The University of Washington proposes the project, "Leveraging Use of Open Data by Public Library Staff for Community Benefit." This proposal is for an IMLS National Leadership Planning Grant that will take place over a one-year timeframe. The purpose of this planning grant is to examine the data needs of public library staff and determine which of those needs can be met through the use of open data to support effective program, service, and partnership planning. Our key research question asks: what are the current barriers among library staff to using open data for planning and decision-making? We will answer this question through qualitative interviews and surveys and through an in-person workshop. While this planning grant will generate crucial findings for the public library field, we will also use it to develop a future project grant for building an open-source open data platform for public libraries. We have discussed these plans and have received encouragement and support from these key organizations in the public library field: Public Library Association, Washington and Colorado State Libraries, the Civic Switchboard Project, and individual public libraries. This support will help us to draw upon local and national expertise to solicit diverse viewpoints from a broad range of public libraries across differing geographic, community, and demographic settings.

Statement of National Need
During the summer of 2019 Karalyn Ostler, an intern for the Open Data Literacy project (IMLS-RE-40-16-0015-16) under the direction of Dr. Nicholas Weber, worked with branch managers at the Seattle Public Library to answer questions they had about their service communities using open data (Ostler, 2019). Ostler created an open-source, map-based online dashboard (kostler.shinyapps.io/SPL-Seattle-Census-Data/) to showcase American Community Survey data at the census tract level layered on top of branch locations. Ostler's dashboard prototype demonstrated to us that public libraries have a need for specific data about their communities. For example, library staff might ask: "How many students attend public versus private school in our service area?" "Which areas of our community face challenges in obtaining healthy food consistently?" "Which schools face challenges in reaching third grade reading levels among their students?" All of these questions can be answered through the use of open data, but using that data remains a challenge.

President Obama's 2013 Executive Order "Making Open and Machine Readable the New Default for Government Information" (Exec. Order No. 13642) paved the way for many state and city governments to implement open data policies (Sunlight Foundation, n.d.). Today library staff have the potential to access large amounts of federal, state, and local data to aid them in answering questions about their communities such as: Are our library's services evolving to meet current community members needs? Do our programs address current and relevant challenges in our community? Are we partnering with relevant community organizations? Yet the process of finding, curating, and understanding this data, alone or in combination with internal operational data, is complex and prevents many public library staff from taking advantage of this public resource. Libraries may not have the capability, capacity, or resources to overcome the barriers to open data use. As exemplified by Ostler's work, employing a user-centered, collaborative approach, we can design a system that reduces or eliminates these barriers and will aid libraries in understanding their communities.

National Significance
Increasingly public libraries are shifting from an internal focus on collections development and technology investment, to an external focus on community engagement and community-building (Edwards, Rauseo, & Unger, 2013; American Library Association, 2014; American Library Association, 2012). ALA's 2019 State of American Libraries report (American Library Association, 2019a) found that the number of programs offered in public libraries and corresponding attendance rates are on the rise, and while this is an exciting development within the public libraries field, funding is not expected to be sufficient to meet the needs of programming demands. The most recent IMLS

Public Libraries Survey annual report (The Institute of Museum and Library Services, 2019) indicates slow recovery when compared to financial data between 2009 to 2013.

With the insecurity of public library funding and the increased interest in community engagement, libraries need to be strategic in the development of programs, ongoing core operational services (e.g. collections development, reference, public access technology), and partnerships with organizations whose goals are aligned with the library (e.g. arts organizations, youth services, public health). Open data is currently underutilized by public library staff but is a rich resource for prioritizing the most needed programs and services in a community. We will investigate the use of this freely available resource to help library staff answer questions about their community and align programming, services, and strategic partnerships to specifically address issue areas (see The National Neighborhood Indicator Project (NNIP) for examples (n.d.)) in their community. Public libraries can benefit from using practices that other neighborhood or community-based organizations have employed in relation to data to determine and address community needs.

Existing Literature & Practice
In efforts similar to Ostler's project, other libraries have successfully used open census and American Community Survey data to better target their collections (LaRue, 2004), and to determine locales in need of additional outreach (Mcconnaughy & Wilson, 2006; Socha et al., 2012). However, as noted earlier and evidenced by the studies cited above, using open data for this purpose is complex. Researcher Nim Dvir (2017) identified challenges to using open government data from information [dis]organization to human computer interaction issues. Proprietary software exists that may serve this need, but those products, such as Gale Analytics, Orangeboy Savannah, or CIVICTechnologies Community Connect are out of reach financially to most public libraries and can be time-consuming to learn and use.

