

Finding Aid Aggregation: Toward a Robust Future

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ABSTRACT

Over the last twenty-five years, cultural heritage professionals have formed aggregations—of finding aids, digital object metadata, or related forms of description—in order to overcome barriers to creating and presenting structured, consistent, and interoperable description and to enable expanded access. Now most of these aggregators are struggling to update their infrastructure, meet user needs for access to archival collections, and engage with some of the most promising conceptual, technical, and structural advances in the field. In 2018–2019, the “Toward a National Archival Finding Aid Network” planning initiative identified what aggregation has accomplished, articulated the key challenges facing aggregators, identified which areas could benefit from collaborative work, and created a vision for that work. With the near-completion of a research and demonstration by the California Digital Library, “Building a National Finding Aid Network” (NAFAN), the project and the archival profession have an opportunity to learn from the past and transform access to cultural heritage. However, none of the large-scale aggregations in the United States present a viable model for sustainability. Sustainability will become possible if they overcome the factors that have limited the success of aggregation so far. These include an over-focus on implementing new technical standards and infrastructure and under-focus on the real limitations: lack of knowledge of end user needs and attempting to accomplish too much without the needed resources. By drawing on both the background research described in this article and the further research conducted during the current NAFAN project, this and other cultural heritage enterprises have an opportunity to create a future in which access to cultural heritage is equalized and expanded for both institutions and end users.

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KEY WORDS

Archival description; Finding aids; Aggregation

The promise of sharing technical and associated infrastructure among cultural heritage institutions (libraries, archives, and museums) has a strong history in the United States. With a variety of technical and organizational models, initiatives such as the Online Computer Library Center (OCLC), the National Union Catalog of Manuscript Collections (NUCMC), and a variety of state and regional library and cultural heritage collaborations became essential components in how we manage and provide access to both unique and commodity information resources over the course of the twentieth century. During the twenty-first century, we have seen the advent and growth of numerous and important infrastructures specific to cultural heritage. Among those are state or regional aggregations that host finding aids, such as Archives West, the Online Archive of California, and Virginia Heritage, which began forming in the United States in 1998 to overcome barriers to creating and presenting interoperable archival description and to implement Encoded Archival Description (EAD).

Now, most of these aggregators are struggling with aging technology, unclear value for their end users¹ and participating institutions, and incomplete geographical coverage. Other forms of aggregation and shared infrastructure for cultural heritage, most notably the Digital Public Library of America (DPLA) and the Social Networks and Archival Context (SNAC) project, are important and innovative but struggle with many of the same issues—technology, unclear value, coverage—and have not yet found a sustainable way to fund and staff their programs. In short, building on the aggregation that exists is not a viable way forward. In the United States, and as cultural heritage professionals, we face a difficult choice: to abandon aggregation and return to institution-level solutions for discovery of and access to cultural heritage materials, or to reimagine aggregation as a sustainable, user-centered, and impactful national effort.

In 2018–2019, I worked with the California Digital Library's (CDL) "Toward a National Archival Finding Aid Network" (NAFAN), using my twenty years of experience with creating and sustaining collaborations between libraries, archives, and other heritage organizations in the Northwest United States and beyond. I conducted original research on the current state of finding aid aggregations and the landscape of archival description. Based on that research, project partners—representatives from finding aid aggregators in the United States plus other stakeholders—came to a strong consensus that those same partners should pursue a national-scale approach to aggregating and presenting finding aid metadata. Furthermore, the group proposed an integrated presentation that includes associated content and context drawn from DPLA and SNAC. A task force drawn from those partners developed an action plan for the near, medium, and long term. In July 2020, based on the findings of the NAFAN project, the Institute for Museum and Library Services (IMLS) awarded the California Digital Library and the project partners a National Leadership Grant for a two-year research and demonstration

project to build the foundation for a national finding aid network. As of this writing, that project is making substantial progress toward key objectives: unprecedented research into end user needs, prototyping a technical infrastructure, and exploring options for sustainability.²

The research that launched the NAFAN project reveals data points and trends that, together with other aggregation initiatives and developments in the discovery and delivery of archival collections, demonstrate the strengths and weaknesses of aggregation at the national, regional, and state level. NAFAN, like DPLA and SNAC, has an ambitious mission of becoming a comprehensive means of access to heritage collections in the United States. In the growth of NAFAN, archivists and libraries can choose a robust future for discovery and use of archival collections in both analog and digital forms. However, we must not repeat past errors, which include an overfocus on technology and standards. Instead, we must focus on meeting the needs of end users by developing compelling and sustainable approaches to archival discovery and delivery. Abandoning aggregation for local solutions is not the answer; it will exacerbate many of the very problems that we aimed to solve. We can instead pursue aggregation as an element of archival discovery and delivery, informed by the past, to create a brighter future.

The NAFAN Study

The details of the NAFAN study are documented in *Finding Aid Aggregation at a Crossroads*.³ A detailed accounting of the study's research methodology, along with detailed profiles of all aggregators and meta-aggregators,⁴ is available in the appendixes to that same report.⁵ A few basic points from the report about aggregation of finding aids—coverage, resources, end users, and value added—provide important context for the present discussion.

COVERAGE OF STATE AND REGIONAL AGGREGATORS

To begin to understand the importance of state and regional aggregators, we must first articulate coverage and comprehensiveness. The opportunity to participate in an aggregation varies widely. Institutions in only twenty-three states have access to and participate in a state or regional aggregation. Institutions in twenty-five states—situated within a swath of the Midwest, much of New England, and nearly all the Southeast—do not. Repositories in an additional two states (Alaska and Nevada) have access to Archives West but do not participate.⁶

The extent of coverage is also both contracting and expanding: In late 2020, the Rocky Mountain Online Archive (RMOA) ceased its multistate operations. The University of New Mexico, the host and sole funder of the RMOA, reports that it is transitioning to an ArchivesSpace-based solution for New Mexico partners

only as the New Mexico Archives Online (NMAO).⁷ The University of Wyoming's American Heritage Center joined Archives West in spring 2021 and has added about 4,000 finding aids to that interface.⁸ Colorado institutions are now without access to a finding aid aggregator.

Aggregators hold 167,079 descriptions from 938 institutions. Of the state and regional aggregators, the Online Archive of California and Archives West hold the largest number of records, with 51,615 and 33,845 respectively. Texas Archival Resources Online and Virginia Heritage are roughly of equal size at 7,200–7,500, and the remaining aggregations hold less than that.⁹ Though the total corpus of archival collections in the United States is unknown, this likely represents a significant part of the total.¹⁰ However, within each state or region, the finding aids of many institutions are not represented because they do not participate, and institutions that do not create finding aids are not included in aggregations.¹¹

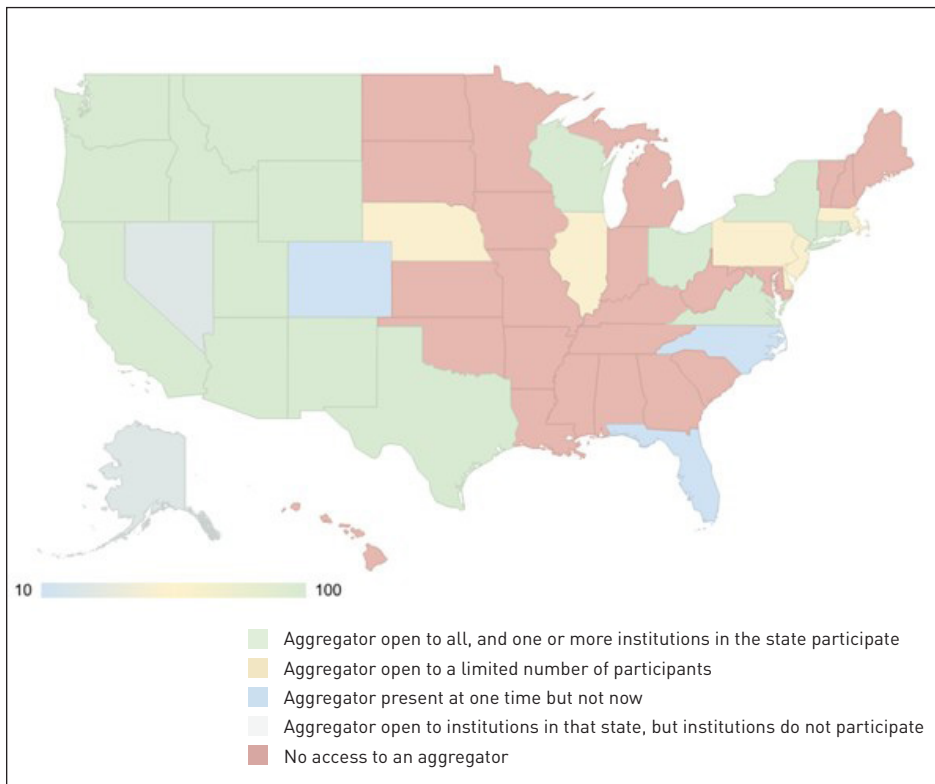


FIGURE 1. Access to state or regional finding aid aggregator. *Source:* Map automatically generated from survey data, all aggregators. Jodi Allison-Bunnell, "Finding Aid Aggregation at a Crossroads," ed. Adrian Turner (UC Office of the President: California Digital Library, 2019), 10, <https://escholarship.org/uc/item/5sp13112>. Map was updated to reflect RMOA's status, July 26, 2020, and the American Heritage Center's status, February 11, 2022. As of September 16, 2022, the American Heritage Center has added 3,860 finding aids to Archives West (<https://archiveswest.orbiscascade.org/search.php?r=wyuah>).

