

Building Public Libraries' Capacity for Open Data Services: Models and Implementation

Andrea Copeland (PI) and Ayoung Yoon (Co-PI), the project team at Indiana University Purdue University Indianapolis (IUPUI) are applying for a research grant from the National Leadership Grants program to request \$349,084 to validate and implement a theoretical model for developing public library services relevant to open data, which were developed from previous IMLS funded project (LG-96-17-0184-17). This 2.5-year project has a national focus and addresses the IMLS goal of *Building Capacity* by focusing on ways that public libraries create capacity to work with and provide services using open data, under *Community Catalysts* project type.

A. STATEMENT OF NEED

A.1. Statement of Need

The open data movement started in 2009 as part of the Obama administration's open government initiative, which was designed to create accountability and transparency for all levels of government. However, to date, the open data movement data has largely focused on supplying data, with very little effort or resources invested in its use by individuals (Gascó-Hernández et al., 2018). Therefore, experts have largely benefitted from the increased transparency. For those individuals who lack access to, knowledge of, and skills for data use, the supply of data have not increase transparency for them nor has it advantaged them in anyway (Cinnamon, 2020; Wolff, 2016). As ordinary citizens are not likely to possess the necessary data literacy skills, user participation in open data is still low (Janssen et al., 2012). As a result, the much-anticipated impact of open data has not been fully realized (Wang & Shepherd, 2020; Wang & Lo, 2016; Worthy, 2015). Research is needed to determine how to lower the entry for open data use and minimize the effects of the overwhelming supply of data. The abundance of data without curation diminishes distinction among datasets, leaving users unsure of what data are available and how it might be used.

Public libraries are an important part of open data ecosystems. A civic intermediary can help to engage individuals in their community's welfare and promote equitable use of data, thereby facilitating transparency, which will ultimately lead to more accountability in communities. In addition, community members can work with their local governments to use open data to address social problems, such as homelessness or violence against women (Robinson & Mather, 2017). An engaged community can call for regulation or public policy that provides for the equitable collection, distribution, and use of data, which will ultimately empower communities to make decisions that benefit their members (Hawken et al., 2020). Further, the PIs previous research (Yoon et al, 2018) found, in support of existing studies (Toldson & Johns, 2016; White, 2016; García, & Sönmez, 2020) that minoritized communities are often a source of data analysis; they are viewed as a problematic subject to be analyzed, typically in terms of deficit data. By increasing access to community data and the ability to use data within local communities through public libraries, minoritized communities and others will be able to counter (with asset data and varied perspectives on all data types)—or at least contribute to—their community's narrative through more equitable access to data. There is considerable power and economic leverage to be gained from control of data, and now, that control is in the hands of the privileged few. Distributing this power will result in the contribution of different voices to civic, cultural, and economic matters.

Public libraries can connect individuals with the knowledge and skills needed to participate in this space. Public libraries can support open data by providing curated access to data, bridging the "data divide" (Burke et al., 2015), serving as an intermediary platform to provide public access to information (Burke et al., 2015), and empowering citizens with data literacy skills and knowledge (Eaves, 2013; Copeland et al., 2020). Fortunately, public libraries have the trust of their communities and strong infrastructures from which to build data services (Sayogo, 2016). As a result, public libraries are increasingly participating in the open data movement, such as by providing open data access through collaboration with local government (e.g., the open data portal developed by the Boston Public Library), public programming (e.g., the data book club created by the Toronto Public Library), data workforce development (e.g., data literacy training provided by Providence Public Libraries), and civic data engagement through partnerships with local data intermediaries (e.g., Civic Switchboard).

While these initiatives indicate progress and provide emerging knowledge that has and will continue to inform our work, there remain notable gaps between public libraries that are actively participating in open data and those that are not due to differences in capacity and resources. Public libraries need resources and professional networks to guide them to initiate, organize, explain, and promote data services to their communities. **This project aims to build public libraries’ capacities for open data engagement, library data skill development, and public service design.** As part of the project team’s previous grant—its IMLS ([LG-96-17-0184-17](#)) project—the team reviewed local community data ecosystems and the role of the public library in those ecosystems, working with public libraries that have been active in the open data realm to develop a research-driven theoretical model for public libraries’ open data engagement, named mCODE (the model for Community Open Data Engagement; for details, see the next section, **A.2. Previous work: Our model**). The mCODE is unique in that it emphasizes the local context and community engagement, reflecting public libraries’ strong position to address the place-based needs of their communities (Yoon et al., 2018). **Our goals are to test mCODE, which we previously developed via evidence-based practices, and to create an implementation model.** The project team will continue to work with public libraries to validate, implement, and refine the model through this proposed project. We believe that our model is flexible in its design and thus can address the gap in existing work and increase the capacity for data services. In doing so, it will help to bring about the intended impact of open data, which has been in the making for over a decade.

