

LYRASIS proposes a collaborative project to create and pilot an adaptable set of tools and resources that can be used to assess, plan for, and manage sustainability in open source software (OSS) programs serving cultural and scientific heritage organizations. In 2017, with support from IMLS grant LG-73-17-0005-17, LYRASIS held a national forum with stakeholders from 27 diverse OSS programs to explore and deepen the field's understanding of sustainability. Participants defined a framework for OSS sustainability assessment and planning, described in *It Takes A Village (ITAV): An OSS Sustainability Guidebook*, which was published in February 2018. The *ITAV Guidebook* provides a model that can be applied to emerging and established OSS programs. Over the past two years, LYRASIS and ITAV Forum participants and advisors have been testing the framework with OSS programs using a variety of approaches and processes. The project proposed here will expand upon this work to create and pilot a structured series of tools – *ITAV in Practice* – that guides users through the assessment and planning process. *ITAV in Practice* will be designed to address the needs of diverse OSS programs in a cost-effective way that fosters learning and supports the iterative nature of sustainability planning. LYRASIS will engage with cultural- and heritage-based OSS communities to produce *ITAV in Practice*, test it with seven different OSS programs, and evaluate its effectiveness in building and managing sustainability plans. The project advances IMLS's goal to "Build Capacity" by strengthening the field's ability to sustain community-supported OSS programs that are critical components of local and national digital infrastructures and initiatives.

Statement of National Need

ITAV: The Forum and Guidebook

OSS supports cultural and heritage organizations in mission-critical functions to manage and provide access to content, information, and services. Libraries, archives, and museums have come to rely upon OSS applications for content management (e.g., Drupal, Mukurtu, Omeka), collections management (e.g., ArchivesSpace, CollectiveAccess), integrated library systems (e.g., Evergreen, Koha), digital repositories (e.g., Avalon Media System, DSpace, Islandora), digital preservation (e.g., BitCurator, LOCKSS), discovery (e.g., Blacklight, VuFind), and other functions (such as CORAL for electronic resource management, SimplyE for e-reading, and Zotero for citation analysis). Often evolving from grants and supported by dispersed communities of users and volunteers, OSS initiatives rarely plan for or document sustainability. When organizational leadership or capacities change, volunteers shift interests, or grants end, OSS technologies become endangered. This is not unique to cultural and heritage communities. A 2016 research report for the Ford Foundation, *Roads and Bridges: The Unseen Labor Behind Our Digital Infrastructure*, describes the prevalence and importance of OSS as a public good as well as the challenges to its sustainability. "The decentralized nature of open source has made it what it is: crowdsourced software that anyone can build, share and contribute to. But when it comes to discussing organizational needs or sustainability, it can be difficult to make authoritative decisions."¹

Complex OSS programs that support cultural and heritage organizations are built from and depend upon multiple, other OSS applications to function, complicating sustainability. For example, ArchivesSpace uses the Solr search platform, Mukurtu is based on Drupal, and Blacklight uses a Ruby on Rails application framework. Sustainability assessment and planning must account for interdependencies, interrelationships, and the evolution of underpinning communities and technologies. Building an individual organization's infrastructure or a national digital platform with OSS requires continuous attention to sustainability to ensure that commitment and resources will be available for as long as the OSS is needed. Sustainability was an overarching theme of IMLS's *National Digital Infrastructure and Initiatives: A Report on the 2017 National Digital Platform at Three Forum* (June 2018), where "everyone agreed that sustainability remains one of the greatest challenges libraries face" (p. 12). Participants concluded that "Sustainability, maintenance, and long-term impact must be considered as

¹ Nadia Eghbal, *Roads and Bridges: The Unseen Labor Behind Our Digital Infrastructure* (New York: The Ford Foundation, 7/14/2016), p. 61, available at <https://www.fordfoundation.org/work/learning/research-reports/roads-and-bridges-the-unseen-labor-behind-our-digital-infrastructure/> (retrieved 2/7/2020). For additional examples of the challenges to sustaining OSS, see Klint Finley, "Giving Open Source Projects Life After a Developer's Death," *Wired* (11/06/2017), available at <https://www.wired.com/story/giving-open-source-projects-life-after-a-developers-death/> (retrieved 2/4/2020).

early as possible for any program” (p. 16).

In response to the challenges of sustaining OSS, LYRASIS hosted a forum in October 2017, with support from an IMLS National Leadership Grant for Libraries, titled “It Takes a Village: Open Source Software Sustainability Models.” The Forum convened 49 stakeholders from 27 OSS initiatives serving cultural and scientific heritage to develop a guide for planning, promotion, and assessment of sustainability. Published in February 2018, the *ITAV Guidebook* provides OSS stakeholders with a nonjudgmental framework to evaluate the health of their software and identify opportunities for change and growth. It also offers potential adopters of OSS a structure within which to consider sustainability and risk. The framework portion of the *ITAV Guidebook* is attached in Supportingdoc5 and the full *Guidebook* is available at <https://www.lyrasis.org/itav>.

In looking at their own OSS programs, Forum participants discovered that sustainability is not a linear process with specific starting and end points. They defined OSS sustainability as an iterative process evolving across phases and facets. The three phases speak to where an OSS program or facet is in its lifecycle: **getting started**, **growing**, or **stable but not static**. The four facets describe the different, but intertwined components of OSS sustainability: **governance**, **technology**, **resources**, and **community engagement** (see Supportingdoc5, pages 8-9). Each facet is equally critical but may be in a different phase and have different timelines and needs. In addition to defining phases and facets, the *ITAV Guidebook* describes goals, characteristics, and common roadblocks, followed by guidance for moving an OSS program to the next phase in a given facet. The *Guidebook* also offers case studies and resources to inform a program’s research, planning, and decision-making processes.