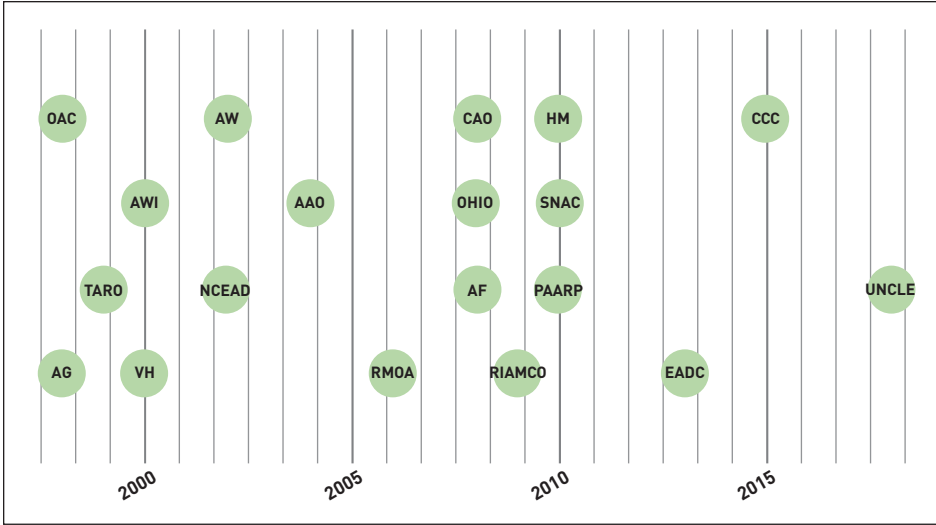


Figure 2. Timeline of aggregator and meta-aggregator founding. *Source:* Automatically generated from survey data, all aggregators. Jodi Allison-Bunnell, “Finding Aid Aggregation at a Crossroads,” ed. Adrian Turner (UC Office of the President: California Digital Library, 2019), 14, <https://escholarship.org/uc/item/5sp13112>.

FOUNDING DATES AND MISSIONS

Most finding aid aggregations were started in two clusters, the first around 1998–2002, and the second around 2008–2010. Only three aggregations—Chicago Collections Consortium, Empire Archival Discovery Cooperative, and University of Nebraska Consortium of Libraries—have emerged since 2010. The explicit or implied goals of aggregations as they were formed focused primarily on helping archivists, librarians, and curators improve collection description and discovery and make it easier for researchers to find materials.¹² Aggregations were important, even essential, sources of the tools that enabled repositories to adopt new standards, including *Describing Archives: A Content Standard* (first issued in 2004); practices such as Greene and Meissner’s “More Product, Less Process”; and EAD itself—which was widely acknowledged to be inaccessible to most practitioners.¹³ By all tangible measures, aggregators have accomplished the goals they originally set for themselves.

Aggregators also informed and influenced one another: OAC’s Robin Chandler and Adrian Turner were consultants for Northwest Digital Archives (NWDA) during its two formation grants, while Rocky Mountain Online Archive (RMOA) and Rhode Island Archives and Manuscript Collections Online (RIAMCO) modeled themselves substantially after NWDA.¹⁴

RESOURCES

The second major element from the NAFAN report is resources for aggregation. What resources are currently expended on finding aid aggregation is an essential element to understand the present and to quantify what resources could be shifted toward future efforts.

Budgets and Staffing

Most finding aid aggregations have no identified budget, and, when one exists, it averages about \$30,000 a year.¹⁵ Only two aggregations (Archives West and the Chicago Collections Consortium) make a formal yearly budget request and can completely describe the resources required to support the service. Dedicated staffing is rare, averaging about 0.4 FTE where it does exist.¹⁶ Many participating institutions see membership models as untenable, as they feel unable to contribute financial or other resources to an aggregation. Only three aggregations—Arizona Archives Online, Archives West, and Chicago Collections Consortium—have annual membership fees that support the program.¹⁷ Most aggregations depend entirely on host organizations for all resources. While some host organizations regard aggregation as an essential service that must be sustained, many aggregations feel they need to “fly under the radar” so that the host organization perceives that they use minimal or no resources. For those organizations, behaviors such as meting out requests for technical support are seen as essential to survival.¹⁸

If all resources that currently support finding aid aggregation were shifted toward a national-level initiative, the result would be about 5.0 FTE and \$154,550.¹⁹ Because aggregators struggle to find resources for maintenance and development and most platforms are static, we can conclude that the current level of resources available for aggregation is almost certainly insufficient for a national-level initiative, even with presumed efficiencies of scale, and even if all current resources were shifted (leaving none at the state and regional levels).²⁰

Grants

Grant funds started, but have not sustained, finding aid aggregation. Federal grant agencies and foundations invested in nearly every finding aid aggregation between 1998 and 2015 for initial infrastructure development and EAD conversion or creation.²¹ Ongoing costs have not garnered support in most cases. After spikes in 1999 and 2008 that correspond with the two waves of aggregation creation, grant funding for the creation/conversion and hosting of finding aids on the state and regional levels declined. In the last eight years, funders have focused on digital collections and name/identity authority aggregation, specifically the Digital Public Library of America (DPLA) and Social Networks and Archival Context (SNAC).

The total investment in archival aggregation (including SNAC, which has attracted more substantial resources than any finding aid aggregation) between 1999 and 2017 was roughly the same as that invested in DPLA between 2014 and 2018: about \$7 million.²²

GOVERNANCE

The third major element from the NAFAN report is governance, which is essential to understanding the current decision-making power of aggregations. Most aggregations operate with limited decision-making authority because they depend on host organizations. Most aggregations have a specific commitment to contributor consultation and democratic processes around changes or features, but cannot make impactful decisions, all of which are determined by their host organization.²³ Contributors are limited to making decisions about relatively small details about the composition of committees, best practices, and the appearance of finding aids on their website. The more critical budget for technical and other support is beyond their reach.

INFRASTRUCTURE

The fourth major finding in the NAFAN report concerns infrastructure, a term used here to mean the combination of technology and other forms of shared approaches, including best practices/documentation, training, standards enforcement, and decision-making processes. These are all necessary adjuncts to using shared systems.

Aging Systems

Finding aid aggregators use a range of different systems to host and manage finding aids, but they are all purpose-built or highly customized to index and display EAD finding aids. Aggregators have no obvious choices for successor systems to replace aging applications.²⁴ Archival collection management systems, notably ArchivesSpace, are not integrated with aggregator systems, and contributing EAD exports to an aggregator requires additional effort by the institution and is generally cumbersome.²⁵

Inconsistent Metadata

Most aggregations set the bar for standards compliance low to make contribution accessible to the greatest number of institutions. They require little beyond the required EAD elements and collection-level DACS compliance, both of which are

quite minimal. Enforcement of those requirements is loose. While this approach to standards increases accessibility to a variety of institutions, that same lack of standards compliance limits the benefits of large-scale aggregation without extensive metadata remediation. EAD is an extremely flexible standard, particularly at the component level, where a wide and varied level of usage exists despite the proliferation of “best practice” guidelines.²⁶

Aggregators primarily host finding aids encoded in EAD Version 2002 even though EAD3 was released in 2015. EAD3 includes significant changes to the level of granularity possible in dates, extents, and identities.²⁷ Many aggregators say that it is important to maintain currency by adopting EAD3, but, to date, none have adopted the new standard.²⁸ A few aggregators also support MARC records, as well as supplemental PDF finding aids (e.g., a PDF container list that offers further detail and is attached to a collection-level EAD record).²⁹

Meta-aggregators include primarily MARC records (which form the majority of the content in ArchiveGrid) and EAC-CPF records.³⁰ The proportion of EAD finding aids and resource descriptions is thus relatively small in the total corpus held by aggregators of any type.

A Limited Appetite for Innovation

Finding aid aggregators report that their participating institutions have limited appetite for emerging technologies and standards: only a minority of participants are eager to pursue new opportunities (e.g., Linked Open Data, EAC-CPF, EAD3) and are instead satisfied with minimal-level “utility” functions, fearing that innovation would require increased investments of money and time.³¹ Most institutions (regardless of size or resources) have relatively little vision of finding aid reuse in other contexts, such as using metadata to support presentation of digital objects. Better-resourced institutions that wish to innovate do so generally (though not universally) on their own and not as part of an aggregation. Instead, they remain focused on local-level customization to achieve search, branding, and presentation in the institutional context.³²

The Relationship of Aggregators and Meta-Aggregators

Why are we inquiring so deeply into the possibilities of a national finding aid network if meta-aggregators are already providing that very thing? In fact, meta-aggregation is not a national archival network. The difference lies in the current models for meta-aggregation, which depend on state and regional aggregators and individual institutions to provide persistent finding aid hosting. ArchiveGrid harvests data from finding aids that are hosted by either aggregators or individual contributing institutions. SNAC aggregates and hosts descriptions of persons, families,

and organizations related to archival collections (EAC-CPF records), but also links out to finding aids hosted by aggregators or individual contributing institutions. Individual institutions can contribute descriptions to meta-aggregations without also participating in an aggregation. If institutions hold materials with relevant subjects, they can also contribute to subject-specific aggregations such as the History of Medicine Finding Aids Consortium. Not all aggregators share all finding aid data with ArchiveGrid (e.g., the Online Archive of California contributors opt in to share data, Archives West shares data comprehensively, Rhode Island Archives and Manuscripts Online doesn't share at all). By their own admission, none of the current meta-aggregators is comprehensive.³³

END USERS

The fifth major element of the NAFAN report is our findings on end users (both researcher end users and the participating institutions) and aggregation. While aggregations of archival description formed in part to facilitate broader access for end users, we lack a broad understanding of how end users interact with, navigate between, interpret, and utilize an expanding universe of descriptions that include finding aids, item-level descriptions, descriptions of creators, and holding repositories, among others. How well are users served by any forms of archival description? Twenty-five years into finding aid aggregation, we do not know—at least not to the extent that we could or should.