Testing and validation of this model is significant for advancing our team’s previous efforts and promoting public libraries’ engagement with open data while ensuring the external validity of our model. For this project, we have operationalized the term “testing,” using a more inclusive definition adopted from Crabtree and Miller (1999): “to test [an] explanatory theory (model) by evaluating it in different context[s]” (p. 7). Thus, in our project, testing a model involves replicating cases in different contexts to identify whether previous results extend to new cases (Yin, 2014). Testing is also critical for turning a theoretical model (a representation of behavior in a real-world system based on theories and concepts) into an implementation model (a description of how the model will be refined, operationalized, and executed), or, in other words, moving from the theoretical level to the operational level (Hahn, 2013). Validating our model will enable the transfer of knowledge across situations, resulting in generalizability and scalability beyond this proposed project.

Given the importance of testing the model, the following research questions will guide the proposed project:

1. How feasible is implementation of the proposed model for different public library contexts?
2. Does this model increase the capacity of public libraries’ open data engagement?

This project meets the IMLS agency-level goals **by supporting libraries’ capacity development for open data engagement** while enhancing citizens’ engagement with data and creating opportunities for citizens to learn about and work with data for community development. Belonging to the category Build Capacity, our project will help libraries to implement open data engagement services based on the model created by the research team and practitioners while **sharing best practices and innovations** in the field of public libraries. Capacity building cannot be achieved by one-time trial; thus, our goals are to assist libraries the implementation with a practical manual to **help them design services based on community need** and to create a living community of practice (CoP) so that libraries with successful implementation experiences can be a resource for libraries new to data services. Ultimately, the public libraries that implement the model and facilitate their communities’ engagement with open data will contribute to the community’s well-being by connecting them with existing data resources and infrastructure and **servicing as a trusted space for community’s open data engagement.**

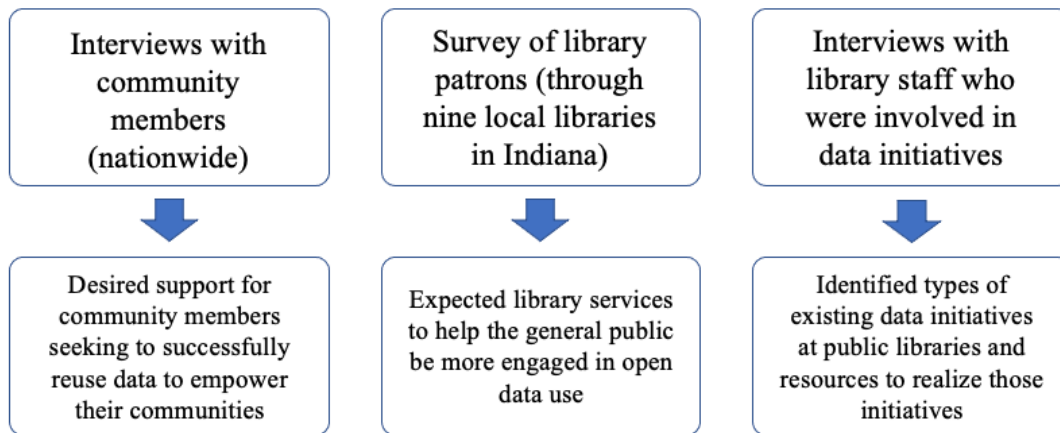
A.2. Previous Work: Our Model (mCODE)

Background and model development

The Data Reuse for Local Community project was initiated in 2017 with support from the IMLS ([LG-96-17-0184-17](#)). The goal of this project was to assist community members with open data reuse by connecting them with existing resources and data infrastructure through public library services. The project was designed to

