan. Disabilities are rising as an urgent topic in the field; in the Society of American Archivists' (SAA) most recent national conference, six separate sessions addressed disabilities. Recognizing the widespread need, SAA initiated a Task Force that updated and published their newly revised [Guidelines for Accessible Archives for People with Disabilities](#) in February 2019—the first major update in a decade. The year 2020 is the 30th anniversary of the Americans with Disabilities Act—an ideal time to expand practices for designing technologies to improve access. Unexpectedly, amid the COVID-19 pandemic, it's also a year when nearly all Americans are gaining new firsthand experience in what it's like to live with limited access to resources—and depending on digital tools more than ever before.

Articles and guidelines have been written on improving the archives experience for people with disabilities that moves beyond ADA compliance. In her article “Disability: Uncovering Our Hidden History” published in *Archival Outlook* in 2013, Sara White surveyed H-Net Disabilities members about accessing archives. One area that she concluded, based on feedback, that needed further study was access to websites, and in particular online catalogs and finding aids.

In addition to virtual access through websites, incorporating digital technologies in physical spaces is also a way to improve access for people with disabilities. In the article from *Archival Outlook* in 2019, “Engaging Users with Disabilities for Accessible Spaces,” Lydia Tang describes enhancements made to the archives reading room at Michigan State University, including incorporating technology, such as adding a sound dome for exhibitions to promote their sound recordings and represent senses other than sight, and working with the company Able Eyes on creating a virtual 360-degree tour of the first floor of their library.

Last year Lyris released [Lyris 2019: Accessibility Survey Report: Understanding the Landscape of Library Accessibility for Online Materials](#), which looks at how libraries manage digital content, what policies are in place, and what training is available. The survey of mainly academic libraries covered three main areas: content acquisition, content creation, and systems. This report is a useful snapshot for our project team, faculty, and students to better understand the current landscape of how libraries and archives manage digital accessibility. As the report recommends, we want to contribute to a community of shared knowledge with our project results.

The [SAA Guidelines For Accessible Archives for People With Disabilities](#), approved in February 2019, covers an important range of topics such as core values of accessibility, effective communication, physical archival spaces, and public services. It also contains a section on digital content and offers recommendations that apply to

websites, apps, social media, and electronic documents. It also points to the [Web Content Accessibility Guidelines \(WCAG\)](#), and the ISO PDF-UA, which ensures accessibility when using assistive technology. This section, while very useful, is brief, and provides condensed recommendations. Using this section as a starting point, one objective of this grant project will be to expand the guidelines to provide broader and more diverse examples of ways in which archivists can make digital content more accessible. We will look, not only at types of digital content, but various scenarios when digital content is used in an archival setting. W3-provided [scenarios and descriptions of users with disabilities](#) focused principally on screen-based assistive technologies, which are valuable starting points, but do not include the technology attitudes, archival-specific needs, collaboration opportunities and new interfaces that impact access design for people with disabilities. We will expand on this to include voice user interactions (e.g. Alexa, Siri), physical computing, artificial intelligence/machine learning, personalization and augmented reality, as well as service and collaboration models.

As discussed in the [IMLS National Digital Infrastructures and Initiatives: A Report on the 2017 National Digital Platform at Three Forum](#), librarians need to be innovators to improve usability and should take an active role in improving and shaping the user experience. The report also discusses the importance of collaboration in relation to building equitable digital communities.

It is clear from the articles and guidelines that more work needs to be done. The writings serve as inspiration for our grant proposal to look beyond legal compliance and further into innovative methods of access that make improvements not only for people with disabilities, but all people.

Today, a vast number of designers and technologists consider digital accessibility in the narrow realm of adaptive technologies and compliance with code-based standards for web and mobile. Moreover, many global technology companies do not prioritize accessibility compatibility in upgrades, new operating systems and hardware advances, making ongoing use unpredictable and burdensome, occasionally impossible. However, new opportunities in artificial intelligence, voice and gestural interfaces, collaboration, personalization, and immersive platforms (e.g. augmented reality, streaming, etc) remain out of reach for many archivists, librarians and users. Digital interfaces and functionality are increasingly integrated into the physical world, affording new ways of interacting beyond the confines of stereotypical software applications.