Few finding aid aggregators have invested significantly in understanding the needs of their users. Most have not had specific initiatives to identify end user groups and shape functional decisions accordingly and instead maintain a strong focus toward internal users—archivists and librarians. Both Archives West and the Online Archive of California had established tools such as user personae (a set of archetype end users), but only Archives West has recently updated its personae to anticipate or respond to changing circumstances.³⁴

Lack of attention to end users is inextricably tied to the longstanding critiques of finding aids in general and of EAD in particular. The works of Michael Eidson, Jill Tatem, and Gregory Wideman are among those that both raise these points and draw on the earlier work of Pugh and Freeman that called for a reorientation of description toward users. Eidson specifically points to the development of finding aid networks, with their focus on technical infrastructure, as part of the problem: “.... here we are today with some ‘unknown’ level of success, *basking in the glory of consortia building* and seeing the ultimate goal of union access within reach. We now have a large quantity of converted legacy data along with published examples of successful case studies that claim to have now met or are closer to meeting the needs of users by encoding their finding aids in EAD” [emphasis mine].³⁵ Because the development of aggregations

focused on technology rather than on end users, the promised advantages of EAD (flexible, portable metadata that can be used and presented in any number of ways) have arguably remained unrealized. Implementations of EAD largely replicated paper finding aids on screens, much like early “online card catalogs” that replicated the appearance and functionality of the venerable card catalog. During the Society of American Archivists’ 2008 Annual Meeting, Jeanne Kramer-Smyth, Elizabeth Yakel, Max Evans, and Jodi Allison-Bunnell called for a radical re-envisioning of EAD finding aids. Panelists argued that rather than simply presenting EAD finding aids as facsimiles of typescript narratives, we should use the underlying structured data to better deliver what is most important to users through rich graphics and accommodation of diverse perspectives, while faithfully presenting the content, structure, and context of the collection.³⁶ That vision is arguably yet to be realized.³⁷

Last, end user access to finding aids and to digital collections is nearly always siloed in separate interfaces, even for connected materials (e.g., a finding aid description of an item and a digital version of the item itself).³⁸ No large-scale effort to integrate finding aids with related digital collections (e.g., local, state/regional, and national digital aggregations, such as HathiTrust, DPLA, etc.) exists.³⁹

Purpose and Value

The usage analysis from aggregations that collect that data shows that, for the institutions that participate in them, aggregators promote broader visibility of their finding aids, primarily by facilitating search engine exposure.⁴⁰ Aggregators express strong ethics of access for all researchers and, in service to that access, provide equal exposure to collections whether they are held by well-known or obscure institutions. In short, they contribute to democratizing access.⁴¹ All aggregators felt that in the absence of aggregations, small or less-resourced institutions would be less able to make their collections accessible. This is of particular importance with the current discussions on ensuring that archival collections are inclusive and diverse in their contents and descriptions: institutions or efforts focused on diverse collections are more often also not well resourced.⁴²

In contrast, better-resourced institutions perceive less value in sharing finding aids with an aggregator. With few exceptions, well-resourced institutions do not rely on aggregators for basic infrastructure and would provide a similar level of access in the absence of aggregation. But regardless of the nature of participating institutions, aggregators continue to be successful, and even garner membership fees, if they relieve a local cost and labor burden not only on the technical and metadata tasks, but (in some cases) by offering better end user experience. For example, Southern Oregon University (SOU) finds that participating in Archives West offers both greater exposure for collections and allows staff to do tasks that can only be done locally.⁴³ The University of Washington Library’s Special Collections department

shut down its local finding aid hosting to rely on Archives West as its exclusive finding aid interface in 2014, shifting that responsibility from highly skilled local labor to the AW central staff in exchange for a membership fee they were already paying.⁴⁴

ORGANIZATIONAL TRANSITIONS

Last from the NAFAN report, the organizational structures and limited resources of current finding aid aggregators reveal a landscape ripe for evolution. One-third of the current aggregators are evaluating their activities with the possibility of re-forming, merging, spinning off, or spinning down the service. Only a few aggregators are actively adding contributors or content. Clearly, all or nearly all of the finding aid aggregators are in a stage of transition: purposeful transformation in response to constituents' changing needs that may result in services re-forming, merging, spinning off, or spinning down.⁴⁵ Of the three meta-aggregators, two (History of Medicine and ArchiveGrid) are in a similar place as the aggregators. A transition state is not a negative. Instead, it is a natural part of organizational development that can feed back into continuous cycles of development and redevelopment. And, for finding aid aggregation, it represents both a significant opportunity and profound challenges.

The NAFAN Action Plan

During the NAFAN project, partners developed a collective understanding of the current landscape of a finding aid aggregation as background for an exploration of how best to provide access to archival collections, to ensure the long-term sustainability of that access, and to plan for future developments in this space. Project director Adrian Turner and I used the data and analysis collected in the NAFAN report as background for a full-day symposium attended by project partners, expert advisers, and other stakeholders on June 17, 2019.⁴⁶ Faced with a stark choice—either pursue a fundamentally different approach, or abandon finding aid aggregation altogether—participants came to consensus that pursuing a larger scale, sustainable, and user-centered approach was ultimately less risky than the status quo.

REQUIREMENTS FOR THE LONG-TERM VISION

During the symposium, attendees created consensus requirements for the long-term vision of a national-level finding aid network that provide the underpinnings of a sustainable enterprise.

Serve End Users

- Facilitate direct and ongoing involvement of a diverse range of researchers end users to shape creation and development of the system.
- Support discovery that gets end users as close to the full resource as possible. The ideal is the actual resource, or digital representation thereof, in context.
- Provide maximum integration between collection descriptions (with related context) and content.

Be Inclusive and Comprehensive

- Recognize the value of underrepresented contributors and collections and create low barriers to entry.
- Flexibly support the participation of contributors who cannot make their holdings available online due to legal, ethical, cultural, and other factors.

Reduce Local Work for Contributors

- Support low barriers to entry for contributors.
- Take many forms of existing metadata (e.g., structured in formats such as EAD and MARC, unstructured full text within PDF files)
- Set minimal requirements for descriptive metadata (e.g., based on *Describing Archives: A Content Standard's* single-level minimum requirements) to sufficiently support browsing/searching.
- Integrate with related tools (e.g., ArchivesSpace, Access to Memory) to support efficient workflows.
- Automate the contribution process so that it is as easy as possible.
- Allow for iteration over time.

Clearly Identify the Contributing Institution

- Recognize institutional investment through branding that supports good user experience.

Using the symposium outcomes, a task force created a NAFAN action plan in September 2019.⁴⁷ At the close of the planning initiative, the California Digital Library released the action plan for the next stages of development that included high-level functional requirements and components. Those components are represented in Figure 3.

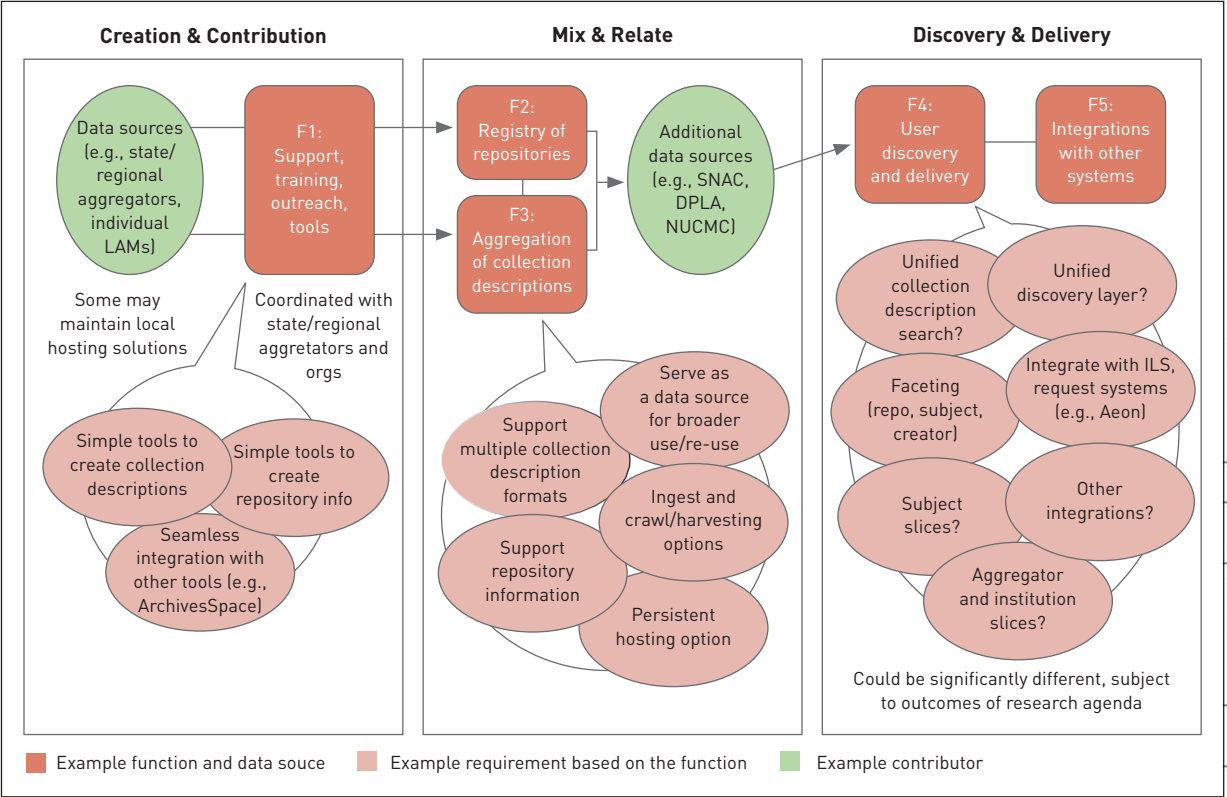


Figure 3. Schematic diagram of proposed NAFAN

The task force also created a five-year timeline (2019–2024) for fully realizing this vision.⁴⁸ That plan includes an upfront commitment to understanding and meeting end-user needs; a commitment to inclusivity and diversity of content and participating institutions; and minimal requirements for descriptive metadata to reduce barriers to entry. It also seeks an integrated presentation of data and metadata from multiple sources (DPLA, SNAC, NUCMC) without insisting that those sources be under the same organization or governance.