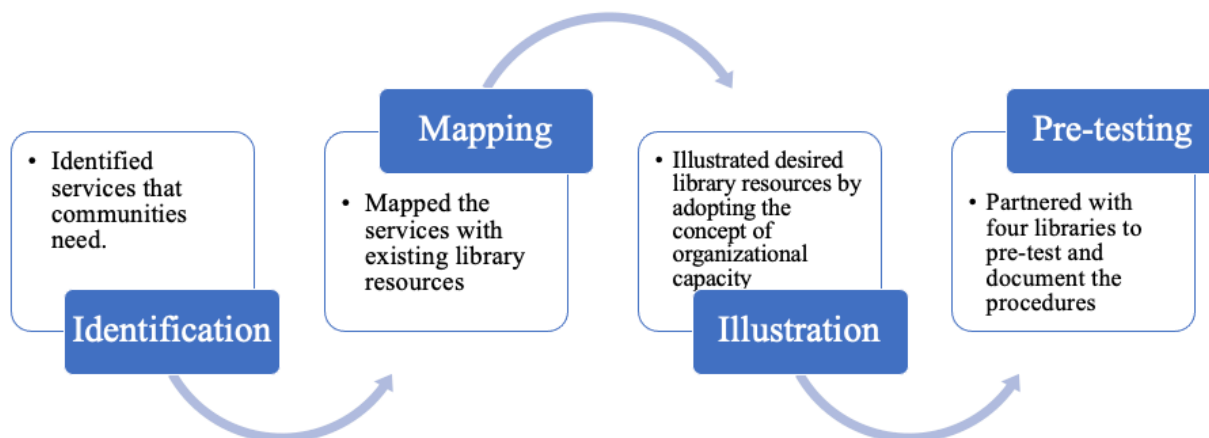
move from theoretical research to practical service development (only a prototype). Several key findings from the project’s three research activities offered a foundation for our efforts to build mCODE (See Figure 1). Other findings have been presented in detail in previous publications (Copeland et al., 2020, 2019; Copeland & Yoon, 2018; Yoon & Copeland, 2020, 2019; Yoon et al., 2018).

Figure 1. Key findings from each research activity



From the findings, the project team first identified four areas in which libraries and community members are in great need of support as well as expected library services (for details on those areas, see **Public libraries’ model for Community Open Data Engagement**). We then mapped those areas with library resources and capacities that were identified from existing data initiatives, creating the skeleton of our model. We integrated the concept of organizational capacity and capacity dimensions, which were developed by one of the PIs in her previous IMLS-funded project (Library Capacity Assessment and Development for Big Data Curation [[#LG-72-17-0139-17](#)]), into our model to illustrate the desired resources for offering such services. Lastly, we partnered with four public libraries in different community contexts that were matched with the identified service areas. They viewed our theoretical model with practical eyes and pre-tested it, documenting the workflow of those pre-tests (see Figure 2 for the process).

Figure 2. Model development process



Four libraries were identified via our interview study with library staff, our advisory board’s network and recommendations, and open recruitment from our conference presentations and networking. These libraries were as follows:

- Providence Public Library, Rhode Island (RI)
- Allen County Public Library, Indiana (IN)
- Asotin County Library, Washington (WA)

- Brooklyn Public Library, New York (NY)

Public libraries’ model for Community Open Data Engagement (mCODE)

The final model, mCODE, includes four focal service areas public libraries can use to support successful data reuse in their communities:

- Area 1. Promoting open data access
- Area 2. Providing instructions to promote data literacy among the public
- Area 3. Developing library programming from open data
- Area 4. Developing internal data capacities for future service creation

For each focal service area, the model addresses six dimensions of organizational capacity (vision, human resources, financial resources, administration, infrastructure, and network) at three levels of engagement with data and data practices (beginning, maturing, and leading). Table 1 provides an example of the model for one focal service. An example of the full model with definitions of terms is attached as **Supporting Document 1: Example of Model**.

Table 1. mCODE example: Area 2. *Providing data literacy instructions for the public* within the context of the *Human resources dimension*.