Over the past two years, the *ITAV Guidebook* has been downloaded by 1,837 unique users and the ITAV webpage has been viewed 13,867 times by 5,402 unique users. Webinars and presentations about the *Guidebook* have attracted 450 attendees at events hosted by the Coalition for Networked Information (CNI), Digital Library Federation, EuropeanaTech (see an article in *Insight* [issue 10](#)), Society of American Archivists, Museum Computer Network, World Open Library Federation, and LYRASIS. The Samvera community recently presented at CNI about their use of ITAV. LYRASIS also offered a series of webinars to explore each of the individual facets in greater depth. Even before publication, some ITAV Forum participants began using the *Guidebook* with their communities, one noting in an evaluation: “This has helped us assess where we are and how best to move forward. We have all been a little siloed in our approaches, thinking we were the only ones in a space, and so (it) will be good for others to see that there is experience to tap into and build on.” An individual unable to participate in the ITAV Forum commented on the value of the *Guidebook* as a tool for “understanding the stages of growth and development their project and community will go through.” Another reader noted: “It’s reassuring to see that our project is undergoing a transition that seems typical for other OSS communities and I know we’ll benefit from the collective wisdom and best practices provided by the guidebook.”

LYRASIS has been testing and validating the ITAV framework through application to a variety of programs. Internally, we are in the process of evaluating five OSS programs in the DuraSpace Community-Supported Programs Division (ArchivesSpace, CollectionSpace, DSpace, Fedora, and VIVO). The process included a workshop and follow-up evaluation and planning sessions with individual programs’ staff and leadership. The ITAV team also has worked with external organizations. The first was a facilitated [workshop](#) at the University of Michigan to apply the *Guidebook* to its open source publishing platform, Fulcrum; a follow-up is planned for 2020. The *ITAV Guidebook* also was used for two consultations: the [ARKs in the Open](#) project, which is building an open international community around Archival Resource Keys (ARKs), and the Repository Analytics and Metrics Portal ([RAMP](#)), a collaborative web service at Montana State University that improves the accuracy of institutional repository analytics. And, while OSS remains the focus of this project, others are using the *ITAV Guidebook* for sustainability planning around consortia, digital libraries, and other projects, demonstrating the wider applicability of the framework. Internally, we have used the framework for [LYRASIS Learning](#), our continuing education program, and will apply it over the next year to a project funded by the Andrew W. Mellon Foundation, [Performing Arts Readiness](#), which supports emergency preparedness.

The Idea for ITAV in Practice:

As LYRASIS and others have applied the ITAV framework to various OSS programs, the need for

shared tools and processes has emerged as an important need within the community. While the webinars and presentations mentioned above will raise awareness and help some get started, communities supporting OSS are complex and diverse, making use of the ITAV framework unique to each and limiting applicability of general educational sessions. Consultations are better adapted to the uniqueness of an OSS program, but also are expensive and time consuming, limiting the ability for agile adaptation of sustainability plans as OSS programs, communities, and technologies evolve. To address the needs of diverse OSS programs in a cost-effective way that fosters learning and supports iterative assessment and planning, LYRASIS proposes development of a more structured series of tools through *ITAV in Practice*, which will guide users through the process in a way that allows for adaptation to local circumstances. The ITAV tools also will provide a means to document and easily update sustainability plans. Letters in the attached Supportingdoc3 speak to community interest in expanding the *ITAV Guidebook* through the proposed *ITAV in Practice*.

Research conducted during the ITAV Forum found that sustainability plans for OSS programs are frequently undocumented, sometimes drafted to meet a grant requirement, but not revisited or updated in an ongoing way. While aspects of sustainability may be implicit in other organizational plans (e.g., strategic plans, budgets, technology roadmaps), sustainability is not an explicit consideration each time those plans are updated and is not considered in a holistic way so that elements of all facets (governance, technology, resources, and community engagement) are mutually supportive. For example, technology sustainability may need to be considered in the context of resource requirements (budgets), user needs (strategic plans), and community engagement for code contributions or testing (communications). *ITAV in Practice* will enable all stakeholders in an OSS program to participate in assessment of each facet of sustainability at current phases, develop balanced strategies to advance sustainability goals, and integrate sustainability plans into other organizational planning efforts. *ITAV in Practice* will be free to access and use, flexible so that OSS programs can adapt tools to their own needs, and designed to support community-based processes.

The *ITAV Guidebook* identifies readings that could inform assessment or planning in each of the four facets from the nonprofit, social, and heritage sectors. However, none of the resources identified have included: (a) all four ITAV facets in a coordinated way; (b) open source technology as central to a program's mission; and (c) community as a key aspect of operating and governing models. In addition, while strategic plans look at the long term (3-5 year) and operating plans look at the short, annual term, sustainability planning involves a combination of timeframes for different facets. While all types of plans could involve environmental scans, OSS sustainability plans also need to include consideration of viability – that is, when to not sustain an OSS program – which is not typically part of strategic or business planning. For some, this is one of the most valuable aspects of the ITAV work. A digital archivist working with LYRASIS on a new OSS project noted the importance of having “an exit strategy, whether it's because there's something else that does the job better or because there is no longer a need for the process or function that an OSS tool was designed to accomplish.”

In looking for tools that could easily be adapted to ITAV, general planning templates (such as [Washington University's Sustainability Framework and Assessment Tool](#) or [Strengthening Nonprofits' Capacity Builder Resource Library](#)) do not address unique characteristics of OSS communities, financial models, governing structures, or technologies. The U.K.-based Software Sustainability Institute provides a [Checklist for a Software Management Plan](#) that includes a few questions about sustainability as part of a larger plan for software developed and used by individual researchers. They also provide tips and suggestions, as does [OSS Watch](#), but no existing resource was found that could be readily adapted and applied to the ITAV framework. Specific resources that can assist with assessment and planning within individual facets will be reviewed and included in *ITAV in Practice* as recommendations when relevant, to build on existing knowledge. Examples of such resources include: software preservation best practices, such as those promoted by the [Software Preservation Network](#), for OSS programs that are sunsetting; analytic tools, such as those developed by the [CHAOSS Project](#) at the Linux Foundation, for measuring activity and analyzing development of OSS technologies; and community engagement models, such as Educopia Institute's [Community Cultivation Field Guide](#), for OSS programs seeking to expand community involvement. In addition to including existing resources and creating new materials for *ITAV in Practice*, models that have been developed by LYRASIS in various ITAV applications will be further vetted and adapted during the project. Examples include prototype discussion guides, activities, questionnaires, and group exercises. *ITAV in Practice* will evaluate and make use

of the best of existing openly accessible resources, create new tools to fill gaps within facets or phases, and provide all within a coordinated framework that supports the infrastructures of libraries, archives, and museums.