Our project complements other data-driven initiatives within the public library field. For example, PLA has built their Leadership Academy around the philosophy that to be effective leaders, librarians must "shift their libraries from an internal approach—focused on organizational operations—to an external approach—focused on community needs" (American Library Association, 2012). PLA recently released a Professional Development Theory of Change (American Library Association, 2019b) containing four areas of professional development, including a "Data-driven Leaders" area. PLA has invested heavily in making the adoption of outcome measurement a standard practice within the public library field through the Project Outcome initiative (American Library Association, 2016). To date, this initiative has collected over 300,000 patron responses from over 1,700 public libraries in the United States. Other public library organizations are also supporting this movement by helping library staff understand how to focus on community needs within certain issue areas. For example, Urban Libraries Council launched Edge 2.0 in March 2019, an evolution of the Edge program (Urban Libraries Council, n.d.) which is a set of resources that "helps libraries of all sizes align their technology resources to community priorities." More broadly, IMLS has supported data initiatives within the public library field including Research Institute in Public Libraries (RIPL) (Colorado State Library & Colorado Library Consortium, n.d.) which began as an event to help participants "learn practical, strategic methods of gathering, analyzing, and using data for planning, management, and communicating impact." These initiatives are a sample of current efforts within the public library field to improve the use of data in aligning with and meeting community needs. Each complements our intent to assist public libraries with making better use of open data to meet local community needs.

Other data focused projects, such as Measures that Matter (COSLA, n.d.), Open Data Literacy (n.d.), Civic Switchboard (n.d.), and STEAM-GIS (LG-11-19-0127-19, 2019), have focused on public library

involvement in the open data ecosystem but have not thoroughly investigated the *use of* open data by public library staff for community needs assessment. Civic Switchboard has perhaps come the closest to this line of inquiry by producing a guide (Brenner et al., 2019) for public libraries that includes a short section on Using Civic Data but as they write in their letter of support for our project, "one of the roles [we] consider to be currently underdeveloped, is libraries as users of civic data. In this role, use of civic data can help libraries better understand their constituencies, design responsive and community-centered programs and services, and make informed strategic decisions." We can develop this library role and add to the knowledge-base begun by the projects above.

Phase of Maturity & Project Category
This is a planning grant submitted in the Community Catalyst category to explore the use of open data to strengthen the local relevance of public library programs, services, and partnerships. We believe that a clearer understanding of the needs and issues within a library's service population will allow libraries to better tailor offerings to their community. This project is in the exploratory phase of maturity because we seek to further understand the opportunity and the needs of our target community, public library professionals.

Project Design
We will complete our one-year planning project in four phases. In Phase 1 we will focus on understanding what questions public libraries seek to answer about their communities and what barriers prevent them from finding answers through semi-structured interviews and a survey. In Phase 2 we will map existing open datasets to the questions identified in Phase 1 and prioritize which dataset-question pairs we will use in Phase 3. In Phase 3 we will hold an in-person workshop with public library staff to further explore questions and corresponding datasets, and use a participatory prototyping process (Davis, 2020) to clarify user needs and priorities for a future open data platform. In Phase 4 we will create a plan for developing a data platform to overcome the barriers to open data use identified in earlier phases.

The study population for this planning grant is primarily public library staff with additional information drawn from staff in supporting organizations (e.g. state library agencies and open data projects). Our intent is to provide the public library field with resources for overcoming challenges to utilizing open data in planning programs, services, and partnerships. This intention grows out of preliminary research conducted in the Open Data Literacy project in which public library staff expressed a desire for information and data to help them plan services. The intended beneficiaries for the grant outputs are public library staff, administrators, and state library agency staff.