Increasingly, it is expected that archival content and descriptions are accessible digitally. While most archives have a digital and online presence, digital collections, finding aids, websites and apps need more attention for greater accessibility and solutions specific to the types of content and user experiences. For example, how can websites and screen readers be improved to help read the hierarchical content of online finding aids? How can archives improve website accessibility of digital collections?

What innovative adaptive technologies beyond alt tags and screen readers can be used to improve access to visual materials? What emerging technologies can improve the browsing and searching of archival content in a more accessible way? What are additional guidelines that collection management software vendors could follow when developing archival applications?

Kat Holmes in *Mismatch* states “The word ‘mismatch’ comes from the World Health Organization’s definition of disability as a ‘mismatched interaction between the features of a person’s body and the features of the environment in which they live.’ This social model of disability underscores a designer’s responsibility. (see <https://www.mentalhealth.org.uk/learning-disabilities/a-to-z/s/social-model-disability>). Every design choice either increases or decreases those mismatches between people. Mismatches are the building blocks of exclusion.” Holmes describes the spectrum and context of disabilities across the senses - from temporary to lifelong, to particular life stages. One example is restricted arm usage due to carrying groceries, a broken arm, arthritis and permanent disability. Today, across the globe, COVID-19 restrictions on movement and access, are prompting many to leverage accommodations, new forms of access and collaboration, that have been the daily experience of those in the disabled community. In parallel, a small but growing technology industry understanding of how designing with disability at the forefront, serves all users, is gaining some traction. (For example, [Why Your Phone’s Accessibility Options Are Useful for Everyone](#), New York Times 3/24/20). However, this nascent opportunity lacks industry guidelines in general, and library and archival applications in particular. Much early research and general guidelines is not tested through actual technology development and real-use assessment, especially in nascent technologies. This project aims to address this by expanding guidelines, prototyping and testing actual applications and incorporating nascent technologies.

Project Design

The project will bring together a core team of archive and library professionals, designers and design educators, and disability experts —11 people in the project team. The participants from SAA's Accessibility and Disability Section include archivists with disabilities. The Braille Institute will be a collaborator, and their experts have already advised on prior student and faculty research. ArtCenter’s Designmatters department, specializing in design for social innovation, will also advise and help with project documentation. We anticipate adding experts in other types of disabilities, such as physical, cognitive and hearing.

The overarching question to be explored will be, “**How can we improve digital technologies to better serve people with disabilities?**” An exciting related question is, “**What can we learn from people with disabilities to improve access for all people?**”

The two key assumptions for the new project, based on the results from the *Future Pasts* work are:

- Archivists and designers can benefit from collaboration, using a design methodology to improve access. The methodology consists of the designers immersing themselves into the topic (archives and special collections); creating personae; developing insights; iterating ideas, creating prototypes, and doing user testing.
- Emerging interactive technologies can improve access to archival materials

A recent demonstration of the approach is documented in the 2019 release by ArtCenter of its IMLS-funded publication, [*Future Pasts: Reimagining the User Experience in Archives*](#). The result of a year and a half long series of research and design studios, that documented emerging best practices and a portfolio of service and solution designs for library and archive professionals working with technology designers, who have a broad expertise in research, creative technology, and human factors. These design practices—and the project structure that led to their development—will be adapted for this new project.

Reimagining Access will scale the exploratory work accomplished in the prior grant period, which resulted in prototypes that address: multiple search and browsing strategies, interactive timelines, crowdsourcing, enhancing physical discovery of materials through interactive technologies, amongst other access improvements. There will be an additional lens of design for inclusion, and extending existing adaptive tools to better support users with disabilities. The project is structured on two levels. (1) Students are challenged to design solutions and develop early prototypes. (2) At a meta level, the faculty, students and archive experts extrapolate key insights from across all the projects and articulate these as potential emerging best practices. “Designing” in this context means; deepening methods of research into context, usage and participatory design; effective skill building; application of existing and potential technologies; and the development of a portfolio of strategic prototypes.

The work plan organizes the project into 5 phases over a 2-year period:

Phase 1. Symposium:

Convene approximately 25 national leaders in disability advocacy, library and archives, technology, and inclusive design, to address the topic of inclusive design for improved interactive access for diverse audiences. The day will be made up of expert panels, speakers, breakout workshops and roundtables.