Project Design

Goals, Outcomes, Assumptions, and Risks

The goal of the proposed project is to advance national practice in support of digital infrastructures and initiatives by improving sustainability among existing and emerging OSS programs serving cultural and scientific heritage organizations. In collaboration with diverse OSS programs, LYRASIS will create, test, evaluate, and publish a dynamic, flexible suite of tools and resources – *ITAV in Practice* – to provide pathways for sustainability assessment, planning, and management. The desired outcomes are to raise field awareness of the value of sustainability planning and make it easier for programs to develop and maintain plans that ensure their OSS remains viable and effective for as long as it is needed.

The direct audience for *ITAV in Practice* is stakeholders in OSS programs, including those who develop, contribute, manage, fund, and use OSS to support the missions of libraries, archives, museums, and other cultural and scientific heritage organizations. These stakeholders will be involved in creating and testing *ITAV in Practice*, sharing their experiences and perspectives to strengthen programs and assist others in the field. Through ITAV's network of forum, webinar, presentation, and consulting participants, LYRASIS and the project's Advisory Group will reach out personally and through media to invite engagement in project activities and encourage feedback during and after the project period. On a secondary level, any library, archive, or museum that is considering or uses OSS will benefit from improved planning for and greater transparency around sustainability for the software upon which they depend.

The project assumes that documented tools and processes will strengthen sustainability by providing assessments and results that not only document sustainability plans, but also integrate sustainability strategies into other planning documents (strategic, operating, budget, etc.). There are risks inherent in trying to serve, through one suite of tools, the wide variety of OSS in use and under development in cultural and scientific heritage communities. To address this, LYRASIS will collaborate with a diverse group of programs in the planning, design, testing, and evaluation stages of the project, including both established and emerging OSS programs with different missions, audiences, financial models, staffing/volunteer structures, and governance models (see Supportingdoc1 for examples). Through iterative design, testing, and evaluation, both individual facets and the entire suite of *ITAV in Practice* will be assessed multiple times in such areas as ease of use, flexibility, and value of outputs in relation to sustainability planning. Achieving consensus among different stakeholders in an OSS program also is a challenge, which we plan to address through inclusion of educational materials that support effective decision-making processes, such as discussion guides and group exercises.

Leaders, Advisors, and Collaborators

The project co-leads will be the same individuals who led the Forum and creation of the *ITAV Guidebook*, Laurie Gemmill Arp (Director of Collection Stewardship) and Megan Forbes (Program Manager, CollectionSpace). Both have served a variety of roles within multiple OSS programs, including governing, user, and staffing positions. They are experienced consultants and instructors, bringing skills in project management and consensus-building to the plan of work. Each is expected to dedicate an average of 20% of their time over the project period. They plan to divide leadership among the facets, with Laurie managing work on governance and community engagement, and Megan managing work on technology and resource. Laurie will serve as project director for IMLS. The project co-leads will benefit from insight and perspectives of other LYRASIS staff supporting OSS programs, including those working for the five organizational homes within LYRASIS and those providing hosted OSS technology services for the community. While the diversity of OSS programs represented with LYRASIS provides a variety of contexts for ITAV application, the co-leads will not rely only on these in creation of *ITAV in Practice*.

The ITAV Forum Advisory Group (AG) will continue to provide critical expertise and perspective to the

project. Members are Robert Cartolano (Associate Vice President for Digital Programs and Technology Services, Columbia University Libraries), Tom Cramer (Assistant University Librarian and Director of Digital Library Systems and Services, Stanford University), Mercè Crosas (Chief Data Science and Technology Officer, Institute for Quantitative Social Science, Harvard University), Michele Kimpton (Director of Business Development and Strategy, DPLA), Katherine Skinner (Executive Director, Educopia Institute), and Ann Baird Whiteside (Librarian and Assistant Dean for Information Resources, Harvard University Graduate School of Design). Letters of commitment are included in the attached Supportingdoc3. Advisory Group members will contribute in a variety of ways to the project as noted in the steps below, including hosting facet planning meetings, selecting test programs, advising on design and content, and testing and reviewing early versions.

ITAV in Practice will be created through a highly collaborative process involving individuals from many different OSS programs, including users and community adopters, technical leads and developers, volunteers and contributors, governance, and staffing. Examples of OSS programs that will potentially be involved are listed in Supportingdoc1. Collaborators will assist in defining tools and processes, reviewing and testing early versions, recommending valuable reference resources, and evaluating the effectiveness of *ITAV in Practice*. Ongoing collaboration with this community of experts also will be important to *ITAV* sustainability plans.

Description of ITAV in Practice

The proposed suite of tools will be designed to enable stakeholders in OSS programs to collectively assess facets, determine current and desired phases, then apply tools (templates, exercises, checklists, etc.) and resources (case studies, models, readings, etc.) to identify sustainability strategies, develop plans, and measure results. *ITAV in Practice* will be flexible to accommodate diverse OSS programs; agile to enable programs to set priorities within and among facets; easy to use, edit, and share within a community-based planning process; and approachable to make sustainability planning easier to start and maintain, with outputs that are clear. All materials² in *ITAV in Practice* will be accessible via a wiki (or other documentation management system) under a Creative Commons license.