Our project is centered around collaboration with the public library field, to ensure that their perspectives and contributions are incorporated into the project throughout all of the project phases. Their input will drive the development of the in-person workshop activities and the plan. The project is also designed to be iterative in nature so that each phase builds upon and incorporates findings and stakeholder feedback from the previous phase/s of work and stakeholder feedback at multiple points. Each project phase will culminate in the dissemination of artifacts and findings and opportunities for feedback from participants. By centering the project design on direct solicitation and engagement with the target community and focusing on recruiting a diverse group within our target community, we will consider multiple perspectives and build consensus throughout the course of the project.

Project Design Summary			
Primary Activities	*Participants*	*Project Purpose*	*Outputs for Field*
Semi-structured interviews	National - 25 public library staff, state library agency staff, and open data project staff	Determine issue areas, potential questions about community, and potential data to analyze	Synthesis of interview findings identifying priority issue areas and key questions across groups
Workshop Participant Survey	State (WA) - 18 public library staff	Prioritize issue areas & inform development of prototyping prompts used in workshop activities	Not applicable
Dataset Analysis	Not applicable	Map open data datasets to issue areas and questions identified in interviews and surveys	Summary report including mapping methodology, selection criteria, and prioritization of open datasets
Participatory Paper Prototyping Workshop	State (WA) - 18 public library staff	Identify and document most promising paths to pursue for further development	Summary report from workshop with high-level findings + digital artifacts of paper prototypes
Develop Plan	National - Participants from Phases 1-3 and technical expert	Build consensus on next steps for incremental platform development	Plan with recommendations for building an open source open data platform

Dissemination and Engagement Activities for Project Outputs
Each phase of the project will culminate in dissemination and engagement activities (e.g. webinars, conference and poster sessions) to project participants and stakeholders to share and solicit feedback on key findings, resources or artifacts, and next steps. All resources and artifacts will be made available with an open license. In addition, we will seek to disseminate through events with other stakeholders, such as WebJunction, Association for Rural and Small Libraries (ARSL), Public Library Association (PLA), and Chief Officers of State Library Agencies (COSLA) as appropriate or requested. We will attend conferences and events where we will disseminate findings about the project. Organizational support from TASCHA and the iSchool will also be provided to assist with dissemination to online audiences through websites, a project microsite, and multiple social media channels.

Detailed information about the sequence and timing of the activities within each phase is presented in the "Schedule of Completion".

Phase 1
Participants | We will gather information through two different mechanisms to inform future phases of the project work. The first mechanism is a semi-structured interview with a sample of 25 people drawn from a national pool. The second mechanism is a survey administered to a sample of 18 public library staff from Washington State (or nearby areas) who will participate in an in-person workshop.

We will schedule and conduct at least 25 semi-structured interviews with staff who work in or support the public library field. This will include a mixture of public library staff, state library agency staff, and open data project staff. We are including state data coordinators and open data project staff in this group because they work closely with multiple public libraries and can provide an additional perspective. 20 of the interviews will be conducted with public library staff. The interview sample will be a convenience sample drawn from the existing professional networks of the researchers and then augmented by the networks of the state library agency staff to recruit a diverse public library sample. We will include public library staff from communities representing different geographical locations, densities (e.g. rural, suburban, and urban), service area population sizes, and community socio-demographics.

Additionally, we will administer a survey to the 18 public library staff who will participate in our workshop in Phase 3. These participants will be drawn from Washington State or nearby areas. As with the interviewees, our participant sample will be drawn from a diverse sample of public libraries. We will engage with the Washington State Library to ensure their unique knowledge of the state's public libraries is used to obtain the desired diversity among the sample.

Content | The interviews and survey will be primarily designed to answer the following high-level questions: Who makes up your community (residents, commuters, others)? What information would you like to know about the community? What issues or challenges do you see in the community currently? Where do you seek out information about your community? Public library staff will address questions directly while interviewees who work outside of a public library will provide information about issue areas that they are hearing about in their work with public library staff. Issues and challenges will later be classified into issue areas using the National Neighborhood Indicators Project's (n.d.) classification of issue areas (e.g. affordable housing, food & nutrition, school readiness) because their mission to "[develop and use] neighborhood information systems in local policymaking and community building" (n.d.) complements our project and was recommended to us by the Civic Switchboard team. We will also ask for examples of more specific questions or trends that the staff would want to understand within the issue areas for use in the next phase. Questions will also be included to understand potential political, organizational, or cultural barriers to using data in the envisioned manner.

