

## Abstract

The lead applicant is the University of Wisconsin-Madison (UW). This collaborative project will involve the Maker Education Initiative (Maker Ed), a project Tides Center. Together, UW and Maker Ed will organize a National Forum: **Research and Assessment in Makerspaces**, which will bring together leaders in maker-centered learning, especially those in library services, to review and build on current research, culminating in a white paper and serving as a springboard to launch the “Research, Evaluations and Reports” section of Maker Ed’s Resource Library [makered.org/resources], a robust and freely accessible online repository that will contain relevant research, reports, white papers, and research-to-practitioner links for maker education, with a particular focus on libraries coming from this project.

The overarching goal of the National Forum is to distill current research relevant to maker-based learning experiences in libraries, identify gaps and communicate the research in a way to be useful for library practice. This will further build the foundation of research and theory on which library-based maker programming is designed, facilitated and assessed. The target audience of the National Forum will include library practitioners working on maker programs from rural, suburban and urban libraries from a broad sample of geographic regions. In addition, researchers, evaluators and policymakers whose work it is to study, design and support maker-based learning experiences in libraries.

This 12-month (December 1, 2018 – November 30, 2019) project intends to address the IMLS strategic goal of promoting lifelong learning through enhancing library resources that support the development of critical literacies (like digital, computational and civic through making) and enhancing cross-disciplinary and inquiry based methods of learning in libraries (IMLS, 2018). Key deliverables and outcomes from this project will include: 1) planning, organizing and execution of a national forum on research and assessment of making and makerspaces in libraries, 2) an annotated bibliography and white paper that will bring together themes, findings and gaps in research related to makerspaces and libraries, 3) a resource page on the Maker Ed web site to share the annotated bibliography and white paper, 4) additional dissemination activities such as presentations, panels and meet-ups at regional and national library conferences to share what was learned from the Forum

In the long term, we intend for these resources to be freely available for practitioners to help inform the development, refinement and evaluation of maker-based learning experiences in libraries around the country.

## Proposal Narrative

The University of Wisconsin (UW) respectfully requests \$99,651 to support a National Forum to be held in partnership with the Maker Education Initiative (Maker Ed), a project of Tides Center. The Forum: *Research and Assessment in Makerspaces* will bring together leaders in maker-centered learning, especially those in library services, to review and build on current research, culminating in a white paper, annotated bibliography and serving as a springboard to launch the “Research, Evaluations and Reports” section of Maker Ed’s Resource Library [makered.org/resources], a robust and freely accessible online repository that will contain relevant research, reports, white papers, and research-to-practitioner links for maker education.

### I. Statement of National Need

This Forum proposal is responding to the rapid growth of educational makerspaces and their emergence in public libraries, providing research attention to the pivotal topic of evidence of learning and engagement. Making<sup>1</sup> has emerged as an engaging entry point and activity for inquiry-based learning in libraries (Bowler & Champagne, 2016; Koh, & Abbas, 2015). As the current expansion of makerspaces and maker programs in the U.S. continues (Anderson, 2012; Hatch, 2014), formal and informal educators are increasingly enthusiastic about applying this educational innovation in their own spaces, workshops and programs.

Related to this enthusiasm, more and more libraries are offering learning experiences through making and makerspaces. Library Journal surveyed over 7000 public libraries in the United States and Canada about making two years ago and found 89% of respondents claimed to offer some kinds of maker activities (Dixon, 2017). This past spring, the Institute of Museum and Library Services (IMLS), in partnership with the Children’s Museum of Pittsburgh and thought partners like Maker Ed, released a framework to support learning in museum and library

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<sup>1</sup> The terms “making” and “tinkering” are currently used in multiple ways. Within this proposal, we define making and tinkering under the same umbrella of constructionist-inspired, hands-on learning experiences.