To assist in setting priorities and managing lists of potentially complex strategies in a framework that is used by many OSS communities, LYRASIS envisions the outputs of *ITAV in Practice* functioning in a similar way to Agile Software Development [task boards](#) or scrum boards, which modularize elements to make them easier to understand, schedule, reassign, etc. The end result will be a coherent plan that can be easily adapted to accommodate change. Examples of how this might look can be seen in the 2019 [roadmaps](#) for the California Digital Library's Publishing and Special Collections Group. In addition to assessment and planning tools specific to OSS sustainability, *ITAV in Practice* will incorporate resources to support successful use. Examples include strategies for defining and applying organizational mission, vision, and values in sustainability plans; recommendations for facilitating planning within a community; models for evaluating progress; and suggestions for incorporating sustainability into other organizational plans. Sustainability is an iterative process, and *ITAV in Practice* will be designed to be easy to revisit and update, so that plans are not just created annually and stored, but used and adjusted on an ongoing basis. As noted in the "Project Activities" section below, LYRASIS will work with an instructional designer to incorporate the variety of tools and resources into a usable, accessible interface that meets the project's goals. A graphic designer will also assist in unifying content to align with the *Guidebook's* Sustainability Wheel framework (page 10 of Supportingdoc5).

Project Activities and Steps

The project will take 30 months, from August 2020 through January 2023. The plan of work is designed to create materials for individual facets (governance, technology, resources, and community engagement) in an iterative process that incorporates collaborative planning, group-based and OSS program testing, and both immediate and six-month follow-up evaluations. What is learned from the team designing and applying tools for the first facet will be incorporated into planning, design, testing, and evaluation strategies for the second

² Although "tools" is used to describe content in *ITAV in Practice*, no software is being produced through this project.

facet and so on. Five selected OSS programs will test tools for each facet as developed; two others will pilot the entire “beta” version of *ITAV in Practice* through a consultative process that allows co-leads to both facilitate implementation and evaluate effectiveness. Sections of *ITAV in Practice* will be available in beta form as other facet resources are being developed, so the community will not need to wait until the end of the project period to begin using wiki content. Outreach will occur throughout the project period to engage the OSS community, share results, gather feedback, and incorporate diverse perspectives and experiences into *ITAV in Practice*. Specific steps are as follows:

1. Establish framework and process for initial work to create *ITAV in Practice*.

Timeframe: Project year (PY) 1, Quarter (Q) 1, August through October 2020.

- a. Co-leads work with the Advisory Group to set locations and determine invitees for the four facet design meetings, select OSS programs to participate in testing, refine desired outputs, and review a draft agenda for the first facet design meeting (see Supportingdoc2 for a sample).
 - Facet design meetings will be held in different regions of the country to support national engagement as well as local networking among OSS programs. An Advisory Group member will serve as host for each, providing meeting space and support for local logistics. All four sites and hosts will be identified at the beginning of the project.
 - While the plan of work focuses on one facet at a time, design meeting participants will be identified for all facets at the beginning to ensure diversity and broad representation. Each facet design session will include the co-leads, an Advisory Group mentor/host, a facilitator, an instructional designer, and eight OSS program representatives with relevant expertise in the facet under discussion (13 total/meeting). Diversity will be sought among participants, including their OSS phase and focus, stakeholder role, and demographics (e.g., gender, ethnicity, years of experience, etc.).
 - The Advisory Group will draft a code of conduct³ for project meetings to encourage open dialogue in a safe environment that supports mutual respect and inclusion for all participants. Each group meeting will review and be allowed to add to or refine the code at the beginning of their session.
 - Seven different OSS programs will be selected by the Advisory Group to test and pilot *ITAV in Practice*. Five programs will test *ITAV in Practice* at the design stage; four will test one facet each as they are released, and one program will test all four facets. Once the beta version of *ITAV in Practice* is complete, two additional OSS programs will pilot the entire set of tools in consultation with the co-leads. The five testers and two pilots represent different types of users: those interested in working on a single aspect of their OSS organization and those conducting a full assessment of sustainability as part of a larger planning process. Co-leads will invite written expressions of interest from leaders of OSS programs, after which additional information about needs and plans of interested programs will be collected by interview and compiled for the Advisory Group to use in making selections. All test and pilot OSS programs will be selected early in the project to ensure they represent diversity in terms of size, scope, governance structure, service community and life cycle phase. Several OSS programs serving different communities have already indicated interest, including [ePADD](#), [Fulcrum](#), [Intercept](#), [Samvera](#), [Specify](#), [Vega](#), and [VIVO](#).
- b. Co-leads meet with the project’s facilitator and instructional designer to review and incorporate the Advisory Group’s input into project plans. Expectations will be clarified, evaluation strategies defined, and the agenda and activities for the first facet design meeting detailed.
 - Each of the facet design meetings will be facilitated by Christina Drummond (CJSD Consulting). She successfully facilitated the ITAV Forum, and brings knowledge and experience from that and other community-supported initiatives to inform structure and conduct of facet design meetings. She will adapt the general agenda for each facet meeting, recommend exercises and strategies to achieve desired outputs, and develop an assessment plan for meeting follow-up. Ms. Drummond will work with the co-leads after each meeting to confirm results, evaluate effectiveness, and identify adjustments for future meetings. While Ms. Drummond will serve as a sounding board around

³ For example, see one by Code4Lib at <https://2018.code4lib.org/conduct/>.

emerging themes, she will not be responsible for *ITAV in Practice* content.