Goals

- Create a community of practice to inform, evaluate and direct the development of new knowledge, effective skills and collaborations for the program. Specifically to:

- Identify strategic areas of opportunity and needs that address the national challenge of access for excluded people in the disabled community
- Develop imperatives/ principles for successful design
- Include perspectives and contributions from members of the education, design, disabled, library and archival communities
- Determine the scope and type of disabilities most appropriate and feasible for concept development
- Collate, share and disseminate existing resources (guidelines, attendee/community contacts, application examples, existing applications, etc.)
- Align project and studio direction with other initiatives in the domain e.g. SAA Accessibility and Disability Section, Rare Books and Manuscripts (RBMS) Diversity Committee, and the Digital Library Federation's new Accessibility Working Group
- Produce materials (see below) and begin dissemination and communication of outcomes

Outputs

- Proceedings
- Streaming/online video of key speakers
- Social media and web artefacts : photos, text articles, video
- Key needs, opportunities and direction for phase 2, in the form of an initial brief

Phase 2. Core Development Period

A 28-week studio (scaling the pedagogy and plan for *Future Pasts: Reimagining the User Experience in Archives*) will be led by the Co-PIs and faculty. Faculty have professional and practical experience working in the disability community, assistive technology and library/archives design. Prior to the class beginning, the advisors, PI's and faculty will develop a list of pre-class readings and assignments, visiting guests, participatory design session partners and field visits. "Participatory design" (sometimes referred to as **co-design**) actively involves all stakeholders and constituents (e.g. community leaders, partners, archivists, citizens, end users) in research and creative activities. This ensures that the project designs **with, not for**, the disabled community as well as creating useful, usable and desirable solutions. All students accepted to the studio and program will undertake IRB training.

Starting during this planning period, Sam Holtzman, PhD, Director of Faculty Development, Teaching and Learning will serve as a key advisor in establishing program learning outcomes, assessment rubrics, qualitative and quantitative evaluation metrics and monitoring throughout. As part of the project team, he will be instrumental in assessment input and monitoring throughout the entire project.

Students are invited to apply to the studio. Typically 12-15 students are accepted and the cohort is curated to include: a range of programs - from industrial and spatial

design to communication, film and interaction design, as well as those in social innovation programming in Designmatters. Selection is based on their previous professional experience, project portfolio, skills, motivation for applying, and diverse team experience. Groups, identified to ensure balanced skills and interests conduct structured, replicable working sessions and studios that reflect real-world designers/professionals being engaged by an archives/library for a discrete assignment: to research, design and strategically prototype new digital tools to improve access for people with disabilities. The team approach allows for 4-5 different areas of research and design. For example, specific groups within the disabled community, unique technology platforms, and user/stakeholder needs.

We plan on engaging with Michigan State University's Usability and Accessibility Research and Consulting unit for their IRB expertise and protocols in conducting usability studies with people with disabilities. The first part of their consulting will consist of a detailed guidance report discussing critical factors to consider when working with and for people with disabilities (specifically individuals with visual, hearing, dexterity, mobility, cognitive, and learning disabilities). The second part of their services will be usability and accessibility consulting to review student projects. They will first review proposed student projects to ensure that appropriate considerations have been made to accommodate people with disabilities and later review final project prototypes. All participating project faculty, students, and PIs will have undergone training through the MSU Human Research Protection Program.

The Core Development Period will be organized as follows:

- *Weeks 1-3: Immersion:* Designers and archivists study the context and experiences of people with disabilities in archives and special collections. This includes surveying existing tools/technologies and real-world use cases that inform current interactions and experiences. This sequence of activities results in: interviews, site visits and literature reviews, high-level personae (fictional archetypical profiles) of stakeholders and people with a range of disabilities (vision impairment, physical disability, cognitive/learning disabilities) in a variety of archival settings and use scenarios (such as an in-person reference session in an archives reading room, virtual reference through email or social media, a user search of an online catalog, an online or physical exhibition, and an archival instruction session to a class in person or through a video conferencing platform). An important facet of immersion is to think empathetically and practically about potential barriers for people with disabilities, without falling into disrespectful or disenfranchising stereotypes.
- *Weeks 4-6: Generative concept development* including personae (users), key use cases and iterative user-experience prototyping and evaluation; in a range of mediums, these prototypes allow for playtesting, user low fidelity walkthroughs and strategic development of minimum viable prototyping priorities. Several different directions within

a given topic area are developed and evaluated, with an eye toward information architecture and flow system diagrams.