In addition to the high level questions noted above, the survey will identify specific issue areas of interest to workshop participants so that we can prioritize which issue areas will be the focus of the workshop. We also will include questions about workshop participant's current experience, skills, and capacity in regards to using data to answer questions about their community within the issue areas. The survey will be conducted using Qualtrics, a survey platform available through an institutional license.

Analysis & Preparation | We will record interviews and collect survey responses with participants' consent and in accordance with IRB requirements. We will analyze interview transcripts and open-ended survey questions using an inductive process of qualitative thematic analysis to uncover issue areas and specific questions about the library community. We will analyze quantitative survey

responses using tools available in Qualtrics to determine the range of responses and the mean and median responses. We will then select up to ten issue areas, determined by the priority assigned by the interviewees and survey participants to guide the open data assessment in Phase 2 and the development of the workshop exercises in Phase 3. Once the analysis is complete, initial findings will be shared with the interview participants for feedback and revision.

Phase 2
Analysis & Preparation | Using the ten issue areas identified in the Phase 1 analysis, we will search for relevant open datasets on civic open data portals and through open data initiative literature. For example, the following datasets may be useful: USDA ERS Food Access Data (United States Department of Agriculture, 2019), Centers for Disease Control and Prevention (CDC) Behavioral Risk Factor Surveillance System (Centers for Disease Control, 2019), The United States Small-Area Life Expectancy Project (USALEEP) (National Association for Public Health Statistics and Information Systems, n.d.). We will map open datasets to the corresponding ten issue areas.

The next step will be to assess whether the datasets meet certain criteria such as:

- There is a sufficient level of detail in the dataset
- The data is up-to-date
- The data is licensed for sharing
- The source of the data is trustworthy
- The data is updated with an appropriate frequency
- The data spans a sufficient date range
- The data coverage is national

Focusing on the datasets that meet the most criteria we will assess the usability of the dataset to address issue areas and, if possible, specific questions within the issue area (e.g. the issue area is School Readiness; the question is Are third graders meeting reading levels). This process will result in a public resource that maps datasets to issue areas that will be useful for the open data and public library fields.

At the conclusion of this phase we will have a curated collection of datasets to demonstrate to workshop participants how open data can answer questions about their communities. We will also openly publish our mapping technique and dataset inclusion criteria for library staff, researchers, and others to replicate our process.

Phase 3
Participants | In this phase of the project we will conduct an in-person workshop with 18 public library staff from a cross-section of public libraries in or near Washington state (due to travel funding constraints). Workshop participants will be drawn from communities representing different geographical locations, densities (e.g. rural, suburban, and urban), service area population sizes, community socio-demographics, and roles within the library. We will engage with the Washington State Library to use their knowledge of the state's public libraries to obtain diversity among the participants. As described earlier, each workshop participant will have completed a survey to help us identify issue areas and specific questions for exploration, and to provide information on experience, capacity, and skills related to data use and analysis within their roles. Participants will be supported through the use of stipends to cover costs related to travel, substitute staff, or other barriers that might otherwise prohibit their participation. The location of the workshop will be chosen to best accommodate the largest number of participants and to fit within budgeting constraints.

Content | Phase 3 will address the question, "how can open data best be presented to inform libraries about their communities?" We will use a participatory prototyping process (Davis, 2020) to uncover user needs and priorities for a future open data platform. The processes used in the workshop are not focused on designing the system but rather to provide insights into the tasks and interactions users see as a priority in a potential system. The workshop will have multiple prototyping sessions, each built around a set of prompts, and designed for small groups of 4-5 participants. The sessions will be iterative in nature. Each prototyping exercise will focus on an issue area (e.g. food insecurity, persistent health conditions, school readiness) identified in Phase 1. The groups will have a note-taker to capture "out loud" thinking and a facilitator to prompt participants to address specific aspects of the prototype. Facilitators may probe participants on potential technical, organizational, or cultural barriers to using the prototype or components of it. As part of each prototype session, the small groups will actively engage with each other's prototypes through a "gallery walk" exercise. This exercise provides an opportunity to reflect on the experience of the other groups and incorporate that into their final prototype design while also providing valuable information that will inform the plan developed in the final phase of the project.