- An instructional designer will work with the co-leads to apply user-centered design to and ensure accessibility of both *ITAV in Practice* overall and individual tools/resources. While the instructional designer will not create content, he or she will help design tools and resources to be effective in practice, adaptable for different OSS use cases, and in accord with web content accessibility standards. Preliminary bids have been collected to inform the budget (see the RFP in Supportingdoc4). Co-leads will review these, check references, and select one based on bidders' experience with similar projects and their knowledge of user-centered design and accessibility principles and standards; preference will be given to candidates with previous experience working with the library, archives, and/or museum communities. The instructional designer will attend the four facet design meetings to observe how participants approach and work through aspects of sustainability and learn about OSS/field terms and context. He or she also will advise on evaluation strategies and help incorporate feedback from evaluations into improved design of *ITAV in Practice*.
 - c. Co-leads arrange for the first facet meeting's facilities, issue invitations, order meeting supplies and meals, and arrange travel when needed for participants. Alicia Johnson, Administrative Assistant at LYRASIS, will work with the co-leads to manage logistics and travel, as she did for the ITAV Forum.
2. Design, review, test, and evaluate the first facet within ITAV (Governance).
Timeframe: primarily PY1, Q2-3, (November 2020 through May 2021).
- a. The first step will be to hold a one-day design meeting with 13 participants representing different OSS programs and stakeholder perspectives relevant to the chosen facet (see 1.a above). The goal of the design meeting is to map the *ITAV Guidebook* content with participant expertise into a practical set of exercises and tools that can be used by any OSS program working on sustainability planning. Tools and resources tested by the ITAV team over the past year will be provided for review and feedback, additional tools and resources will be identified, and input will be sought to create new resources to address gaps. For example, a recommendation for moving from Phase 2 to 3 of Governance is to evaluate all aspects of existing governance. Part of this evaluation could be an exercise called "Catastrophizing," which asks OSS program staff and contributors to brainstorm a list of worst-case scenarios and then evaluate how well their governance structure would handle the problem. Another example is an exercise to understand "Who Is Your Community." Through a participatory process, a diagram is created that identifies the OSS program's stakeholders and maps their characteristics. Participants in the design meeting will review tools like these and identify additional tools, resources, and activities to support an OSS community in assessing and strengthening sustainability.
 - b. Following the facet design meeting, the instructional designer will work with the co-leads to create and/or improve tools identified during the meeting. This is expected to take 2-3 months through an iterative process of research, writing, design, review, and editing. In addition to creating specific tools and connecting to existing, useful resources, co-leads and the instructional designer will design the contextual framework for each facet (e.g., definitions, phase descriptions, etc.) and content to guide users in their interaction with the wiki. LYRASIS will work with the graphic designer for the *ITAV Guidebook*, Kathleen Turaski of Resonance Marketing, to identify and create an engaging presentation of content that encourages usability and aligns with the *Guidebook*. Resonance Marketing is a communications firm focused on serving non-profit organizations and has worked with clients like Clark Atlanta University, Educopia, Emory University, and Helen Keller International.
 - c. Also following the facet design meeting, the facilitator will gather feedback from participants to evaluate the effectiveness of the experience from their perspective. This feedback will be used to inform the agendas of succeeding facet design meetings.
 - d. When the draft version of the facet is ready in *ITAV in Practice*, design meeting participants and the Advisory Group will be invited to review, test, and provide feedback along with the two OSS test programs selected by the Advisory Group as noted in 1.a above. The programs testing a single facet will do so over 2-4 weeks, whereas the OSS program testing all four facets will do so in multiple 2-to-4-week periods over approximately one year. Co-leads will provide an introductory webinar prior to the

test phase for each facet, be available during the review period (4-6 weeks) for phone or email support, then gather feedback via a survey of all and interviews with the OSS test program teams.

- e. Co-leads will revise facet content prior to public release in beta form for open use. In addition, there will be a second evaluation by both OSS programs testing the draft facet six months after using the tools to assess longer-term value. Excluding this six-month follow-up evaluation, the timeframe for creating content for one facet of *ITAV in Practice* from design meeting to beta release is six months.

3. Design, review, test, and evaluate content for remaining three facets.

Timeframe: PY1 Q3 through PY2 early Q3, February 2021 through February 2022

- a. The same design meeting, development, testing, and evaluation process described in section 2 above will be followed for the three remaining facets, using feedback gathered from participants and OSS test programs in preceding facets to adjust approaches and designs where needed. The co-leads will convene a virtual meeting with the facilitator and instructional designer approximately two months following each design meeting to review feedback, consider the context of the upcoming facet, and create the agenda for the next design meeting.
- b. Design consideration will be given to the ways in which content may overlap between facets. Usability and accessibility assessments will be done by the instructional designer after beta release of facet 1 and before beta release of facet 2 to ensure *ITAV in Practice* meets standards and any identified issues are addressed prior to inviting testing and review of the draft of facet 2.
- c. Participants in preceding design meetings will be invited to review content in draft versions of succeeding facets, to widen the pool of reviewers and testers. As beta releases occur for individual facets, LYRASIS and Advisory Group members will share announcements about their availability within the OSS community. *ITAV in Practice* will include a “contact us” option for users to ask questions and provide feedback. Beta release of the fourth facet is scheduled for February 2022.

4. Conduct pilots of *ITAV in Practice* with two additional OSS programs to assess effectiveness and impact.

Timeframe: PY2 Q3 through PY3, early Q1, March through August 2022.