In interviews with expert advisers who reviewed the action plan in draft form in 2019, I summarized some key points that will inform NAFAN’s future actions.⁴⁹ These include:

Value proposition: Put more attention into stating the current value proposition and describing how this project will develop that value. Have a clear and multilevel communication plan that provides consistent messaging across multiple audiences.

Research and development: Integrating innovation, creativity, rapid prototyping, testing, and development as early in the process as possible has some benefits. However, some feel that the research needs to happen before building of

infrastructure begins. Be clear about *what we already know* and *what actually needs to be researched*.

Business planning/sustainability: Business planning work from the start is strong and helps ensure that it emerges from the community rather than in a black box. Be sure that the resources match the work; if there is mismatch, you must either scale back the work or increase the resources.

In July 2020, in response to an application based on the findings of the planning project and the vision of the task force, the Institute for Museum and Library Services (IMLS) awarded the California Digital Library a \$982,175 National Leadership Grant for Libraries for a two-year research and demonstration project to implement this action plan. As of this writing, that project is well past the midpoint of its work.⁵⁰ At the 2021 meeting of the Society of American Archivists, Adrian Turner of CDL and Lesley Langa of OCLC presented an update on the project's overall progress.⁵¹ Their efforts include testing both the existing finding aid metadata and the technical components of a potential system and community building with the existing aggregators. Sustainability planning includes summarizing and testing the value proposition of aggregation and evaluating the existing aggregator sustainability models.⁵²

OCLC's user research is the project's most compelling effort to date and a very significant contribution not only to the potential development of NAFAN, but to the archives field in general. A team composed of Lynn Silipigni Connaway, Chela Scott Weber, Lesley Langa, Brooke Doyle, Brittany Brannon, Merrilee Proffitt, and Janet Mason formed a plan to gain a current understanding of both researcher and practitioner needs.⁵³ Through a mix of focus groups with practitioners, a pop-up survey of users of aggregator sites, and semistructured interviews with respondents to the pop-up survey, the team is gaining a potentially unprecedented level of information about end users of archival collections; the pop-up survey alone garnered over 3,000 responses from end users of aggregator sites. In their second major report on results, they note that most users of finding aid aggregation sites identify as retirees (followed closely by archivists and librarians) and that the majority are using the sites to complete a personal project.⁵⁴ They are comparing the current users of aggregations against existing end user personae to understand the efficacy and currency of those tools, and they are documenting the benefits and challenges that users find in current aggregations. This research is an invaluable contribution toward developing a clear value proposition for future cultural heritage aggregation efforts of all types.

Other Aggregation Efforts

The NAFAN action plan and the current grant-funded development efforts are significant and important for the future of archival discovery and delivery. To be successful in the long term, NAFAN must draw on the experiences of other

cultural heritage aggregation efforts, including DPLA and SNAC. In their greater and lesser successes, both hold object lessons in value proposition, sustainable funding models, and metadata aggregation.

THE DIGITAL PUBLIC LIBRARY OF AMERICA

The Digital Public Library of America (DPLA) emerged out of the same discussions around cultural heritage aggregation and access described elsewhere, gained traction in 2010 and launched in 2013.⁵⁵ It now includes over 44 million items from service and content hubs across the United States.⁵⁶ The fundamental model of the Digital Public Library is similar to Archive Grid: DPLA does not host metadata or digital objects, but harvests it from either service hubs (which host and/or aggregate for their state or region) or content hubs (single institutions with sufficient content to contribute on their own). Thus, the DPLA hubs are roughly equivalent to the EAD aggregators, providing both durable hosting and supports such as training and best practices. The hubs are particularly important for promoting exposure to less-resourced institutions that lack the capability to maintain their own digital asset management systems.

From the perspective of cultural heritage institutions, and parallel to the finding aid aggregators, DPLA is particularly important for the advances it has promoted in metadata consistency. Most metadata for digital objects is formed in Dublin Core. As a data structure standard, Dublin Core is similar to EAD in its flexibility: it can accommodate both many different data content standards (e.g., Resource Description and Access [RDA], DACS, and specialized or local schema).⁵⁷ Additionally, institutions often make decisions about metadata based on display and function in a local system rather than thinking long-term or at scale.⁵⁸ This makes aggregation at scale challenging, as a number of key functions—limiting search results by format and date or providing useful subject search, for instance—depend on consistent metadata.⁵⁹ DPLA's role in promoting standardized rights statements has been immensely important in promoting copyright knowledge and more open access to cultural heritage objects when that is appropriate.⁶⁰ And these discussions have also centered on the locus for metadata standardization, whether of rights statements or other required fields: Should metadata remediation happen at DPLA? The hub? The originating institution? Each approach has its own advantages, disadvantages, and costs.⁶¹

There is geographic overlap in state and regional aggregators and DPLA hubs even though each focuses on a different body of metadata—aggregators on finding aids, and DPLA on digital object metadata. But only four states—California, Oregon, Washington, and New York—have the same organizations serving as hosts to both finding aid aggregation and as a DPLA hub organizational home.⁶²

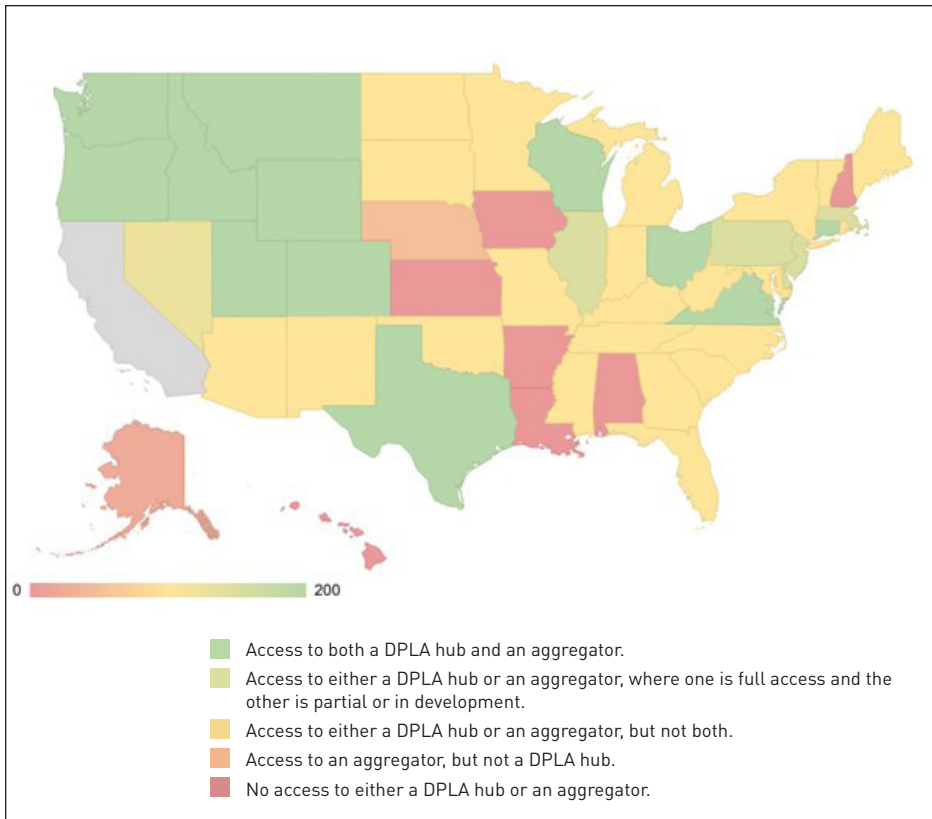


Figure 4. Map of access to DPLA hubs and aggregators by state, 2022. *Source:* Jodi Allison-Bunnell, AB Consulting, "Overlap between Finding Aid Aggregators and DPLA Hubs," updated February 11, 2022, https://docs.google.com/spreadsheets/d/10muktWhUiapifrT1YYdgNql0a4SSk_8Klz6VsXnae20/edit?usp=sharing.

From an organizational standpoint, the hubs network is fragile. In a discussion at the inaugural Hubs Network meeting in 2018, each hub described its approach to governance, technology, and funding.⁶³ During that session, it was evident that nearly every hub depends for funding on well-resourced institutions and/or LSTA grants to states. Their governance decisions are beyond the scope of the institutions that contribute to the hub. The hubs generally operate on the assumption that less-resourced institutions cannot contribute effort or resources to the functioning of the hub and require initial and ongoing support from the hub, which is in turn an ongoing cost. Others observe that each state or region takes very different approaches to its sustainability.⁶⁴ In other words, the hubs are in precisely the same situation as most of the EAD aggregators.

After a beginning based on substantial public and private investment, DPLA instituted a membership model in 2017–2018.⁶⁵ The Hubs Network currently includes thirty-four service hubs, of which twenty-seven are etwork members.⁶⁶ From the current membership rates, we can infer that the annual financial

contributions from hubs that are network members totals about \$287,000.⁶⁷ And those fees support only 13% of DPLA's total annual expenses of \$2,249,071.⁶⁸ Not all of the hubs in operation at one time have continued as either DPLA hubs or functioning programs; for instance, the Empire State Digital Network ceased operation in 2019.⁶⁹

While many organizations were inspired by the vision of DPLA at the beginning and spun up hubs quickly with grant and other short-term funding, not every state or region was so eager to jump on board. For instance, the development of the Orbis Cascade Alliance (hereafter Alliance) DPLA hub took eight years from initial proposal to ingest/go-live because the Alliance's board of directors had serious concerns about the value of membership. In particular, their concerns centered on the continued cost of participation (e.g., the annual fee) and exactly what the gain for both the hub and the participating institutions was.⁷⁰

Concerns about DPLA's viability radiate far outside the Hubs Network. In November 2018, DPLA underwent an abrupt refocus and laid off most of the staff who worked on cultural heritage aggregation. Roger Schonfeld attributed the struggles of DPLA and other organizations to not developing a business model early enough, to forming separate organizations for each new idea, and to not sufficiently addressing labor precarity for staff.⁷¹ The Hubs community expressed concerns at both the decision and the lack of communication surrounding it, and the discussion around the refocus at the annual Library Information Technology Association (LITA) forum was contentious.⁷² However, DPLA has since been successful at continuing to grow its Hubs Network and issued a strategic plan that specifically addresses the organization's commitment to cultural heritage work.⁷³ The organization's work in diversity, equity, and inclusion over the course of 2020 and 2021 is significant and is contributing toward repairing culturally insensitive and inaccurate descriptions. DPLA is also making strong efforts toward ensuring that the governance of the Hubs Network is diverse, inclusive, and representative.⁷⁴

As a roughly parallel effort to NAFAN, DPLA's struggles with value proposition and sustainability hold significant lessons for the formation of NAFAN. Namely, NAFAN must better address the value proposition for both participants and end users and also create more sustainable funding models that do not rely on grants or disproportionate support from well-resourced institutions.