- *Week 7*: Midpoint critique of concepts with key advisors/experts to identify the strongest concepts. This includes synthesis of multiple design options, evaluation against real-world and real-people needs. Priority is given to projects that address unique user needs, create generalizable models for re-use and scaling, are viable candidates for more extensive prototyping and demonstrate a clear through line of research, actionable insights and feature/technology choice.
- *Weeks 8-11*: Refine mid- to high-fidelity prototypes, conduct user testing. Each student group, under the supervision and direction of faculty, experts and PIs, leverage Agile methodology to iteratively develop prototypes that test assumptions, technologies and user experience. Technology trade-offs, innovation and user input, inform design decisions that are documented in process books, videos and media.
 - *Weeks 12-14*: User Experience Prototypes (in the form of relevant user interfaces, apps or online services, as relevant) presented for evaluation/assessment by advisors/experts. The top 1-3 prototypes are selected for more advanced development. Final documentation of process is completed. Methods and working prototypes are collated and assessed for: fulfillment of design brief, applicability and ease of use, innovation for stakeholder needs.
 - *Weeks 15-28*: Advanced development of prototypes with more in-depth testing, refinement and production.

Selected projects are brought into a "Development Studio." This approach has been used successfully in the past to bring projects to production level completion. Technology experts for specific platforms (e.g. VR, web, physical computing, adaptive hardware or voice) mentor students through unique user experience and technology choices and innovation. Onsite/field testing allows for ongoing participatory design and user-testing to ensure that applications are both usable and fit for purpose.

Core Development Phase Outputs

- Syllabus with assignments, resources, references
- Course learning outcomes for studio: e.g. what did we learn about designing for people with disabilities that we did not know when we started?
- User experience deliverables: these will be shared with librarians, archivists and designers as a model and reusable case studies for their own institutional initiatives.
 - Research insights on real-world experience of archivists, disabled participants and specific tools e.g. voice interaction for partially sighted
 - Personae- Enlarging our existing fictional personae from *Future Pasts: Reimagining the User Experience in Archives* to create multidimensional

stories of archive use for people with auditory, physical, cognitive, visual and speech challenges.

- User journeys, wireframes, information architecture
- Prototypes in relevant technologies (for example: applications, website and mobile services, adaptive tools or VR)
- Documentation through film, media, writing and process books
- Insights and guidelines for archivists assessing, building or acquiring new technologies on usage, implementation and real-use by people with disabilities
- Samples of prototypes for archivists and designers to serve as blueprints and foundations for their own institutional initiatives.
- Prompts to the technology industry, including archival application vendors, for new features, services and technology applications.

Phase 3. Synthesis & Assessment:

The deliverables from the Core Development Period will include a number of relevant insights into designing the user experience for people with disabilities. These will inform the writing of new SAA guidelines. The project team has expertise that will be integral during this phase, including members of the SAA Accessibility and Disability Section who were co-authors (among other members) of the *Guidelines for Accessible Archives for People with Disabilities*. The priority will be to distill the lessons learned into simple, practical, and easily understandable tips written for a broad audience. The SAA Guidelines are written in this user friendly style and the new content will be written to match. We will also be looking closely for examples of how designing for people with disabilities can improve access to archival materials for everyone.

Phase 4. Creation of final deliverables:

After synthesizing and assessing the core project outputs, the project team will:

- Write new guidelines for key stakeholders to improve accessibility of digital content:
 - Archivists, and librarians; better prepare materials for access e.g. new types of metadata and coding for access by new technologies e.g. voice UIs, machine learning, VR/AR and streaming.
 - Designers and Institutions; tools, guidelines and methods for collaboration to leverage deliverables and models outlined above.
 - Design educators; how to prepare designers to work professionally with accessibility at the heart of their work.
 - Technology industry; how to shift from high level human interface guidelines into specifics of archival needs and emerging interfaces.

- Select final photo and video documentation of the symposium, design studio, student work, and project meetings. These selections will be cataloged and added to the Archives and some will be used for the project website and video.
- Create short project video featuring highlights of the guidelines, project results, and prototypes.
- Create project website that includes project description and assets (photo and video documentation, new guidelines, and short project video). The website will be part of the Designmatters website's Project Archive.