- a. Once *ITAV in Practice* is complete, two OSS programs will pilot the tools across all four facets simultaneously, with consulting support from the co-leads. Pilot OSS programs will be selected by the Advisory Group early in the project (1.a above). Co-leads will provide pilots with regular updates during the design stage to keep them engaged.
- b. Consultations with the pilot OSS programs will facilitate use of *ITAV in Practice* and support creation of sustainability plans. In addition to assisting each program in the assessment and planning process, co-leads will identify how and where tools may cross facets when combined in use, and assess effectiveness of the *ITAV in Practice* tools and resources during use.
 - In the quarter preceding pilots, co-leads will work with each OSS program’s staff and leadership to define the process they plan to use in detail (e.g., who will be involved, expected outputs and outcomes, steps in and timing of the process, etc.). Methods for maintaining a shared schedule and documentation will be determined. Regular, scheduled communication between OSS programs and co-leads will be ongoing throughout the pilot process via phone or video conferences.
 - Co-leads will provide a webinar introduction to *ITAV in Practice* for each program’s stakeholders at the beginning of the pilot. Pilot programs will be encouraged to engage as many community members as they can in this webinar, to share plans for the assessment process.
 - The co-leads will meet in-person to consult with each pilot OSS program at an appropriate point in their process. Some may see this as valuable at the beginning, others may find it more useful midway or at the end when they are reviewing results and validating plans with their stakeholders.
 - While each consultation will be unique to the pilot program’s needs and communities, the overall assessment and planning process is estimated to take an average of six to eight weeks per OSS program due to expected broad community engagement. The two pilots will go on simultaneously and lessons from each group’s experience will be shared with others when useful.

- Each pilot program will produce a case study of their process and/or sustainability plan to share through the ITAV website. Co-leads will review and recommend edits as needed prior to publication. Each pilot will be allowed to exclude confidential information from their cases.
 - To ensure participation from volunteer-based OSS programs or those with fewer financial resources, and to support community-wide engagement in use of *ITAV in Practice*, each OSS program will receive a stipend to support selected meeting expenses (lunches and supplies) and travel for three community members for the in-person meeting with co-leads during the planning process.
- c. Evaluations will occur immediately after each consultation via an anonymous survey of participants. Discussions, led by co-leads with each OSS program’s leaders, will explore survey results and provide the pilot program an opportunity to recommend adjustments, additions, or changes to *ITAV in Practice*. As during the design phase, another evaluation will take place with pilot OSS programs six months after completion of *ITAV in Practice* to assess longer-term value and impact.
 - d. The full beta version of *ITAV in Practice* will be available online around February 2022, allowing other organizations to adopt it. Co-leads will provide telephone and email support to these if requested. They also will include these organizations when soliciting feedback and evaluations.
5. Final project release, outreach, final project evaluation, and ITAV sustainability.
- Timeframe: PY2 Q3-4 and PY3 Q1-2, February 2022 through January 2023 (end of project period).
- a. Results of two pilot implementations along with feedback from the OSS user community during that period will be incorporated into the final project release by the co-leads, instructional designer, and graphic designer (August 2022).
 - b. Once *ITAV in Practice* is open for use (version 1), co-leads will schedule two free webinars to promote it to the community, encouraging OSS programs to try it out, contribute additional resources, and/or provide feedback. One recording will be freely shared via the ITAV wiki and LYRISIS website (August 2022 through January 2023).
 - c. Three conference presentations will be made during 2022, to share *ITAV in Practice* and encourage use. Sites will be selected to reach diverse OSS stakeholder groups, such as events sponsored by CNI, Museum Computer Network, Code4Lib, American Library Association, and Society of American Archivists. A co-lead and Advisory Group member will present at selected events and presentation materials will be shared afterwards through the ITAV wiki.
 - d. In addition to the iterative evaluations noted above – of design meetings, draft and beta facet sections of *ITAV in Practice* by test and pilot programs, and user feedback – the co-leads will conduct a final project evaluation through a survey of all collaborators in the project (November 2022 through January 2023). This survey will address predetermined performance measures for IMLS Agency-Level Goal 2 (Build Capacity). Webinar attendees will be asked to complete evaluations following sessions. Usage statistics will be tracked for both the *ITAV Guidebook* and *ITAV in Practice*. The ITAV wiki also will provide the means for users to provide feedback, ask questions, and recommend content additions.
 - e. Post-project, LYRISIS will continue to collaborate with the OSS community to maintain *ITAV in Practice*. Most tools and resources within it will not require updating, but new resources and tools may be added in the future. *ITAV in Practice* will be a community resource, built through community effort, and LYRISIS and the ITAV Advisory Group will encourage the community to not only use it, but also contribute resources for others to use, including adaptations of tools produced through this project and new tools or resources. LYRISIS commits to provide wiki space for ITAV post-project, and intends to use *ITAV in Practice* internally for ongoing sustainability planning for the OSS programs we support. As a final step, the co-leads will work with the Advisory Group immediately post project to apply *ITAV in Practice* to the full “It Takes a Village” initiative itself. Strategies and plans resulting from the assessment will be provided to IMLS and shared with the community through the ITAV wiki.

Indicators of Success

- Participation in design and testing of *ITAV in Practice* includes diverse OSS program and individual perspectives in order to provide tools and resources that are useful, usable, and accessible for all types of

users. The co-leads and Advisory Group will track key characteristics of design meeting and test/pilot programs to evaluate the project's success at including diverse perspectives in *ITAV in Practice*. The final project evaluation will include questions about OSS program characteristics to apply to analysis of results and assess any variances in measures of value between different types and sizes of programs.

- A second indicator of success is that *ITAV in Practice* successfully leads OSS programs through creation and/or updating of sustainability plans. Co-leads will assess this in part through follow-up evaluations and interviews with the five OSS programs involved in testing *ITAV in Practice* facets and the two OSS programs piloting the resources, with the goal that all seven have completed relevant evaluations and identified strategies for strengthening their organization. The final project evaluation will reach across all participants in the project (and any known users of the wiki) to assess use and value of *ITAV in Practice* beyond the seven OSS test/pilot programs. Success would be that 90% or more of final evaluation respondents indicate they will use or continue to use *ITAV in Practice* in their programs
- *ITAV in Practice* also seeks to raise awareness of the importance and value of sustainability planning. Web statistics will be gathered and applied by co-leads across the ITAV program (*Guidebook*, wiki, and tools) as ongoing measures of awareness, interest, and use.