SOCIAL NETWORKS AND ARCHIVAL CONTEXT

Social Networks and Archival Context (SNAC) provides integrated access to archival and other cultural resources through the descriptions of corporate bodies, persons, and families (Encoded Archival Context for Corporate Bodies, Persons, and Families, or EAC-CPF), and a platform for maintaining those descriptions. SNAC began in 2010 at the University of Virginia as a research project; since 2015,

it has been transitioning to a cooperative program of UVA, the National Archives, and a small group of members (currently fifty-four).⁷⁵

SNAC is founded on a critically important insight: The creators of archives and records, and the contexts and connections they share, are a more compelling entry point than the collection-centric models archives and libraries currently use. That insight, in turn, is supported by EAC-CPF, which provides a data structure format for describing creators separately from the records themselves. EAC-CPF is part of a movement to make archival description more interoperable in the context of the semantic web. It emerged as a standard in 2011 after a decade of development and experimentation.⁷⁶ However, implementation remained quite inaccessible to many archivists in its first years of existence because of the lack of tools and infrastructure to create and maintain EAC-CPF records.⁷⁷

The initial body of EAC-CPF records for SNAC was created by taking EAD from EAD aggregators and data from other sources, extracting creator metadata, and normalizing that metadata to make it consistent and useful.⁷⁸ An essential element of the post-2015 phase of the project is to develop the cooperative structure for editing existing records and creating new ones. However, the members who have editorial access to their own records are a tiny subset compared to the number of institutions that contributed records, but now have no means to maintain them.⁷⁹

SNAC is a success story in its demonstration of the creator-centric model and the context that preserves and reveals. Its centralized approach to acquiring and automatically normalizing CFP records from EADs and other sources (based not on human cleanup but on automated processes) created a large and significant data set on cultural heritage creators. It is well linked to Wikipedia, has attracted successful crowdsourcing efforts, and has strong relationships with entities outside of libraries, archives, and museums, such as Ancestry.com and the Church of Jesus Christ of Latter-Day Saints.⁸⁰

NAFAN must also pay close attention to the less strong parts of SNAC around sustainability and community engagement. SNAC, having been formed later than finding aid aggregators (but contemporaneously with DPLA) and still dependent on grant funds, both characterizes itself and fits the characteristics of the “Validation” phase of organizational development, in which “...a community articulates its value and legitimacy to new audiences, broadening its constituent base and sphere of influence.”⁸¹ SNAC depends on a metadata standard that, like EAD, is complex and difficult for most institutions to adopt. The current membership comprises predominantly well-resourced institutions that can both engage a complex standard and contribute significant skilled labor toward the project. That approach to membership, while common for projects of this type, is not consistent with current trends toward diversity and inclusion and may exacerbate the lack of access to materials held by less well-resourced institutions.⁸² All the staff is funded either by grants or are contributed to the project.⁸³ Member organizations contribute

labor, but not financial resources.⁸⁴ Thus, the project has not yet transitioned to its anticipated mixed-mode sustainability model. To achieve its goals of inclusion and making contributions (metadata, effort, funds) viable for a broad spectrum of institutions, NAFAN must not only emphasize sustainability from the beginning, but must employ an effective community development model that does not exacerbate the lack of access to materials held by less well-resourced institutions.

Context

Other initiatives offer both tangible advancements and should significantly inform future aggregation efforts: Stanford's Lighting the Way project; the theoretical basis for maintenance and revisions of *Describing Archives: A Content Standard* (DACS); and other activities in large-scale cultural heritage collaboration.

LIGHTING THE WAY

Stanford University's Lighting the Way (LTW) project was a National Forum funded by IMLS "to build consensus around strategic and technical directions to improve user experience, access, and interoperability across user-facing discovery and delivery systems for archives, and to provide a model for values-driven technology work within archives and special collections."⁸⁵ LTW began in 2014 with the ArcLight project, a Blacklight-based discovery platform to improve the discovery and delivery of archives and special collections.⁸⁶ That phase of development produced a set of end-user personae and design documents in 2017, and a minimum viable product (MVP) in 2019.⁸⁷ With a deliberately collaborative approach to development (albeit facilitated largely by well-resourced institutions that are Stanford's peers) and a user-centric approach, ArcLight represents a level of focus on end-user needs unprecedented before OCLC's NAFAN research began in 2020.⁸⁸ Both its approach and its insights must substantially inform the NAFAN project's development.⁸⁹

In 2020, LTW convened a two-and-a-half day, in-person forum with seventy-one participants from a diverse set of institutions to engage in information sharing and collaborative problem solving around improving how user-facing systems support discovery and delivery for archives and special collections.⁹⁰ In 2021, the project convened ten working groups, chosen through a competitive process, to draw on the themes of the forum and produce the components of the project's handbook, which was released in October.⁹¹ The LTW groups that produced projects most congruent with this discussion are those that focused on methods to present digital objects in collection context at scale and highlighted the need to be user centric and really understand user needs to inform the development of tools and processes.⁹²

As a carefully constructed national-level conversation, LTW provides a viable roadmap for the development of infrastructure for archival discovery and delivery. In its commitment to institutional and individual diversity and its use of Liberating Structures (a set of discussion models that facilitate inclusive decision-making) in the forum's work, it models approaches that are truly inclusive and avoid the pitfalls not only of domination by historic majority groups, but by those representing only well-resourced institutions.⁹³

DESCRIBING ARCHIVES: A CONTENT STANDARD

Describing Archives: A Content Standard (DACS), first published in 2004 and revised in 2013, is fundamental not only to archival description, but to the purpose of that description: access.⁹⁴ In its 2020 revision, it provides a firmly user-centered stance. Its second principle is:

Users are the fundamental reason for archival description. Archivists make descriptive choices that impact how users find, identify, select, and use archival records. To make wise choices about descriptive practices, archivists must develop and maintain an awareness of user needs and behaviors.⁹⁵

It follows logically that designing discovery and delivery must be equally user centered.⁹⁶ For instance, the most recent revision of DACS addresses rights statements for archival description. During the feedback period, 145 individuals responded; about one-third of those respondents identified as working at small institutions.⁹⁷ As the locus of standards creation and maintenance, the Society of American Archivists and the apparatus of its Standards Committee play a critical role in supporting user-centric standards with generous opportunities for community input.

LARGE-SCALE CULTURAL HERITAGE COLLABORATION

Recent developments in large-scale cultural heritage collaboration should significantly inform processes of understanding and evaluating the value added by aggregation. As Schonfeld observes, there were some very significant events in the consortium landscape over the course of 2017–2019. According to Schonfeld's post, the DuraSpace and LYRASIS merger was a strategic move based on common strengths and growth opportunities and is one of many such mergers for LYRASIS.⁹⁸ Organizational struggles caused the demise of the Digital Preservation Network.⁹⁹ Those struggles bear close examination by other consortia in this sector for lessons on funding sustainability, organizational development, clarity of purpose, and managing technical innovation.

The sustainability of collaborations and consortia has its own substantial literature, but two recently published guides specifically address cultural heritage collaboration and the process of transitioning from soft or grant funding to more sustainable models. Close attention to their advice can contribute substantially to NAFAN's success. Educopia's *Community Cultivation: A Field Guide* outlines both the phases of development and redevelopment previously mentioned, but offers proven tools suited to the requirements and pitfalls of each phase.¹⁰⁰ It was written specifically to address the well-documented "Valley of Death" between grant-funded and sustainable programs.¹⁰¹ In particular, its framework gives communities a way to have what are often difficult discussions and to understand that those discussions are not only necessary, but a natural part of development and redevelopment rather than a crisis. Laurie Gemmil Arp's *It Takes a Village: Open-Source Software Sustainability. A Guidebook for Programs Serving Cultural Heritage and Scientific Heritage*, while focused on sustaining open-source software, also provides generalizable guidance on the ways in which a program can navigate these often-rough waters. The guidebook's origin in LYRASIS, the administrative home of ArchivesSpace, is compelling on its own, as ArchivesSpace has made the transition from grant funding to member-provided support and is arguably one of the field's success stories.

Toward a Brighter Future

The initial impetus for the research we did for the NAFAN project was the need to replace aging infrastructure for finding aid hosting and aggregation. However, our findings show that the most fundamental issues with aggregation lie with resources and the value of the work to end users.