Dimensions of organizational capacity		Beginning	Maturing	Leading
Human resources	Goal	<ul style="list-style-type: none"> • Current staff time and resources are used to offer classes. 	<ul style="list-style-type: none"> • Technology instruction is included as a staffing consideration. Support for technology classes is recognized as a job duty. 	<ul style="list-style-type: none"> • Data instruction is a staffing priority. Administrative and support staff’s time is devoted to ensuring the data program runs smoothly.
	Desired resources	<ul style="list-style-type: none"> • Staff time should be specifically allotted to develop and deliver data classes. 	<ul style="list-style-type: none"> • Data and technology instruction duties should be included in job descriptions. • IT department staff’s time should be allocated as needed to support data programming. • Volunteers/interns may serve as class assistants to support students one-on-one. 	<ul style="list-style-type: none"> • Skilled staff instructors should be retained and given resources for professional development. • Staff should be supported in reporting grants, recruiting students, advertising classes, and maintaining community relationships. • Technical staff should maintain classroom technology.
	Action items	<ul style="list-style-type: none"> • A staff member begins to develop their own data skills to deliver classes. 	<ul style="list-style-type: none"> • Staff members continue their professional development and begin to adapt and develop curriculum for data instruction. • They reach out to other staff members to support data programming (e.g., scheduling, registration, grant paperwork, evaluations). • The libraries plan to hire staff members with instructional and data skills. 	<ul style="list-style-type: none"> • Data instruction and work supporting this program are appropriately included in staff evaluations. • Support staff who play a role in data programming (IT, human resources, administration) are recognized and included in staffing planning.
	Recommendations	<ul style="list-style-type: none"> • Many free online resources are available for staff members to increase their own data 	<ul style="list-style-type: none"> • Libraries should consider reaching out to data professionals and instructors who may be interested in 	<ul style="list-style-type: none"> • It is crucial to gather internal instructional staff members, external staff members (e.g., contractors), and

		skills and to serve as templates and resources for instruction. <ul style="list-style-type: none"> • If there is not enough time available to develop classes, libraries should consider starting with a learning circle for patrons and/or staff (https://www.p2pu.org). 	working part-time as contract instructors (e.g., a community college instructor who teaches Excel, data literacy, or computer science).	volunteers/interns into a data team.
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B. PROJECT DESIGN

B.1. Project Goal and Intended Outcomes

The long-term goal of this project is to build public libraries’ capacity for open data engagement, data skill development for librarians and library users, and public service design. The objective of the project is to help achieve our long-term goal by testing the theoretical model that we developed through evidence-based practices and create an implementation model. Our study proposes the following specific objectives:

1. Identify the gap between library practices and the developed model as well as the factors that are critical to support model implementation based on the conceptual dimensions of organization capacity.
2. Empirically test and validate the usefulness of the model.
3. Develop a library manual to facilitate implementation of the model.

The key outputs include the following: (1) a list of barriers to implementation of the model at public libraries, (2) an implementation/revised version of mCODE, and (3) a library manual to support mCODE implementation.

B.2. Intended Audiences

The outcomes expected from the project will serve three primary audiences:

1. **Public librarians** who want to build a capacity for open data engagement in the communities they serve. Public librarians will benefit from this project by learning how to provide the services and resources necessary to empower library users by increasing their skills (e.g., data literacy skills) and interests. Contributing to the development of an informed and engaged citizenry is a longstanding goal of U.S. public libraries. Given the increasing prevalence of data-driven decision- and policymaking (Kitchin, 2014b; Shirley, 2016), if public librarians do not build communities’ capacity to reuse data, librarians will face considerable obstacles to meeting this goal.
2. **LIS educators** who want to (1) train future information professionals, particularly public librarians, to raise awareness of new roles and educate them about a new service model through master’s level coursework; and (2) provide professional development opportunities for current practitioners who want to expand their knowledge and use of data to serve and engage their communities.
3. **Community partners** who work in collaboration with public libraries to address needs within communities that lack the data skills or resources to use data to inform their work.

B.3. Research design

To address the research questions proposed above and achieve the project’s goals, multiple research methods will be employed in different activities. **Supporting Document 2: List of Project Activities** lists the specific research questions, the methods associated with the intended outcomes, and project outputs. The project will be conducted in three phases, as explained below.

Pre-phase: Library partner selection (completed)

Partner libraries were identified through a variety of methods: a review of all the strategic plans of *Library Journal’s* Star Libraries for 2019 based on their alignment with our project goal and at least one focus area of the model; recommendations by our advisory board; and connections created through a former study

participant's work as a civic data scientist. The project team had an initial meeting with each library to learn their context (i.e., their service priority, alignment with the strategic plan, and motivation to be part of our project) and to share information about our project. The four partner libraries matched with each service area are as follows:

Area 1. Promoting open data access – Spokane Public Library, WA

Area 2. Providing instructions to promote data literacy among the public – Ann Arbor District Library, MI

Area 3. Developing library programming from open data – Evansville Vanderburgh Public Library, IN

Area 4. Developing internal data capacities for future service creation – Indianapolis Public Library, IN

Our selection of libraries reflected diverse contexts in terms of geographic location, size of the local community, and type of community served. Each library partner has been introduced to and paired with a mentor library from our advisory board (i.e., one that has already successfully implemented one focus area of the model) for planning (see the **Project Resources**).