National Impact

ITAV in Practice will support OSS programs and communities in making the best use of limited resources to sustain up-to-date local and national digital infrastructures for cultural and scientific heritage organizations. It will provide not only the framework for thinking about sustainability but also the tools and a structure for effective assessment and planning. Clarity around what sustainability means for a specific OSS program and what is required to grow or maintain the OSS will empower the community to set priorities and anticipate challenges before they become crises. *ITAV in Practice* will enable community members to create consensus around a shared vision of the future, bringing all stakeholders together to sustain their OSS or, when appropriate, plan for sunseting a program while limiting impact on the field. *ITAV in Practice* has the potential to transform sustainability from a concept in a grant proposal or financial model to a clearly defined goal with strategies, steps, and benchmarks to evaluate achievement. While designed for OSS programs, the *ITAV Guidebook* has been considered as a framework by other types of cultural and scientific heritage organizations and similar potential may emerge for wider applicability of *ITAV in Practice*.

Like the 2017 ITAV Forum and 2018 *ITAV Guidebook*, this project will continue to raise awareness of the requirements for OSS sustainability and factors that influence sustainability at various stages of a software's lifecycle. Those planning and/or using OSS will have tools, resources, and models to use in researching sustainability strategies, identifying needs and options, and defining plans to maintain and grow their programs. Those seeking funds for new OSS will have models to follow to develop sustainability strategies and communicate them to granting agencies and other investors. Among current OSS adopters, sustainability assessment and planning through *ITAV in Practice* can deepen their engagement with, and support for, the software and community. Stakeholders in cultural and scientific heritage OSS initiatives will gain deeper knowledge of current practices within the field and be exposed to new ideas and sustainability strategies through *ITAV in Practice* case studies, resources, and tools. Through the *Guidebook* and *ITAV in Practice*, libraries, archives, museums, and other cultural and scientific heritage organizations will be encouraged to take a long-term view of the OSS they use, so software is not created just to fix a problem, but rather to endure and provide functionality for a community as long into the future as it is needed.

The broadly inclusive approach to planning proposed above will create tools and resources that adapt and scale to different types, sizes, models, and contexts of OSS programming. Bringing together many experts and diverse perspectives will not only shape *ITAV in Practice* so that it can serve all cultural and scientific heritage OSS communities, but also improve communication and knowledge-sharing within and across those communities. Working together to improve sustainability of OSS across the field can build mutual support among programs, foster collaboration, improve transparency, and increase trust. Sustainability is a concept around which all OSS programs can connect; *ITAV in Practice* will provide a means for them to do so.

Open Source Software Sustainability in Practice
Schedule of Completion

		Project Year 1												Project Year 2												Project Year 3					
		2020					2021							2022							2023										
		A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Activity	Primary Responsibility																														
Select meeting hosts, participants, test & pilot programs	CL, AG																														
Planning meeting: facilitator, instructional designer	CL																														
ITAV in Practice Design and Testing																															
Agenda created for Facet 1 meeting	CL, AG, facilitator																														
Facet 1 meeting site arrangements & invitations	CL, AG																														
Hold Facet 1 meeting	CL, collaborators																														
Meeting 1 assessment by participants & team	Facilitator, CL																														
Facet 1 tools drafted, review by meeting participants	CL, instructional designer, graphic designer																														
Facet 1 tools tested with 2 OSS programs & others	CL, OSS test programs																														
Facet 1 tools evaluated, revised	CL, instructional designer																														
Facet 1 Beta version ready	CL																														
Facet 1 6-month follow-up with OSS test programs	CL																														
Agenda created for Facet 2 meeting	CL, AG, facilitator																														
Facet 2 meeting site arrangements & invitations	CL, AG																														
Hold Facet 2 meeting	CL, collaborators																														
Meeting 2 assessment by participants & team	Facilitator, CL																														
Facet 2 tools drafted, review by meeting participants	CL, instructional designer, graphic designer																														
Facet 2 tools tested with 2 OSS programs & others	CL, OSS test programs																														
Facet 2 tools evaluated, revised	CL, instructional designer																														
Facet 2 beta version ready	CL																														
Facet 2 6-month follow-up with OSS test programs	CL																														
Agenda created for Facet 3 meeting	CL, AG, facilitator																														
Facet 3 meeting site arrangements & invitations	CL, AG																														
Hold Facet 3 meeting	CL, collaborators																														
Meeting 3 assessment by participants & team	Facilitator, CL																														
Facet 3 tools drafted, review by meeting participants	CL, instructional designer, graphic designer																														
Facet 3 tools tested with 2 OSS programs & others	CL, OSS test programs																														
Facet 3 tools evaluated, revised	CL, instructional designer																														
Facet 3 beta version ready	CL																														
Facet 3 6-month follow-up	CL																														
Agenda created for Facet 4 meeting	CL, AG, facilitator																														
Facet 4 meeting site arrangements & invitations	CL, AG																														
Hold Facet 4 meeting	CL, collaborators																														
Meeting 4 assessment by participants & team	Facilitator, CL																														
Facet 4 tools drafted, review by meeting participants	CL, instructional designer, graphic designer																														
Facet 4 tools tested with 2 OSS programs & others	CL, OSS test programs																														
Facet 4 tools evaluated, revised	CL, instructional designer																														
Facet 4 beta version ready	CL																														
Facet 4 6-month follow-up	CL																														

		Project Year 1												Project Year 2												Project Year 3									
		2020					2021							2022							2023														
		A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J				
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30				
Activity	Primary Responsibility																																		
OSS Pilots with Consultations																																			
Plans developed for ITAV in Practice consultations	CL, 2 OSS communities													■																					
Consultations to apply ITAV in Practice	CL, 2 OSS communities													■					■																
Post consultation immediate evaluation	CL																		■																
6-month follow-up	CL																							■											
ITAV in practice tools revised as needed	CL, instructional designer, graphic designer																							■											
Communications																																			
Wiki established & tools added, revised, updated	CL	■					1							2		3			4				■												
Conference presentations (3 planned)	CL, AG													■					■					■					■						
LYRASIS forum updates	CL													■																					
Webinars about ITAV in Practice (2 planned)	CL, AG																												■						
Webinar participant evaluations	CL																												■						
Administration																																			
IMLS grant reports	CL													■															■						
ITAV in Practice user feedback	CL													■					■					■					■						
ITAV usage statistics collected	CL	■					■							■				■					■												
Final project evaluation	CL, AG																												■						

by 4/23



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.