makerspaces. As this momentum continues--as well as that for hands-on learning experiences in general -- practitioners need ways to access and interpret the available research and apply it to their learning environments. This is especially true in libraries, where makerspaces are continuing to expand and are often becoming cornerstones of library -- and ultimately, community -- programming. Integrating maker learning opportunities within library services are repositioning libraries to truly be centers where 21st-century literacies are fostered, developed, and supported. With focused research findings that support and propel their work forward, libraries will be able to simultaneously scale and deepen their efforts, for both the public as well as in partnership with community organizations

Libraries, in particular, as publicly supported organizations, need research to support the flexible and productive adaptation of making to the community context in order to be able to identify and support educational innovations that have a lasting effect on learners. Libraries also need research and evaluation data to buttress the arguments for maker programs as effective for learners as well as our community's learning ecologies. This Forum aims to address both of those needs specifically.

The mission of the public library "is to improve society through facilitating knowledge creation in their communities" (Lankes, 2011). Broadly speaking, American public libraries have achieved this goal through three means: (1) the information they make accessible, (2) a focus on literacy and its transformative potential, and, (3) the public learning spaces that they provide (Wiegand, 2016). Makerspaces in libraries merge these three aspects of library service into a single, powerful crucible for developing personal and social awareness with regard to the creation and use of technology, albeit through the lens of 21<sup>st</sup> century literacies, media, and technological artifacts. Libraries are different than museums (libraries are free to all, and grounded on the principles of equity of information access and a focus on literacy within the community) and different than schools (not compulsory, no grades, no curricular standards). By their very design, after-school programs in libraries facilitate ease of entry *and* ease of exit. How exactly can a voluntary, library program inspire "stick-with-it-ness", so essential to facilitating the deeper questions about making? (Or "geeking out", as termed by Ito et al, 2010). These are among the questions that are key to furthering and realizing the potential of library-based maker

educational programs.

UW and Maker Ed have been at the forefront of the research at the intersection of making and learning. For example, Maker Ed contracted with SRI International in 2016 to research the needs of maker educators (<http://makered.org/community/research/>). The report included a key finding where K-12 formal and informal maker educators specifically stated a need for *searchable and segmented resource collections* that provide information on how making links to standards, specific grade-level skills, and offer evidence of effectiveness. Also, in May 2017, Maker Ed hosted a Leadership Summit for maker educators, who collectively identified specific needs within the maker community. *Seventy-five percent of solutions generated were devoted to providing evidence of effectiveness of maker-centered learning* to practitioners, such as librarians, teacher-librarians, veteran teachers, out-of-school program participants, school administrators, and funders. Additionally, for the past 4 years, Maker Ed has led the Open Portfolio Project, a participatory design research effort that examines the renewed opportunity that portfolios present in allowing makers to provide evidence of their abilities, learning, and growth over time. The project aims to bridge informal and formal learning space and focuses on the practical needs of facilitators to implement portfolios with their audiences.

Similarly, Peter Wardrip at UW recently moved from the Children's Museum of Pittsburgh (CMP) where he led, with IMLS, the work to create a framework for learning in museum and library makerspaces. Through this project, with over forty site visits to library makerspaces nationwide, the feedback pointed overwhelmingly to the need for access to, and further development in, building research and evidence that will help libraries make the case regarding bringing maker education into their library learning spaces, as well as to provide direction for engaging in making in ways that will be most effective for creating desired learning outcomes in the youth they serve. Dr. Wardrip currently continues to partner with CMP to carry out research on maker-based learning experiences as well as partnering with the Madison Public Library on research efforts. And it should be noted that UW has a history of engaging in research and support on library makerspaces, such as an IMLS-funded partnership project between UW and the Bubbler, the makerspace within the Madison Public Library.

The proposed project builds on the incredible momentum behind maker education, whether in classroom or out-of-school-time settings, and the validity of its approach. There exists a strong and growing amount of ongoing research that looks specifically at a wide-range of topics related to maker-centered learning, whether related to theory or practice, equity of access, facilitation techniques, the characteristics of learning environments and material choice, the importance of individual and community voice, and much more. While the research is undoubtedly welcome and necessary, academic papers often remain in academic settings. At this point in time, the maker education community is incredibly open to conversation and partnership between researchers and practitioners, as the two sides to the field are eagerly learning from one another.