Phase 1: Public library staff training, project planning, and community engagement (months 1–12: September 2021 to August 2021)

Phase 1.1. Local training (months 1–3)

During the initial phase of the project, the project team will visit each library site to gain an understanding of the local context and provide a half-day training session. The on-site training will reflect the workshop on mCODE provided at the Research Institute for Public Libraries (RIPL) in December 2020 as well as educational resources developed for the Massive Open Online Course (MOOC) in August 2021 (work in progress at the time this proposal was developed), which are two outcomes of the previous project ([LG-96-17-0184-17](#)).

Phase 1.2. Project planning and community engagement (months 4–12)

After initial visits, the partner libraries, project team, and mentor library will work together to (1) refine the model in each library context, (2) engage the local data ecosystem and community stakeholders in this process, and (3) develop a plan for a new service or program to address one of the four areas. Key activities will include a review of mCODE, assessment of the library's resources and capacity based on mCODE, an environmental scan of the local data ecosystem, and partnership building with community stakeholders when necessary.

Each partner library will document their activities working with mCODE. The project team will provide a template for documentation (e.g., a journal) of their progress, experiences, lessons learned, recommendations for others who might replicate their work, and evaluation of mCODE (e.g., feasibility, fitness). Each library team (partner library, project team, and mentor library) will have a monthly local meeting during the planning process to discuss the progress and challenges of the project as well as to share strategies and successes. We will also have quarterly meetings with the entire project team, including the four partner libraires, the full advisory board, and the project team, to share experiences, provide updates on progress, and learn from each other while starting to build a small-scale CoP for the future project (see **B.5. Sustainability and Future Plan**).

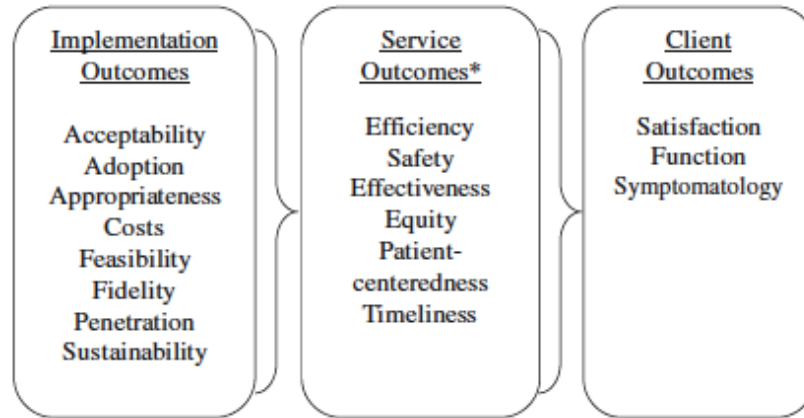
Phase 2: Model implementation and assessment (months 13–24: September 2022 to August 2023)

The four different services developed from the refined model in Phase 1 will be implemented within each partner library while conducting ongoing assessment of the model. During the implementation, the participating libraries will document the process, workflow, and lessons learned (see **B.4. Project Evaluation**). The project team and advisory board will continue to have regular meetings with the partner libraries to provide support and monitor progress.

With the project evaluation method illustrated in **B.4. Project Evaluation**, the project team will adopt the conceptual framework for assessing the implementation of our model originally proposed by Proctor et al. (2009). The framework distinguishes three distinct but interrelated types of outcomes: implementation, service, and client outcomes (see Figure 3). For heuristic purposes, this framework positions implementation outcomes

as preceding both service outcomes and client outcomes, with the latter being impacted by the implementation outcomes. We will assess three outcomes using a variety of methods, including interviews with partner libraries, surveys of participating libraries, and surveys of the served communities (i.e., library patrons).

Figure 3. Types of outcomes (Proctor et al., 2011)



Phase 3: Model revision and development of manual (months 25–30: September 2023 to February 2024)

The project team will modify the model based on lessons learned in the implementation process to develop an implementation version of mCODE. To realize implementation of mCODE, the project team will also develop a manual that reflects the experiences of the partner libraires and the results of outcome assessment. The manual will be developed through collaborative effort among all project members, including the participating libraries. It will be organized with the same structure as mCODE, adopting six dimensions of organizational capacity (vision, human resources, financial resources, administration, infrastructure, and network) at three levels of engagement with data and data practices (beginning, maturing, and leading). Two levels of review will be conducted: an informal review by the partner libraries to catch missing information and errors and a formal review by our advisory board for an external perspective.