Finding aid aggregation is currently neither nationally comprehensive nor equal. It is disconnected from the needs of end users and lacks integration with associated digital collections; as a result, the value added for end users is unclear. EAD emerged with a promise of interoperable descriptions, but that promise remains unfulfilled as both institutions and aggregations persist in presenting finding aids largely as digital versions of analog narratives. Workflows are complex and inaccessible to many institutions. Lack of standards and compliance with them limits possibility of efficient aggregation and innovation. And the resources that developed aggregation, and those that sustain it, are insufficient to support either innovation or sustainability. Brian Stevens of Connecticut Archives Online sums it up well: "It's not a great situation that adoption of EAD is the equivalent of an archival moon landing."¹⁰²

Yet, aggregation also shows significant strengths that can play a vital role in new stages of development. These include the clear commitment across existing aggregations to "lift all boats" and equalize access to collections; twenty-five years of cultural heritage professionals coming together to support one another's work;

and smaller-scale efforts that show what can be accomplished with much more focus on end users. In 1986, Paul Conway challenged archivists to develop a better understanding of users, suggesting that not doing so is “less a problem of will than a problem of method.”¹⁰³ Thirty-five years later, we have methods, but need to develop the will.

We must limit our focus on practices that are esoteric and instead choose those that have wide-ranging impact. Two seminal studies should offer inspiration for these efforts: Greene and Meissner’s “More Product, Less Process” and the Southern Historical Collections’ “Extending the Reach of Southern Sources.”¹⁰⁴ In both studies, the researchers asked their users (in both cases professional historians) how archivists should, respectively, process collections and select for digitization. In both cases, the answers challenged archival orthodoxy *by beginning with end users*. Greene and Meissner heard that historians are satisfied with minimal description and arrangement and do not require that collections be tidy and perfect. The result of their work is that thousands of archivists and other practitioners have abandoned highly detailed and time-consuming processing for higher-level description, assessment of use, and ultimately better use of resources. Clark Brown et al. found that historians, when asked how staff should select from the collections for digitization, wanted archivists to stop selecting. Instead, they wanted them to digitize whole collections, make them available, and let the historians do the selecting and interpreting. Both studies challenged professional orthodoxy; both charted a bold new path; both have had substantial impacts.

Focusing on end users will make a tremendous difference in confronting another issue facing aggregation: the dearth of appetite for innovation. With a clear set of outcomes to produce, the profession can create more excitement for and willingness to invest in implementation of the most promising innovations, including Linked Open Data and related standards. In support of this work, the standards infrastructure of the major organizations, largely the Society of American Archivists and the Library of Congress, must transform to value user needs over technical esoterica.¹⁰⁵

The next developments in aggregation must be based on in-depth, large-scale user studies that focus less on how users interact with specific resources (e.g., finding aids, digital collections) and much more on what users seeking unique cultural heritage materials need and desire.

User studies will yield valuable information on impact and value added, which is really the biggest deficit and barrier to future innovation in this space. As of this writing, the NAFAN project is carrying out and reporting on exactly that in partnership with OCLC.¹⁰⁶ The resources currently devoted to finding aid aggregation are completely inadequate to begin or to sustain large-scale action. Arguably, they do not even sustain what we have now. To change that, cultural heritage professionals must ally with business and sustainability planning experts. In so doing, we must be willing to face extremely difficult questions about what

is of value to our users. We will certainly have to abandon some practices that we value but our users do not. Only by thoughtfully matching outcomes to resources will we be successful. In addition, grant funds must be directed toward enterprises that can be supported in the long term.

One of the outcomes must be relieving a local cost and labor burden and clearly articulating that relief both quantitatively and qualitatively. It is possible, given thoughtful design processes, to provide that value for all types of institutions, whether well- or less-well resourced. Whatever our efforts are, they must be accessible for all types of institutions to facilitate access to a diverse and truly representative archival record.

Neither of the existing large-scale aggregation efforts—DPLA and SNAC—can solve the puzzle of either financial sustainability or provide an administrative home for NAFAN, as neither of those entities have found sustainable solutions to their own sustainability challenges. While we may look longingly overseas at national or multinational efforts, such as Europeana (EU) or Trove (New Zealand), neither the Library of Congress nor the National Archives have the nationwide scope to lead NAFAN, let alone DPLA, SNAC, or some combination of the three.

Meeting user needs and adding value must drive the technology and infrastructure development, not the other way around. Letting the technology—of the finding aid, of EAD, of the systems—drive the development of aggregations has been our greatest limitation to date. We must move past this and develop greater clarity on the role that infrastructure plays in delivering outcomes to both end users and to cultural heritage practitioners. In his 1921 Nobel Prize speech, internationalist Christian Lange stated that “technology is a good servant, but a bad master.”¹⁰⁷ While Lange was speaking of the need for collaboration across states and nations, his fundamental truth applies no less to the landscape of access to cultural heritage a hundred years later.

NOTES

- ¹ Throughout this article, I use “end users” as an umbrella term for the researchers who use archival collections, which may include (but are not limited to) college and university students, college and university faculty, administrators, businesses, genealogists, nonacademic researchers, and those doing research for pleasure or personal use. The intention is to have a relatively simple term that encompasses “not archivists, librarians, or other cultural heritage professionals.”
- ² California Digital Library, “Toward a National Finding Aid Network: A Planning Initiative: Project Workspace,” <https://confluence.ucop.edu/display/NAFAN/Building+a+National+Finding+Aid+Network>.
- ³ Jodi Allison-Bunnell, “Finding Aid Aggregation at a Crossroads,” ed. Adrian Turner (UC Office of the President: California Digital Library, 2019), <https://escholarship.org/uc/item/5sp13112>.
- ⁴ Throughout the research phase of NAFAN, we used the terms “aggregator” and “meta-aggregator.” We defined aggregators as programs/organizations that bring together and host finding aids (descriptions of archival collections) contributed by institutions within a statewide, regional, or topical scope. The programs support systems to ingest, index, and display finding aids to facilitate cross-institution collection search and discovery, using purpose-designed platforms that are optimized for indexing and hosting EAD files. Meta-aggregators are programs/organizations that harvest finding aids and/or

descriptions of archival context contributed by institutions across a national (or international) level. The programs support indexing and linking to finding aids maintained by aggregators and also individual institutions to facilitate large-scale or subject-specific search and discovery.

- ⁵ Allison-Bunnell, "Crossroads," 32.
- ⁶ Alaskan participation in Archives West (three institutions at one time) waned with financial pressures. The reasons for Nevada's non-participation in Archives West are unknown.
- ⁷ Personal communication, Tomas Jaehn to Jodi Allison-Bunnell, March 22, 2021.
- ⁸ Maija Anderson, "A&M and ULC Program Updates," Orbis Cascade Alliance mailing list for participants in Archives West, June 25, 2021.
- ⁹ Allison-Bunnell, "Crossroads," 11.
- ¹⁰ How to measure the total number of collections, or repositories for that matter, is a subject for reasonable debate. ArchiveGrid exposes 195,659 descriptions from 1,485 institutions. (Finding aid total from ArchiveGrid survey data response. Institution count from personal communication, Bruce Washburn to Jodi Allison-Bunnell, October 24, 2020.) A search of WorldCat—and thus of NUCMC—limited to archival materials with a key word of "papers or records or collection" yields about 90,000 results. The survey data gathered by Goldman et al. showed 12,000 unique entries in 2016–2017. Ben Goldman, Eira Tansey, and Whitney Ray, "On the Map: Building a Comprehensive Data Set of Archival Repository Locations in the USA," *Archival Outlook* (May/June 2018), 6, 18, https://mydigitalpublication.com/publication/?m=30305&ci=494339&view=articleBrowser&article_id=3080405&ver=html5. That same article argues that this number still represents a vast undercount. Thus, by any measure, a relatively small number of heritage repositories are represented in any form of aggregation, despite efforts to produce union catalogs since the National Union Catalog of Manuscript Collections began in 1959.
- ¹¹ Institutions that do not create finding aids tend to be multitype institutions such as small historical societies (which are more likely to manage their collections in a museum-type system of description) and small to medium public libraries (which are more likely to assign item-level metadata to some collections, particularly images, to contribute to state digital collection initiatives). In my twelve years on the Montana State Historic Records Advisory Board, which had a mailing list of over 200 institutions in Montana, we consistently found a lack of knowledge of archival collection-level management and description; item-level description as per museum and library practices was more common. *Preferred Practices for Historical Repositories* was one response to that knowledge gap, as were workshops regularly offered by SHRAB members and others. Montana State Historical Records Advisory Board, *Preferred Practices for Historical Repositories*, 2nd ed. (Helena, MT: Montana Historical Society, 2004), https://mhs.mt.gov/_docs/research/docs/archives/bestpractices.pdf, captured at <https://perma.cc/T6MW-77H7>.
- ¹² The first edition of the EAD Document Type Definition was published in 1998; EAD2002 was published three years later. The first edition of *Describing Archives: A Content Standard* was published in 2004. In the 1997 *American Archivist* special issue on implementing EAD, an article by Seaman about the American Heritage Project (AHP), along with a similar article on intra-institutional collaboration at Harvard University and Radcliffe College, proposes that forming consortia is the solution for the technical barriers. Although the bulk of the article focuses on the University of Virginia's implementation of workflows, he closes with four suggestions for fellow archivists. The first suggestion focuses on partnerships: "Archivists working in smaller institutions may have to go outside their immediate environment for these partnerships, *perhaps by forming a consortium with neighboring institutions*" [emphasis mine]. Thus, Seaman clearly suggests that for many institutions ("smaller" being a common, though unfortunate, term for "less resourced"), EAD is too difficult to implement on their own. In both representing the first major collaborative in the United States and emphasizing the need for institutions to collaborate to succeed, Seaman firmly establishes the importance of aggregators in this landscape. (David Seaman, "Multi-Institutional EAD: The University of Virginia's Role in the American Heritage Project," *American Archivist* 60, no. 4 [1997]: 436–44, <https://doi.org/10.17723/aarc.60.4.y3461v26r4421116>.) Others supported this direction in the coming years. In 2007, Gilgenbach et al. described the development of the EAD Factory at OhioLINK, the state consortium of Ohio libraries, as an important advance for improved tools. (Cara Gilgenbach, Amy McCrory, and David Gaj, "The OhioLINK EAD Factory: Consortial Creation and Delivery of EAD," *Archival Issues* 31, no. 2 [2007]: 151–70, <https://www.jstor.org/stable/41102156>.) In 2010, OCLC Research published *Over, Under, Around, and Through: Getting Around Barriers to EAD Implementation*. (Michele Combs et al., *Over, Under, Around, And Through : Getting Around Barriers to EAD Implementation*,

2010, <http://www.oclc.org/content/dam/research/publications/library/2010/2010-04.pdf>, captured at <https://perma.cc/J3JX-NMMW>.) The report identifies the political/organizational and technical issues that institutions face. It offers consortia and aggregations as potential solutions for both types of issues: "Numerous state-, regional- or subject-based consortia have pooled resources to benefit member institutions by lowering barriers to EAD implementation."