Digital products created for this project will be digital content, resources, and assets. LYRASIS will own digital content it creates and hold the copyright. Case studies for the 2 pilot OSS programs will be owned and copyrighted by the pilot organization. All content created for the project will be freely available and openly accessible with no restrictions on use. Content will be provided for free use, sharing, copying, distribution, and adaptation with attribution via the then current Creative Commons Attribution License at publication time (CC: BY) as defined at <https://creativecommons.org/licenses/>. The name and a link to the applied license will be provided on the ITAV website & wiki and in any documents created through the project. The license was chosen to allow for maximum dissemination, use, re-use, and adaptation of materials created through the project.

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.

While LYRASIS and OSS pilot sites will own and hold copyright to materials produced through the project (licensed for open access as noted above), they will have no ownership rights over adaptations or uses of those materials and will impose no conditions on access, use or distribution.

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.

The 2 OSS programs that will pilot test ITAV *in Practice* will be asked to provide case studies of their experience. Programs will be informed of this plan prior to beginning the pilot test. An agreement will be made with each OSS program to document the scope of the pilot consultation and expectations for the case study, including requirements around CC:BY licensing. Case studies will be made public, and authors will be asked to exclude confidential and proprietary information. LYRASIS will review drafts and potentially propose edits to content or layout. Case study authors will review and approve edited content or layout prior to publication on the ITAV wiki.

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.

ITAV in Practice will include tools (templates, process guides, checklists, etc.) and resources (case studies, samples, readings, etc.) to assess sustainability of OSS programs, identify sustainability strategies, and develop plans to improve sustainability. Materials will be provided primarily in text document, spreadsheet and PDF formats. Formats for specific tools and resources will be chosen based on expected use and advice of the project's instructional designer. Tools/resources will be produced in readily available and well-supported formats, such as PDF, Google docs and sheets, and similar platforms, to support downloading for local adaptation. The quantity of tools and resources is unknown at this time.

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.

Tools and resources will be created using standard PC/Mac systems and office software (Google, Adobe, Microsoft Office products). Graphic design firm Resonance will provide layout and other design services. Tools will be provided in editable formats both to LYRASIS for distribution and to users of the *ITAV in Practice* site.

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.

Likely formats are PDF, Google docs/sheets/slides, Microsoft docs/sheets/slides (.docs, .xlsx, .pptx). Web/wiki structure will likely be in XML and/or HTML.

Workflow and Asset Maintenance/Preservation

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

Draft content for *ITAV in Practice* will be reviewed by Advisory Group members, collaborators in facet design meetings, colleagues in test and pilot OSS programs, and other early adopters. Case studies from OSS pilot programs will be reviewed by LYRASIS project staff prior to publication. Feedback will be sought from all project collaborators and early adopters in the community through both an end-of-project survey and via comment and recommendation options on the ITAV wiki/website.

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).

LYRASIS will preserve *ITAV in Practice* through established organization-wide policies and procedures for back-up protocols, ongoing upgrades, and platform migrations. Data storage is cloud-based at a secure, remote site for both full back-ups (weekly) and incremental back-ups (daily). Project co-leads and LYRASIS DuraSpace Community Supported Programs (DCSP) division staff will provide post-grant oversight and management of ITAV content, including ongoing outreach to the OSS field to encourage additions of new or updated resources. Migration, if needed, would be planned at the DCSP level in accordance with platforms selected by LYRASIS leadership to support organization-wide needs. LYRASIS commits funding to support *ITAV in Practice* for as long as the community finds value in and uses it.

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).

LYRASIS will provide descriptive metadata using the Dublin Core standards for all relevant elements of *ITAV in Practice*.

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

Metadata will be recorded in properties of individual documents created for *ITAV in Practice*. Documents and their attached metadata will be preserved at part of the ITAV and LYRASIS web site and wiki instructures.

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).

ITAV in Practice will be promoted via a front page slider on www.lyrasis.org and through LYRASIS Now blog posts and other communications with members and media. Metadata will be embedded in *ITAV in Practice* tools, wiki, and web pages as part of search engine optimization strategies.

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).

ITAV in Practice will be published on LYRASIS' Confluence wiki, with general information on the ITAV page in the LYRASIS website. It will be openly available to anyone online, accessible via standard web browsers. Adobe reading software may be required for use of some tools. The project's instructional designer will assist with testing to ensure compliance with then current web accessibility standards.

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.

- Preservation and Digital Services Publications and Resources (funded in part by NEH) <https://www.lyrasis.org/services/Pages/Publications-and-Resources.aspx>
- The Art of Collections Management Technology (funded in part by the Andrew W. Mellon Foundation) <https://www.lyrasis.org/Leadership/Pages/Museum-Collections-Management.aspx>
- CollectionSpace software and documentation <https://github.com/collectionspace> and <https://wiki.collectionspace.org/display/DOC/CollectionSpace+Release+Documentation>

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 to this project.

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 to this project.

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 to this project.

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

Not applicable to this project.

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

Not applicable to this project.

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

Not applicable to this project.

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 to this project.

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 to this project.

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 to this project.

URL:

Not applicable to this project.

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.

Not applicable to this project.

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?

Not applicable to this project.

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.

Not applicable to this project.

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

Not applicable to this project.

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?

Not applicable to this project.

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

Not applicable to this project.

A.7 Identify where you will deposit the data:

Name of repository:

Not applicable to this project.

URL:

Not applicable to this project.

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

Not applicable to this project.