Analysis & Preparation | Following the workshop, we will analyze the notes and artifacts using an affinity mapping process. Affinity mapping is a method used to find patterns across disparate sources of information and draw out key themes or categories and will be applied to the paper prototypes, small group notes, facilitator observation notes, and gallery walk summaries. All of the data will be sorted into categories and subcategories to derive and describe user needs. This will be completed by the researchers in collaboration with a small group of colleagues. This process will provide a method for prioritizing potential development opportunities in the plan developed in the next phase.

Phase 4
Participants | A group of project participants and consultants with technical expertise will be assembled to provide feedback on drafts of the plan. Technical experts will be drawn from the University of Washington, such as Center for Studies in Demography and Ecology (csde.washington.edu). We have allocated four months for Phase 4 to allow for 3 cycles of iteration on drafts.

Content | We will draft a plan which includes findings from the first three phases and a roadmap for creating a data platform. Virtual meetings with the participants listed above will be held every 3 weeks. Meetings with individuals or a smaller group to get feedback on specific aspects of the plan will happen as needed. This process will provide multiple opportunities for feedback on the full range of issues related to the development of the open-source open data platform, including technical, organizational, and cultural challenges identified in the project phases.

Analysis & Preparation | We will use the information gathered from public library staff and the supporting organizations to design a plan for moving this project forward into the platform creation stage. The plan will be used to develop a project grant proposal to develop replicable models of how public libraries can use open data to explore and understand their communities and then develop programs, services, or partnerships using open data. The plan will also identify areas for further research or potential projects that the public library field could collaboratively undertake.

The project design ensures that the plan will incorporate viewpoints from a variety of staff working at the intersection of public libraries and open data. Dissemination activities focused on the plan will also serve to increase awareness among the public library field of the potential for open data to guide the development of programs, services, and partnerships. It will identify roles for various stakeholders

from individual public libraries, to state library agencies, to research groups, specifying how they can contribute to the development process. The plan will include a 3-year plan for a structured, achievable path to a mature and operable platform.

Project Staff
The project team is comprised of:
- Chris Jowaisas, Senior Research Scientist, Technology & Social Change Group, Information School, University of Washington, who will serve as Project Director (PD)
- Bree Norlander, Data Scientist with the Technology & Social Change Group and Project Manager for the Open Data Literacy Project (IMLS-RE-40-16-0015-16) at the Information School, University of Washington.

The project team has extensive experience in working with public libraries on data initiatives, including serving on the Public Library Association's Measurement, Evaluation, and Assessment Committee and with open data through the Open Data Literacy project; Chris Jowaisas has over 15 years of experience in developing, implementing, and evaluating state, national, and international grant-funded projects focused on technology implementation in partnership with public libraries. Jowaisas has designed, implemented, and evaluated in-person workshops for public library staff on multiple projects.

Bree Norlander has worked in public and academic libraries, has taught data science to graduate students and through The Carpentries, and has three years experience managing the IMLS-funded project Open Data Literacy (ODL), where she connects students, researchers, and public libraries in collaboration around open data. She has extensive experience with data curation, data analysis, and data platform design.

The project team will meet regularly to ensure that overall project activities are on track with the proposed schedule of completion. The Project Director will meet with the Information School Research Services Grants Specialist at least monthly to track project costs and budget. The project team will utilize web-based collaboration platforms with which they have extensive experience to track project progress, communicate with potential participants, and disseminate project results. TASCHA's Communications Specialist will leverage existing communication resources (e.g. social media, website, blog) to disseminate project outputs to the general public.

Measurement of Project Progress
As this project is in the "exploring phase" of maturity in the IMLS Grant Model, the measure of performance will be the completion of phases and corresponding deliverables. Feedback and engagement with project participants is specifically embedded within the project design in the form of interviews, surveys, and discussion.

Direct engagement with the target community will occur throughout the project providing an additional mechanism for the team to evaluate whether the project activities are reaching their intended objectives. Formal feedback mechanisms will include an evaluation of workshop participants to examine whether the intended outcomes were achieved through the workshop.

Diversity Plan
The project design ensures that the needs and perspectives of our target community will drive the development of the project activities. The participants will have multiple opportunities to contribute to the design of the project, most notably during Phase 1, Phase 3, and Phase 4.