Our intention is that this Forum will be an attempt to broaden and make cohesive these research-practice relationships. There is tremendous value embedded in these two-way conversations. This project not only complements ongoing efforts but builds a bridge so that the findings and data can be leveraged and utilized by librarians, media specialists, and educators, to improve their practices, reflect on their facilitation and instruction, and contribute back to the research community. Having continued access to a freely available and regularly updated repository of such literature invites more individuals to the community, encouraging growth in conversation, awareness, and practice.

## **II. Project Design**

UW and Maker Ed will bring together a diverse cohort of 30-35 researchers and practitioners who are leaders in maker-centered learning. These will include key representatives of libraries and other informal education institutions that have been at the forefront of this research, as well as those who are critical in bringing new ideas and perspectives. As we work to identify these participants, we will reach out beyond those voices that are typically heard in the field of maker-centered learning, striving to ensure that representatives of diverse regions, approaches, audiences, demographics and focuses are reached. In addition, representatives of fields that run in parallel to library maker education will be included, as their work and research draws upon strong foundations that are also pertinent to our ongoing understanding of the work. Knowing that the key is to understand what approaches work for whom under what conditions, the project will attend to carefully consider questions of equity, access and context, in order to understand

the nuances in which approaches work for different learners within different learning settings. Initial conversations will be conducted virtually, surveying each participant on the publications and work they feel is key to scaling and deepening the work of maker-centered learning, that which has been done and that which needs to be done. We will then convene participants in-person at a National Forum to share key findings and identify notable gaps as opportunities.

Once the cohort has identified the key publications and resources, as well as areas that need additional focus, a team of 2-3 key staff from UW and Maker Ed, as well as 5-10 members of the Forum cohort, will create an annotated bibliography and white paper for publication. Both publications will leverage the expertise of Forum participants, particularly those representing libraries, in order to bring attention and support to the maker-centered library community. These resources will then live online on Maker Ed's freely accessible Resource Library (<http://makered.org/resources/>)--a resource that has been visited by individuals in all 50 states in the U.S., as well as those from more than 150 different countries--and serve as the cornerstone page as we launch our Research, Evaluation and Reports (RER) section. The RER section will also contain links to the primary sources of the bibliography and other relevant information; it will be searchable and organized in a way that will provide easy access for all, especially practitioners interested in the field's work.

The project will be carried out in five phases:

1. We will first cast a wide net and solicit diverse input on whom to invite to participate in the cohort. We will ask for input from program officers who have funded library projects, national leadership from library professional organizations, and regional / national conference presenters. We will select and initiate conversations with all cohort members to ensure that diverse viewpoints will be represented, as will librarians working with diverse demographics. These initial conversations will also be helpful in shaping the Forum meeting agenda. All project key personnel will be actively involved in the first phase. We will identify 5-10 Forum participants to serve a greater role working with the project team to develop the annotated bibliography and white paper.

2. In phase two, we will plan and host the National Forum in Madison, WI. The forum will be 1.5 days. The agenda will be set to ensure that key research areas are discussed that will increase the momentum and deepen the impact of maker-centered learning, specifically in library services. The agenda will be a mix of presentations and discussions with formats to ensure opportunities for participation in a variety of ways. Crucial to this structure is maintaining a balance of the research and practice voices in the meeting. In phase two, we will also begin the development process of the annotated bibliography and white paper.
3. We will collect the proceedings of the Forum, using them as a basis to publish a white paper oriented at and in partnership with the library community. This will be aimed at populating Maker Ed's Research, Evaluations, and Reports (RER) section of the online Resource Library with the white paper as the cornerstone, and also include the annotated bibliography, and research papers, evaluations and reports that have been deemed most useful to the community. One topic of discussion from the research meeting will inevitably be related to identifying useful resources for library practitioners.
4. We will launch the Resource Library RER category. We will disseminate the Forum's findings and overall resources through Maker Ed's national networks, social media channels, partnerships, and annual Maker Educator Convening. These networks often include library professionals, as well as those working in other formal and informal educational environments. We especially encourage cross-disciplinary conversations, which we've seen to be incredibly fruitful.
5. We will present on findings at national conferences, such as American Library Association (ALA), Public Library Association (PLA), Young Adult Library Services Association (YALSA) and Play Make Learn (a learning conference at UW). Our goal is to utilize the insights from the Forum to drive new directions for maker education research in libraries as well as to connect those interested in the intersection of research and making in libraries.