The implementation model and manual will be broadly shared through professional conferences and publication venues. We will also host a half-day virtual symposium in February 2024 to engage a broader community and receive community feedback. Both the model and the manual will be major resources for our future project (see **B.5. Sustainability and Future Plan**), which will focus on scaling and building a CoP.

B.4. Project Evaluation

Evaluation will focus on three distinct aspects that are essential to the validity of the model: (1) co-creation of knowledge, (2) practice, and (3) reflection by all participants. The library partners will be guided to perform empowerment evaluation, which encourages improvement and self-determination among community members (under the guidance of a professional evaluator) to build capacity in programs or organizations (Fetterman & Wandersman, 2017). The partners will be responsible for learning, capturing, and reporting practical evaluation techniques and data, using quantitative accountability metrics (e.g., accomplishments), and performing transformative evaluation of team dynamics, successes, failures, project highlights, and outcomes. The project team will share the findings of the evaluation across the four organizations. Empowerment evaluation is particularly useful for this project as the partners are viewed as helpers due to their open, honest criticism. This aspect of empowerment evaluation is critical to co-creation, as it removes barriers to knowledge exchange between the partners and project team. In addition, all ten principles of empowerment evaluation—improvement, community ownership, inclusion, democratic participation, social justice, community knowledge, evidence and strategy capacity-building, organizational learning, and accountability—align with the overarching goals of this research.

Phase 1 (throughout the project; 2.5 years). We will use a basic project management framework that includes, for example, milestones and quantitative measurements (e.g., quantity and speed of activities); interviews with project participants; and iterative sharing of accomplishments, roadblocks, and solutions. Partners will be asked to evaluate mCODE (training and implementation) given their local context, and we will use our model to evaluate their resources and capacity. This cross-evaluation will occur throughout the project to facilitate co-creation and knowledge sharing.

Phase 2. Implementation will be evaluated by quantitative measures of the size and scope of data services, community feedback, and staff input (surveys/interviews with users and librarians). Partner journals, monthly/quarterly meetings, and meetings with the community will be used for transformative evaluation. Through dialogue and reflection, the project team, along with library partners, community members, and advisory board members, will evaluate the effectiveness of mCODE and the extent to which the three major outcomes—increase capacity for open data engagement, increase data skill development among library staff and community members, and establish a new public service design—were achieved.

Phase 3. The three major outputs—a list of barriers, the implementation version of mCODE, and the manual—will be the focus of evaluation during this phase. The success of the outcomes will be based on the potential of model adoption, which will be measured by, for example, quantitative measures of interest and interviews with a sample of those who are interested in the manual.

B.5. Project Resources: Personnel, Time, Budget

Project team

Our project team (PIs, library partners and advisory board members) is diverse in terms of gender and cultural/ethnic background. We expect that having a diverse project team will bring a variety of valuable perspectives on all phases of this project. We will actively recruit graduate research assistants from underrepresented populations to enhance diversity. The libraries participating in our project (partners and advisory board members) differ in geographic location, size, and population (i.e., metropolitan, suburban, or rural) as well as the nature of the communities they serve. This enables the inclusion of diverse viewpoints and experiences throughout the project.

PI: Andrea Copeland, Ph.D. is the chair and an associate professor at the Department of Library and Information Science (DLIS), IUPUI. Her research area is public libraries and community engagement. She is the Co-PI of IMLS funded project, Data Reuse for Local Communities ([LG-96-17-0184-17](#)) investigating community data reuse practice.

Co-PI: Ayoung Yoon, Ph.D. is an assistant professor at DLIS, IUPUI. She is the PI of Data Reuse for Local Communities project ([LG-96-17-0184-17](#)). Her research has been focusing on data curation, data reuse, and open data engagement. She was also the PI of previous IMLS funded project, Library Capacity Assessment and Development for Big Data Curation ([LG-72-17-0139-17](#)).