Through our collaboratively-driven project design, we will actively solicit public library staff involvement from communities that include diverse and underserved populations. When possible, we will choose public library staff that are members of those diverse and underserved populations themselves, but also recognize that due to the lack of diversity in the public library profession we will not always be able to do so. An active focus on including viewpoints from diverse or underserved populations will ensure that the prototypes utilized in the workshop and included in the plan will address challenges important to those communities.

Statement of National Impact

We were inspired to plan this project after seeing the impact that Ostler's (2019) community-level open data dashboard had on Seattle Public Library (SPL) front-line library staff. Ostler designed a data platform prototype that overcame the barriers to open data use and SPL branch managers were able to answer questions and gain insights about the community they serve. Providing data that allows libraries to shift to a focus on community needs is one of the primary benefits of the envisioned open source open data platform. Such a platform could be built to meet a variety of issue areas and by directly engaging with public library staff we will determine the priorities for development of the platform.

We assert that scaling this access to open data can lead to similar impact in the 17,000+ communities served by a public library in the United States. Our project will explore which issue areas are current priorities and are suitable for addressing with open data. This research will set the stage for a future project grant by delivering a plan and roadmap for the design of an open source open data platform. It will meet the Community Catalyst program goal of increasing the capacity of libraries to serve as catalysts contributing to the well-being of their communities, by:

- Developing strategies to overcome barriers to using open data by public libraries at scale
- Providing preliminary research into user needs and priorities for future development of an open source open data platform
- Demonstrating that open data can be used to identify and assist public libraries in strengthening their work with collaborators

We will achieve national impact through a project design that includes collaboration with public library staff and a broad dissemination strategy. As described earlier, we will engage with state or national partner organizations to disseminate the interim findings and final plan developed in the phases of the project. Potential partners in these dissemination efforts include national organizations like WebJunction and Public Library Association or state library agencies. This will include multiple webinars with national reach and a communications strategy that will be implemented throughout the project to build awareness and engagement on a national basis. Project staff will submit articles to public library trade publications, academic journals, and conferences. We will also maintain a project website and disseminate findings through social media and blogs. All project outputs will be made publicly available with an open license so that others may use them in their setting to meet their needs.

Preliminary analyses of the qualitative and quantitative data from the planning grant will set the stage for a more extensive project grant. The future project grant will emphasize phased development across multiple issue areas and broaden the number of participants to expand the activities for testing and validating designs on an ongoing basis. We anticipate sustaining the project by using the results from this planning grant to seek funding to develop a data platform.

Phase	Task	MONTH 1	MONTH 2	MONTH 3	MONTH 4	MONTH 5	MONTH 6	MONTH 7	MONTH 8	MONTH 9	MONTH 10	MONTH 11	MONTH 12
Phase 1: Interviews & Surveys	Seek IRB approval for interview activity, workshop participant survey, and workshop activity	▓											
	Develop interview and workshop participant survey instruments	▓											
	Recruit and schedule interviews	▓											
	Initiate interviews & surveys		▓										
	Transcribe data & begin analysis			▓									
	Finish interviews, transcription, and finalize analysis				▓								
	Dissemination activities					▓							
Phase 2: Dataset Mapping	Formalize criteria for assessment of datasets		▓	▓									
	Assess open datasets				▓	▓							
	Map open datasets to issue areas						▓						
	Dissemination activities						▓						
Phase 3: Conduct workshop	Recruitment of potential workshop participants	▓											
	Finalize workshop participant invites / confirm attendance		▓										
	Develop draft agenda and design of workshop activities					▓							
	Finalize workshop agenda / activity development based off of survey and interview data						▓						
	Conduct Workshop							▓					
	Analyze data generated from workshop							▓					
	Dissemination activities								▓				
Phase 4: Develop Plan	Draft initial outline for plan; solicit feedback from collaborators								▓				
	Conduct 1st group meeting for feedback & review of draft									▓			
	Incorporate feedback into outline and complete 2nd draft									▓			
	Conduct 2nd group meeting for feedback & review of draft										▓		
	Incorporate feedback into proposal										▓		
	Develop minimally viable product from paper prototypes											▓	
	Conduct 3rd group meeting for feedback & review of draft											▓	
	Incorporate feedback into proposal											▓	
	Dissemination activities												▓

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?