- ¹³ Initially, tools were few and significantly challenging to use. Practitioners unfamiliar with highly technical work confronted raw XML files and largely created EAD by hand—first using workarounds like the EAD Cookbook, then tools like Oxygen and text editors. In 2001, James Roth explored methods for deploying EAD finding aids. (James M. Roth, "Serving Up EAD: An Exploratory Study on the Deployment and Utilization of Encoded Archival Description Finding Aids," *American Archivist* 64, no. 2 [2001]: 214–37, <https://doi.org/10.17723/aarc.64.2.e687471v304k0u66>.) Greene and Meissner's seminal article challenged long-held notions about the level of detail needed for basic archival processing (Mark A. Greene and Dennis Meissner, "More Product, Less Process: Revamping Traditional Archival Processing," *American Archivist* 68, no. 2 (2005): 208–63, <https://doi.org/10.17723/aarc.68.2.c741823776k65863>.) Seven years later, Yaco detailed the barriers to adopting EAD, primarily a lack of technical skills, small staffs with many responsibilities, and the poor quality of available tools. (Sonia Yaco, "It's Complicated: Barriers to EAD Implementation," *American Archivist* 71, no. 2 [2008]: 456–75, <https://doi.org/10.17723/aarc.71.2.678t26623402p552>.) Wisser's survey on EAD creation amplifies the need for better tools. (Katherine M. Wisser, "EAD Tools Survey" (Society of American Archivists, EAD Roundtable, August 2005), <http://www2.archivists.org/saagroups/ead/EADToolsSurvey.pdf>.) In parallel with the challenges that individual practitioners faced, the infrastructure for searching and delivering EAD files was first nonexistent, then dependent on skilled technical staff at individual institutions. Best practices likewise depended on local skill and capacity for in-depth focus. For a specific example of adoption of MPLP tied to an aggregation, see the grant awarded to Whitworth University in 2005 to pilot use of MPLP techniques for contributors to Northwest Digital Archives. (Northwest Archives Processing Initiative Phase II, NHPRC Grant No. 2002-064—*Whitworth University: A Final Narrative Report Submitted to The National Historical Publications and Records Commission for the Grant Period 1 July 2005–30 June 2007*, 43. Cited in *American Archivist* 73 no. 2, but URL in that reference is no longer valid). NWDA cosponsored several sessions of the SAA DACS workshop in the Northwest specifically for its participating institutions and required DACS-compliant descriptions after 2007.
- ¹⁴ OAC's Robin Chandler and Adrian Tuner were consultants on both NEH grants that developed NWDA in 2002–2005 and 2005–2007. RMOA cited NWDA as a model for its development in its application for NEH funding and used the same software, TEXTml, as NWDA. Jodi Allison-Bunnell, from NWDA, provided consulting to RIAMCO during its initial NEH-funded development.
- ¹⁵ Allison-Bunnell, "Crossroads," 24. Separating FTE from budget dollars was a design decision for the NAFAN study. Doing so provides a better basis for comparison across the aggregators and meta-aggregators.
- ¹⁶ Allison-Bunnell, "Crossroads," 25.
- ¹⁷ For details on membership and fee structures, see "Crossroads," appendixes for Archives West, Arizona Archives Online, and Chicago Collections Consortium.
- ¹⁸ Allison-Bunnell, "Crossroads," 24.
- ¹⁹ Allison-Bunnell, "Crossroads," 24–25.
- ²⁰ Allison-Bunnell, "Crossroads," 20.
- ²¹ Allison-Bunnell, "Crossroads," 27.
- ²² Grant funding totals from Allison-Bunnell, "Crossroads," 28. Data on grant support for DPLA provided by Michele Kimpton, April 11, 2019, personal communication to Jodi Allison-Bunnell. The totals do not include Sloan Foundation funding during this time as that largely focused on e-books.
- ²³ Allison-Bunnell, "Crossroads," 23.
- ²⁴ Allison-Bunnell, "Crossroads," 21–22.
- ²⁵ See, for example, the Orbis Cascade documentation for postprocessing ArchivesSpace output before contributing to Archives West. Orbis Cascade Alliance, "ArchivesSpace Exports," <https://www.orbiscascade.org/programs/ulc/archives-and-manuscripts-collections/archivesspace/as-exports>. Although recent updates to ArchivesSpace have included a means for OAI harvest, true integration with other systems remains difficult.

- ²⁶ Allison-Bunnell, "Crossroads," 22–23.
- ²⁷ For a useful overview of EAD3, created for its release, see Society of American Archivists, Encoded Archival Standards Section, "Frequently Asked Questions about EAD and EAD3," <https://www2.archivists.org/groups/encoded-archival-standards-section/frequently-asked-questions-about-ead-and-ead3>, captured at <https://perma.cc/AZ3A-6YKL>.
- ²⁸ Texas Archival Resources Online recently completed an NEH-funded redesign. Though they had originally intended to update all finding aids to EAD3, they were unable to do so and remain on EAD 2002. NEH overview of grant: <https://securegrants.neh.gov/publicquery/main.aspx?f=1&gn=PW-264144-19>, captured at <https://perma.cc/9S8U-WW5W>. The project appears to be complete: <https://txarchives.org/home>.
- ²⁹ Allison-Bunnell, "Crossroads," 13.
- ³⁰ Allison-Bunnell, "Crossroads," 13.
- ³¹ Allison-Bunnell, "Crossroads," 13. In their 2017 survey, the Technical Subcommittee on Encoded Archival Standards (TS-EAS) conducted a survey on EAD3 implementation that observed the long-standing challenges with the complexity of EAD and confirmed that EAD3 had not contributed substantially to overcoming those challenges. (Wim van Dongen and Katherine M. Wisser, "EAD3 Implementation Survey Results and Discussion," Society of American Archivists, Technical Subcommittee on Encoded Archival Standards, https://www.loc.gov/ead/EAD3_Implementation_Survey_Results_and_Discussion_20190320.pdf, captured at <https://perma.cc/W7RQ-V8CC>.)
- ³² Allison-Bunnell, "Crossroads," 29–30.
- ³³ Allison-Bunnell, "Crossroads," profile of ArchiveGrid and SNAC, 209–61 and 273–82.
- ³⁴ In spring 2018, the Orbis Cascade Alliance's (hereafter Alliance) Unique and Local Content Team revised the user personae first constructed in 2011 for an IMLS National Leadership Grant. The California Digital Library worked with a small set of personae and did usability studies during its 2008 redesign of OAC. More recently, the user personae developed for the ArcLight Project at Stanford University provide a useful baseline; they incorporate some of the other user personae but do not include those from the Alliance. (Stanford University Libraries, "ArcLight," <https://library.stanford.edu/projects/arclight>, captured at <https://perma.cc/GBD6-JKAN>.)
- ³⁵ Eidson particularly questions the value of a standard developed without end user involvement in the initial stages. He also echoes others' concerns about serious technical obstacles, but more importantly suggests that the fatal flaw of EAD is that it is tied to the finding aid as its fundamental organizing principle: "The goal has always been to take advantage of the technology; to use the organic property and structure of finding aids as innate documents themselves, while somehow accounting for the complex relationships apparent to the human eye, but less likely to be picked up by a computer." Here, Eidson argues that the profession lost its chance to re-examine the finding aid as a fundamental tool—an examination that had been under discussion for some time—and points to the work of Pugh and Freeman in calling for a reorientation of description oriented toward users. (Matthew Young Eidson, "Describing Anything that Walks: The Problem Behind the Problem of EAD," *Journal of Archival Organization* 1, no. 4 (2002): 5–28, http://dx.doi.org/10.1300/J201v01n04_02; Mary Jo Pugh, "The Illusion of Omniscience: Subject Access and the Reference Archivist," *American Archivist* 45, no. 1 (1982): 33–44, <https://doi.org/10.17723/aarc.45.1.21861730132n24vx>; Elsie T. Freeman, "In the Eye of the Beholder: Archives Administration from the User's Point of View," *American Archivist* 47, no. 2 [1984]: 111–23, <https://doi.org/10.17723/aarc.47.2.a373340078502136>.) Tatem agreed in her article four years before Eidson's, stating, "The best hope for the design of finding aids that work effectively as digital tools is in collaboration that incorporates rigorous user-centered evaluation." (Jill Tatem, "EAD: Obstacles to Implementation, Opportunities for Understanding," *Archival Issues* 23, no. 2 [1998]: 155–69, <https://doi.org/archivalissues.10871>.) Wiedeman makes a similar argument: that finding aids were originally a compromise between resource constraints and user needs; that discourse around finding aids prevented robust standardization of finding aids as data; and that by developing EAD without questioning finding aids, the profession missed a major chance to innovate. (Gregory Wiedeman, "The Historical Hazards of Finding Aids," *American Archivist* 82, no. 2 (2019): 381–420, <https://doi.org/10.17723/aarc-82-02-20>.)
- ³⁶ Jodi Allison-Bunnell et al., "After the Revolution: Unleashing the Power of EAD" (Annual Meeting of the Society of American Archivists, San Francisco, CA, 2008), http://www.archivists.org/conference/sanfrancisco2008/08_PrelimProgram.pdf, captured at <https://perma.cc/4W35-8QTV>.)