Partner Libraries (Support Letters are attached in Supporting Document 3)

- Indianapolis Public Library, IN – Contact person: **John Helling**, Director of Public Services
- Ann Arbor District Library, MI – Contact person: **Josie Parker**, Director
- Spokane Public Library, WA – Contact person: **Shiloh Deitz**, Community Data Coordinator & Tara Neumann, Community Technology Director
- Evansville Vanderburgh Public Library, IN – Contact person: **Scott Kinney**, Engagement & Experience Officer

Advisory Board (Support Letters are attached in Supporting Document 4)

- **Cate Burlington**, Lead Technology Specialist at Providence Public Library, RI. (Former partner from [LG-96-17-0184-17](#))
- **Diana Plunkett**, Manager of Strategic Initiatives at Brooklyn Public Library, NY. (Former partner from [LG-96-17-0184-17](#))
- **Jennifer Ashby**, Director & Mary Neuman, Assistant Director, Asotin County Public Library, WA. (Former partner from [LG-96-17-0184-17](#))

- **Toby Greenwalt**, Director of Digital Strategy and Technology Integration at Carnegie Library of Pittsburgh, PA, and [Civic Switchboard](#) Team funded by IMLS ([LG-70-17-0146-17](#)).
- **Alex Carruthers**, Manager of Learning and Community Engagement, Toronto Public Library, Canada.

Project Budget

We request a total of \$349,084 (including Indirect \$123,919) to fund this project. (See **Budget Justification**.)

- Project personnel: PIs salary \$82,337; Student support: \$16,643; Total Fringe Benefits: \$23,707
- Library partners to support model implementation: \$60,000
- Advisory board: \$12,500
- Conference and library site visit travel: \$17,055
- Open access journal publishing: \$3,000; Project website & Virtual symposium: \$5,000

Project Plan and Timeline

This is a 2.5-year project. The **Schedule of Completion** lays out the duration of the major activities.

B.6. Communication and Dissemination Plan

There are four main avenues through which information about this project will be disseminated: (1) communication with the library partners and stakeholders during the process of model testing and service development; (2) communication with the communities served by the partner libraries that are interested in using the libraries' open data services; (3) communication with library professionals and LIS educators to increase their awareness of the project and achieve a broader impact; and (4) communication with all the intended audiences through our virtual symposium. For internal communication within the project team, the partner libraries, and our board, we will not only use a virtual storage space to share progress through IU OneDrive and host a monthly partner meeting (local and all project partners) but also use a collaborative communication tool (e.g., Slack) to enable faster and easier communication. The project team will also develop numerous public relations documents to disseminate information about each of the above strands. The project team will use several approaches to disseminate information about the project and its outcomes, including the following: conference papers and presentations, journal articles, a project website, a virtual symposium, our partner libraries and collaborators, project teams' professional networks and affiliations with professional associations, the DLIS alumni network, and extensive event (symposium) and outcome announcements on a wide range of listservs for library audiences. The virtual symposium will provide an opportunity to easily bring together individuals from libraries, community agencies, and LIS educators to explore the impact of data services on their ecosystems and receive feedback on the implementation model.

B.7. Sustainability and Future Plan

The impact of this research beyond the project period will depend on how successfully we build capacity throughout the project. First, it will be important to educate libraries about the significance of their roles in the community data ecosystem and their potential impact by demonstrating successful cases and sharing the experiences of our partner libraries in various contexts. Further, by working with librarians to co-create the implementation model and the library manual intended to facilitate increased engagement with open data, it will be more likely that the model will be adopted by others and undergo continued development.

Upon the successful completion of this project, the project team will apply for the full National Leadership Grants for Libraries to scale our efforts and build the CoP around the model/manual. Several strategies will be implemented for scaling and for addressing people and organizations that are not involved in open data engagement efforts. These strategies include the following:

- Host an institute for professional development with the model and manual by partnering with leadership groups for public libraries (e.g., COSLA, the Urban Libraries Council) to bring the project to the attention of public library executives and policy/funding bodies. We will also utilize existing local resources, such as [DATA Lab](#) (the applied data research lab at IUPUI) and [Polis Center](#) (a community data intermediary).

- Integrate the model and manual into our master’s courses for training new librarians (e.g., S604 Community and Data, S575 Public Library Services, S604 Community Engagement and S553 Public Library Management) and disseminate the work to the LIS education community.
- Build a cohort of ten libraries (updated every year) that will utilize the manual for service/partnership development and use feedback about their experiences to revise the manual.
- Develop an advisory/consultation service to assist libraries with implementing services/partnerships based on the manual.
- Develop a virtual space in which a CoP can evolve around the model and manual through grassroots efforts.
- Develop a sustainable service model for implementation of mCODE and the manual at libraries.