Phase 5. Dissemination:

It is our hope that the project results create more discussion on the topic and collaboration among institutions. We plan to widely reach the library, archives, and design communities with the project results in the following ways:

- Submit new guidelines to SAA for approval to be added to existing guidelines.
- Widely share project website (which will contain a link to SAA's website), with additional sharing of video content on YouTube.
- Present at archival and design conferences, such as SAA, Digital Initiatives Symposium, and CUMULUS. We will also speak to groups, such as RBMS Diversity Committee Reading Group, which we have attended and been in discussion with about this project. Ideally, we would partner in the presentations with other institutions that are embarking on similar projects to improve accessibility in order to create more discussion and ideas.
- Share findings with various LIS organizations' social media, newsletters, and listservs, such as American Library Association (ALA), Lyrasis (with over 1,000 higher education library members across the U.S.), SAA, Society of California Archivists (SCA), Digital Library Federation, and the Library of Congress' Teaching with Primary Sources group.
- Share findings with archival application vendors, such as Artefactual Systems and ArchivesSpace so that more considerations and improvements can be made at the development stage.
- Share findings with the Braille Institute and other organizations specializing in people with disabilities.
- Add project assets, descriptions, and project finding aid to the ArtCenter Archives online catalog. Results from the online catalog appear in Google searches, which increases discovery. In addition, the records and digital objects will be shared on Calisphere and the Digital Public Library of America (DPLA).
- ArtCenter will assist in sharing the guidelines with the industrial design sector, a large and highly relevant constituency typically operating in separate silos from archivists and librarians. ArtCenter has a strong, worldwide digital network of

designers that includes 44,000+ followers on LinkedIn (with an average of 5,000 reader impressions per post), and 65,000+ followers on Facebook.

Diversity Plan

The voices of people with disabilities will be central throughout the project. Through the symposium and the design studio, we will be identifying communities that we will work with and types of disabilities. We anticipate they can possibly include people with visual and hearing impairments, physical, cognitive disabilities, and invisible disabilities. After studying accessibility issues related to accessing archives and special collections, design students will work in groups to select one community to design prototypes for each class group.

The faculty and students will work with the existing network of college associates, project advisory board, subject experts, and knowledge partners to describe, screen, and identify participants for user testing. Some of the ArtCenter faculty already have experience working with designing assistive devices for people with disabilities. We will also reach out to the Pasadena ADA Network and the Los Angeles County Commission on Disabilities to help identify participants and groups.

National Impact

In 2019 both the *SAA Guidelines for Accessible Archives for People with Disabilities* and the *Lyrasis 2019 Accessibility Survey Report: Understanding the Landscape of Library Accessibility for Online Materials* were published showing that there is increasing momentum in the library and archival communities to address issues of accessibility. The Lyrasis report showed that there is more need for training in the field. SAA has been devoted to this topic for more than a decade and has an ongoing Accessibility and Disability Section committed to advancing improvements and awareness for the long term. By expanding SAA's national guidelines to include more information on making digital content more accessible, and through federal support and promotion from IMLS, we are confident that the generated knowledge will benefit a substantial audience across America and beyond.

We feel this is an optimal time to embark on this project. It comes in the wake of a national stay-at-home crisis in which Americans in all fields have had to struggle to learn new forms of access via technology. Mainstream America has in some ways experienced the types of frustrations that the disabled community has faced all along. In addition to increasing awareness, archives and special collections are adding more digital content online and incorporating digital technologies to make collections accessible. The dissemination of our project results, both in the forms of new guidelines and prototypes, will educate and inspire other archivists and librarians to become advocates in their own institutions to create accessibility policies and improve their digital access.

Schedule of Completion

Work Chart Year 1 (September 2020-August 2021)	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Kick-off session with project team to discuss the project												
Work with PhD specialist to establish learning outcomes, assessment rubrics, and metrics												
Plan studio/core development period (CDP)												
Plan symposium												
Hold symposium												
CDP: Immersion (weeks 1-3)												
CDP: Generative Concept Development (weeks 4-6)												
CDP: Midpoint critique (week 7)												
CDP: Refine mid-high level prototypes, conduct user testing (weeks 8-11)												
CDP: User experience prototypes (weeks 12-14)												
CDP: Advanced development of prototypes (weeks 15-28)												



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?