6. By using the Forum as a springboard to launch the RER section of Maker Ed's Resource Library, we will be building on an already successful and much used resource to bolster and expand the information and potential collaborators available to researchers, educators, policy-makers, administrators and other stakeholders, therefore helping to move maker education from a popular movement to a lasting educational reform in all communities.

We will assess our project progress in several ways. First, we will monitor the extent to which the project deliverables are accomplished in a timely manner. In addition, we will track the number of conference presentations, blog posts, and media mentions of the Forum, and the created resources and visits to the RER section of the Resource Library. We will collect feedback via surveys on the Forum itself.

*Project Personnel:* The National Forum will be led by Peter Wardrip (UW), Stephanie Chang (Maker Ed) and Lauren Penney (Maker Ed). Peter Wardrip is Assistant Professor of STEAM Education at UW's School of Education. He currently co-leads an IMLS-funded project to develop an observation tool to document evidence of learning in museum makerspaces. He has co-lead research projects over the past three years at the intersection of making and learning while he worked as a Learning Scientist at the Children's Museum of Pittsburgh. Stephanie Chang is the Director of Programs at Maker Ed. She is responsible for overseeing Maker Ed's program and project offerings. She also currently collaborates with the MIT Teaching Systems Lab on a NSF-funded project examining embedded assessment in maker-centered classrooms. Lauren Penney is the Program Manager at Maker Ed, where she works on building relationships with and supporting multiple institutions across the U.S. who are working on expanding and deepening their maker-centered learning opportunities. She has a background in working on research projects, including as a primary researcher for 300+ youth participants at seven in- and out-of-school locations; maintaining relationships with focal sites; and collecting data.

In working closely with representatives of libraries and library services, we are deepening our commitment to understanding and meeting the needs of underserved communities. Libraries occupy a unique role and space in communities across the nation, as their services are free,



accessible, and open to all, no matter the age, race, gender, socioeconomic status, or affiliation of any kind. Libraries are additionally reaching further beyond their immediate radius with additional services, and representatives of underserved communities are often integrated into the work of libraries already. Throughout this project, in casting a wide net for forum participants and working specifically with libraries, we plan to ensure that the needs are accurately assessed and individuals are embedded parts of the work.

### **III. Diversity Plan**

The forum will take into account diversity for both who participates in the forum itself as well as the perspectives and values of the learners ultimately served by learning and research from makerspaces. Libraries occupy a particularly unique and important role in our communities, offering free services to a diverse public audience. In order to ensure that we examine maker-centered learning as a critical tool for access and equity, we will focus on studies that have incorporated questions of equity into their frameworks and designs.

We understand that education has not been equitably applied in this country, either in terms of access or of relevance. We will focus on research, researchers and practitioners that seek to understand not just how maker-centered learning can benefit well-resourced communities, but how it best works in communities of color, under-resourced communities, for students with disabilities, underrepresented students and others.

We will also work to ensure that the resources and findings that emerge from this project are widely disseminated across diverse communities. Maker Ed has worked with educators and institutions in a variety of communities across the country--urban and rural; across multiple regions; primarily English-language learners; Indigenous communities; and others--and will ensure both that this rich diversity of voices is integral to the conversation, and that all relevant and useful resources that emerge from the project are freely and widely accessible.