C. NATIONAL IMPACT

The project has the potential for national impact with regard to professional service, practice-based research, and graduate and professional development education. Our project will result in an improved model that is robust, fully articulated, flexible, ready-to-go, and customizable to local circumstances. The ultimate outcome of this project is a change in the open data engagement practice of public libraries through different service approaches. Ideally, an increasing number of public libraries will adopt part or all of the model to provide the services needed by their communities.

With regard to community-engaged research, this project will produce a model for those who wish to work with public librarians and engage them and their communities in the research process. Further, this project, which will be a total of six years in length, will demonstrate the value of theoretical research for understanding the impact of the dynamic and reciprocal relationships between public libraries and their communities on library services.

As this research has strong connections to both theory and practice, there will be implications for LIS graduate education as well as professional development. Given ALA’s continued support of competency-based education and ethics that support the removal of societal barriers to reduce inequity and injustice, the manual and other resources produced from this research will provide relevant and meaningful tools to support curricular advances that align with professional values.

Year 2.

Phase	Activities		2022				2023							
			Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	July	Aug
Phase 2	mCODE implementation & evaluation	Implementation	█				█							
		process	█				█							
		Outcome assessment			█			█			█			█
		Quarterly meeting			█			█			█			█
	Practical evaluation			█			█			█			█	
Transformative evaluation			█				█							

Year 3.

Phase	Activities	2023				2024		
		Sep	Oct	Nov	Dec	Jan	Feb	
Phase 3	mCODE revision	█	█					
	Manual development		█	█				
	Internal and external review				█	█		
	Virtual syposium	Preperation				█	█	
		Virtual symposium						█
		Evaluation & analysis						█
	Final report						█	



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.

Our project will produce a manual that will reside on a project website. We will utilize Creative Commons Licensing: Attribution-NonCommercial-ShareAlike 4.0 International (CC BY-NC-SA 4.0). This license restricts use in the following ways: users must give appropriate credit, indicate if changes are made, and not use for commercial endeavors. These restrictions are in place as we'd like to receive credit for our work (important to institutional advancement), realize any changes to our work to either advance our own work or respond to the substance of those changes to defend our work, and lastly we do not want now or encourage others to profit from this work as we assert that economic barriers will slow the progress of open data.

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.

From the IU Policy on Intellectual Property -
The University shall assert no claims to copyright ownership in or to distribution of revenue from Traditional Works of Scholarship.

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.

Not applicable.

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.

We will create a manual in PDF format.

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.

We will use Microsoft office products and use university server space to host the manual.

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.

PDF

Workflow and Asset Maintenance/Preservation

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

Not applicable.

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).

The manual in PDF format will be stored in a variety of different secure locations.

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).

Not applicable.

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

Not applicable.

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).

Not applicable.

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).

We will provide the manual in PDF openly available online via the project website hosted by the university accessible via the standard web browsers.

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.

The Bethel Archive Project: <https://comet.soic.iupui.edu/bethel/index.php/#story>

This site provides open access to a 3D model built to preserve a local historical sanctuary.

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.

Not applicable.

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.

Not applicable.

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.

Not applicable.

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

Not applicable.

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

Not applicable.

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

Not applicable.

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

Not applicable.

Access and Use

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

Not applicable.

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

Name of publicly accessible source code repository:

Not applicable.

URL:

Not applicable.

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.

We will be collecting assessment data via survey, interviews, and journals. This data will guide our evaluation/test of our model.

Data will be collected throughout the first two years of the study, monthly with project sites, and quarterly at advisory board meetings.

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?

Yes, this will require approval. Our plan is to submit for approval upon news of successfully securing this grant.

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.

The interviews and surveys will collect some personally identifiable information (e.g. name of person an organization), and interview and survey data are not possible to be de-identified as we will work with a small number of participants (4 library staff) from distinctive organizational and local context. Further, interview and survey data are only meaningful with the organizational and local context. Although the nature of interview is not sensitive, we will not share the data to protect participants privacy and confidentiality.

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

Word, Excel

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?

We will collect informed consent forms for interviews and surveys. The consent forms will include the description of the project, participation process, confidentiality, compensation, and other information. In addition, the consent form will inform the participants our data deposit and sharing plan. However, the data will only be shared internally with the team.

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

After the completion of the project, our interviews and survey data will be internally archived and managed, but will not disseminate publicly as described above. Other findings will be disseminated through IUPUI ScholarWorks.

A.7 Identify where you will deposit the data:

Name of repository:

NA

URL:

NA

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