### **IV. National Impact**

Libraries have been among the leaders of the maker-centered learning charge for a number of years, developing a depth of understanding for a diverse set of audiences that stands as a model

for how to best reach community members and youth learners at all levels. In order for these grassroots efforts to become widespread and carry greater impact, it would benefit educators to have open and free access to resources in our Resource Library that would include research findings, guides, PD/training resources, and best practices that are transferable across educational environments. We will also leverage Maker Ed's broad networks of maker educators and institutions, our large social media following, and our presence at conferences, webinars, workshops and meetings, as well as our annual Maker Educator Convening, to disseminate the resources created and collected.

The goal of the Forum connects with the IMLS strategic plan, both in the support of lifelong learning and building capacity of library professionals. Building an understanding of the research that exists with respect to learning and library makerspaces is important for ultimately facilitating interdisciplinary, inquiry-based learning experiences in libraries as well as potentially understanding best practices in our support for maker-based learning experiences.

Maker education is at a pivotal moment; in order to move it from an educational fad to a sustainable, lasting, and proven educational reform movement, available to all youth across the country, we must connect the research, practice, and resources that are currently available, and understand what is missing and who is best poised to take on those aspects.

*Project Budget and Resources:* This Forum project was designed with the appropriate resources and capacity in mind, therefore time is given to both the planning and logistics of the forum as well as the development of the deliverables (annotated bibliography, white paper and launch of the RER section of Maker Ed's Resource Library) from the Forum. The financial resources are focused on ensuring that personnel are supported in the carrying out the logistics of the meeting as well as associated travel costs to ensure that participants are able to participate without a financial barrier. Logistically planning will include reaching out to diverse public library professionals in order to ensure that the meeting involves the diversity that exists within the public library field working on maker programs in the United States. The costs associated with the Forum are commensurate with similar convenings and the project partners have successful

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experience both with collaborative, IMLS-supported projects as well as running national convenings. Each partner maintains the capacity necessary to implement this endeavor.

	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19
Project Launch	█											
Identify for potential participants / strategies to reach potential participants	█	█										
Select Participants		█	█	█								
Plan Forum Logistics		█	█	█	█	█						
Annotated Bibliography Development	█	█	█	█	█	█	█	█	█			
White Paper Development				█	█	█	█	█	█	█	█	
Hold Forum						█						
Release Annotated Bibliography												█
Release White Paper												█
Share Forum Work at Conferences/Meetings										█	█	█

# DIGITAL PRODUCT FORM

## Introduction

The Institute of Museum and Library Services (IMLS) is committed to expanding public access to federally funded digital products (i.e., digital content, resources, assets, software, and datasets). The products you create with IMLS funding require careful stewardship to protect and enhance their value, and they should be freely and readily available for use and re-use by libraries, archives, museums, and the public. However, applying these principles to the development and management of digital products can be challenging. 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

- Please check here if you have reviewed Parts I, II, III, and IV below and you have determined that your proposal does NOT involve the creation of digital products (i.e., digital content, resources, assets, software, or datasets). You must still submit this Digital Product Form with your proposal even if you check this box, because this Digital Product Form is a Required Document.

If you ARE creating digital products, you must provide answers to the questions in Part I. In addition, you must also complete at least one of the subsequent sections. If you intend to create or collect digital content, resources, or assets, complete Part II. If you intend to develop software, complete Part III. If you intend to create a dataset, complete Part IV.

## Part I: Intellectual Property Rights and Permissions

**A.1** What will be the intellectual property status of the digital products (content, resources, assets, software, or datasets) you intend to create? Who will hold the copyright(s)? How will you explain property rights and permissions to potential users (for example, by assigning a non-restrictive license such as BSD, GNU, MIT, or Creative Commons to the product)? Explain and justify your licensing selections.

All digital products produced from this forum project (e.g., white paper, annotated bibliography) will be openly licensed according to a Creative Commons Attribution-ShareAlike license (CC BY-SA). This license will permit everyone to use the produced digital products in perpetuity. These products will be openly available from the Maker Ed resource page. This license was selected in that it will encourage educational use of the materials without restriction of purpose.

**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.

All participating parties in the project (UW-Madison & Maker Ed) agree that new digital products produced through the Forum will be published under CC BY-SA and provided through organizations who elect to publish the products on their websites (e.g., Maker Ed resource page on their website).

**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.

There are no anticipated privacy concerns, no necessary permissions or rights, and no potential cultural sensitivities regarding the digital products created by the Forum project.

## Part II: Projects Creating or Collecting Digital Content, Resources, or Assets

### A. Creating or Collecting New Digital Content, Resources, or Assets

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

The project will produce an annotated bibliography that will be made available digitally on the Maker Ed Resource page. In addition, the project will produce a white paper to summarize the ideas from the forum that will also be made available on the Maker Ed web site.

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

All digital products will be generated by the collaborators on the Forum project. Equipment, software, and supplies are expected to be the same as they would be for any other project producing a report. This will include standard office software (e.g., Microsoft Office, Adobe Acrobat).

**A.3** List all the digital file formats (e.g., XML, TIFF, MPEG) you plan to use, along with the relevant information about the appropriate quality standards (e.g., resolution, sampling rate, or pixel dimensions).

All digital products will be formatted to standards that are compatible with the CC BY-SA license and will be most accessible for library practitioners. This will be primarily but not limited to PDF.

## **B. Workflow and Asset Maintenance/Preservation**

**B.1** Describe your quality control plan (i.e., how you will monitor and evaluate your workflow and products).

N/A

**B.2** Describe your plan for preserving and maintaining digital assets during and after the award period of performance. Your plan may 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).

N/A

## **C. Metadata**

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

N/A

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

N/A

**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).

N/A

## **D. 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).

N/A

**D.2** Provide the name(s) and URL(s) (Uniform Resource Locator) for any examples of previous digital content, resources, or assets your organization has created.

N/A

### **Part III. Projects Developing Software**

#### **A. 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 functions, and explain how the software you intend to create is different, and justify why those differences are significant and necessary.

#### **B. Technical Information**

**B.1** List the programming languages, platforms, 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) and URL(s) for examples of any previous software your organization has created.

#### **C. Access and Use**

**C.1** We expect applicants seeking federal funds for software to develop and release these products under open-source licenses to maximize access and promote reuse. What ownership rights will your organization assert over the software you intend to create, and what conditions will you impose on its access and use? Identify and explain the license under which you will release source code for the software you develop (e.g., BSD, GNU, or MIT software licenses). 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.

**C.2** Describe how you will make the software and source code available to the public and/or its intended users.

**C.3** Identify where you will deposit the source code for the software you intend to develop:

Name of publicly accessible source code repository:

URL:

## **Part IV: Projects Creating Datasets**

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

**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 personally identifiable information (PII), confidential information (e.g., trade secrets), or proprietary information? If so, detail the specific steps you will take to protect such information while you prepare the data files for public release (e.g., data anonymization, data suppression PII, or synthetic data).

**A.4** If you will collect additional documentation, such as consent agreements, along with the data, describe plans for preserving the documentation and ensuring that its relationship to the collected data is maintained.

**A.5** What methods will you use to collect or generate the data? Provide details about any technical requirements or dependencies that would be necessary for understanding, retrieving, displaying, or processing the dataset(s).

**A.6** What documentation (e.g., data documentation, codebooks) will you capture or create along with the dataset(s)? Where will the documentation be stored and in what format(s)? How will you permanently associate and manage the documentation with the dataset(s) it describes?

**A.7** What is your plan for archiving, managing, and disseminating data after the completion of the award-funded project?

**A.8** Identify where you will deposit the dataset(s):

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Name of repository:

URL:

**A.9** When and how frequently will you review this data management plan? How will the implementation be monitored?