- ³⁷ Evans was able to build at least a portion of his vision during his tenure at the Church of Latter-Day Saints Church History Department; his aspirations for the Church History Department are documented at <http://archivesmax.blogspot.com/2011/07/new-ead-tool.html>, captured at <https://perma.cc/CX29-QFHU>.
- ³⁸ Jodi Allison-Bunnell, Elizabeth Yakel, and Janet Hauck, "Researchers at Work: Assessing Needs for Content and Presentation of Archival Materials," *Journal of Archival Organization* 9, no. 2 (2011): 67–104, <https://doi.org/10.1080/15332748.2011.598400>.
- ³⁹ The 2016 DPLA working group on Archival Discovery released a set of simple practices that would enable this at scale, but those practices were not adopted by DPLA or any other known organization. Gretchen Gueguen and DPLA Archival Description Working Group, "Aggregating and Representing Collections in the Digital Public Library of America," Digital Public Library of America, November 2016, <http://bit.ly/dplaCollections>. In 2021, as part of Stanford University's Lighting the Way project, a group reconsidered the possibilities of large-scale integration. See Mark Matienzo and Dinah Handel, eds. *The Lighting the Way Handbook: Case Studies, Guidelines, and Emergent Futures for Archival Discovery and Delivery*, <https://doi.org/10.25740/gg453cv6438>.
- ⁴⁰ See, for instance, Archives West quarterly reports, referenced in Allison-Bunnell, "Crossroads," 17.
- ⁴¹ Allison-Bunnell, "Crossroads," 17–18. While there has been much discussion of "hidden collections" over the last twenty years, there has been arguably less attention on the collections that are "hidden" because they are held by small liberal arts colleges, tribal colleges, community colleges, and municipal archives—all generally less well-resourced than large academic institutions. There is also a natural relationship between access to "hidden" collections at these institutions and current initiatives focused on diversity and inclusion.
- ⁴² For instance, tribal colleges, community colleges, county historical societies, historically Black colleges and universities, and organizations devoted to increasing diversity in the archival record are seldom part of well-resourced institutions.
- ⁴³ Becca Evans, "Opportunities with Archives West: How a Small Academic Archive Benefits from Membership," *OLA Quarterly* 24, No. 4 (2019): 28–33.
- ⁴⁴ Allison-Bunnell, "Crossroads," 30.
- ⁴⁵ Katherine Skinner, *Community Cultivation: A Field Guide* (Educopia Institute, November 2018), <https://educopia.org/cultivation>.
- ⁴⁶ See unpublished summary of the symposium at <https://docs.google.com/document/d/1kqGVv5qAQ6F57YH5PEA8KCedw43Q8GoOvyXVgSP5jV8/edit?usp=sharing>.
- ⁴⁷ Group members: Jodi Allison-Bunnell, AB Consulting; Bradley Daigle, Virginia Heritage; Elizabeth Dunham, Arizona Archives Online; Karen Eberhart, Rhode Island Archives and Manuscripts Online; Brian Tingle, Online Archive of California; Adrian Turner, Online Archive of California (chair).
- ⁴⁸ Turner et al., "Toward a National Archival Finding Aid Network. From Planning Initiative to Project and Program: A Plan," October 2019, <https://confluence.ucop.edu/display/NAFAN/Reports+and+Reference+Resources?preview=/205685069/225542305/Toward%20a%20National%20Archival%20Finding%20Aid%20Network%20-%20Action%20Plan.pdf>.
- ⁴⁹ Expert advisers interviewed included Roger Schonfeld (Ithaka S+R), Raym Crow (SPARC), Chela Weber and Bruce Washburn (OCLC Research), Clifford Lynch (CNET), Jerry Simmons (National Archives), Joel Wurl (NEH), Lucy Barber (NHPRC), Leigh Grinstead (LYRASIS), Michele Kimpton (DPLA), Mary Lacy and Alex Lorch (Library of Congress), Mark Matienzo (Stanford University), Nancy Beaumont (Society of American Archivists), and Robert Horton (Smithsonian Institution). Unpublished notes available at <https://docs.google.com/document/d/16BTJ3Lnlw8bXMNo9aB4tiKTZYbBFbugJUWHhdOnh3bo/edit?usp=sharing>.
- ⁵⁰ See the project website at <https://confluence.ucop.edu/display/NAFAN/Building+a+National+Finding+Aid+Network>.
- ⁵¹ Adrian Turner and Lesley Langa, "Project Update: Building a National Finding Aid Network" (Society of American Archivists, 2021 Annual Meeting, July 26, 2021). Content not publicly available.
- ⁵² For the first analysis of the metadata, see Bruce Washburn, "How Well Does EAD Tag Usage Support Finding Aid Discovery?," *Hanging Together* (blog), July 28, 2021, <https://hangingtogether.org/?p=9414>. Washburn's work is an important continuation of previous meta-analyses of EAD tag usage, including M. Bron, M. Proffitt, and B. Washburn, "Thresholds for Discovery: EAD Tag Analysis in ArchiveGrid,

- and Implications for Discovery Systems,” *Code4Lib Journal*, no. 22 (October 14, 2013), <https://journal.code4lib.org/issues/issues/issue22>; Katherine Wissner and Jackie Dean, “EAD Tag Usage: Community Analysis of the Use of Encoded Archival Description Elements,” *American Archivist* 76, no. 2 (2013): 542–66, <https://doi.org/10.17723/aarc.76.2.x4h78gx76780q072>; and the EAD3 Study Group on Discovery, “Implementing EAD3: Search and Exploration,” EAD Roundtable, August 2016, https://www2.archivists.org/sites/all/files/EAD3_Study_Group_on_Discovery_Recommendations_20160719.pdf, captured at <https://perma.cc/SN79-BRTN>.
- ⁵³ Lynn Sillipigni Connaway, “A Research Roadmap for Building a National Finding Aid Network (NAFAN),” *Hanging Together* (blog), August 5, 2021, <https://hangingtogether.org/?p=9492>, captured at <https://perma.cc/7H4Q-PHBG>.
- ⁵⁴ Lesley Langa, “Getting to Know Users of Archival Aggregation Sites,” *Hanging Together* (blog), September 30, 2021, <https://hangingtogether.org/?p=9680>, captured at <https://perma.cc/C7JH-PMXK>. Interestingly, this set of findings is consistent with a user persona developed by Archives West in 2011 that focused on the avocational user. That persona was integral to user testing for the redesign of Archives West and for the summative evaluation of the Cross-Search and Context Utility conducted by Rockwell et al. Resulting reports are no longer available on the Orbis Cascade website.
- ⁵⁵ Digital Public Library of America, “History,” <https://pro.dp.la/about-dpla-pro/history>.
- ⁵⁶ DPLA public search interface, <https://dp.la>.
- ⁵⁷ DublinCore, <https://dublincore.org>.
- ⁵⁸ For instance, the commonly used contentDM system does not display ISO 8601 normalized dates in a way that is human-readable, so practitioners must either enter two date fields (one standards compliant, one human-readable) or choose. Practitioners often choose humans over machines.
- ⁵⁹ Aaron Rubenstein, “Sharing Archival Metadata,” Society of American Archivists, https://www2.archivists.org/sites/all/files/Module_20_CaseStudy_MarkMatienzo.pdf, captured at <https://perma.cc/9B3T-3CU3>; Heather Moulaison Sandy and Chris Freeland, “The Importance of Interoperability: Lessons from the Digital Public Library of America,” *International Information & Library Review* 48, no. 1 (2016): 45–50, <https://doi.org/10.1080/10572317.2016.1146041>; Valerie Horton, “Going ‘All-In’ for Deep Collaboration,” *Collaborative Librarianship* 5, no. 2 (2013): 65–69.
- ⁶⁰ Digital Public Library of America, “Announcing the Launch of RightsStatements.org,” April 14, 2016, <https://dp.la/news/announcing-the-launch-of-rightsstatements-org>, captured at <https://perma.cc/7Y6Q-63LJ>. For guidelines on rights statement implementation, see Digital Public Library of America, “DPLA Standardized Rights Statements Implementation Guidelines,” December 7, 2017, <https://docs.google.com/document/d/1alnokOIlsgf-B4iMTXU33qYN5B2jA3s91KgWoh7DZ7Q/edit>. For more on implementation, see, for instance, Sara Benson et al., “Standardized Rights Statements: A Data Driven Roadmap for Rights Statements Success, Working Group Updates, and Community Conversation” (DPLAfest 2019, Chicago), <https://dplafest2019.sched.com/event/LaRD/standardized-rights-statements-a-data-driven-roadmap-for-rights-statement-success-working-group-updates-and-community-conversation>.
- ⁶¹ During the 2016 DLF Forum, Carly Bogan of OCLC Digital Collection Services shared updates about the organization’s Metadata Refinery, which would allow institutions to efficiently remediate metadata at the local level so that the aggregated metadata was consistent. DPLA staff attending the session commented that they were contemplating a similar service. Neither has moved to production as an alternative to centralized remediation at the hub or national levels. Carlyn Bogan, “OCLC’s Partnership to Provide a Sustainable Aggregation Solution for DPLA Service Hubs,” (DLF Forum, Milwaukee, November 8, 2016), <https://dlfforum2016.sched.com/event/8LH0/t7a-curationcollab>. DPLA staff reference: Personal recollection of conversation with Gretchen Gueguen and Emily Gore, November 8, 2016.
- ⁶² This is further complicated by the Empire State Library Network’s discontinuation of its DPLA hub and members-only access to Orbis Cascade’s DPLA hub. Non-Orbis Cascade members can contribute to Northwest Heritage, an additional DPLA hub for Oregon and Washington that also went live in 2021.
- ⁶³ See Digital Public Library of America, “Announcing Our 2018 Members Meeting and DPLAfest 2019,” <https://dp.la/news/announcing-our-2018-members-meeting-and-dplafest-2019>, captured at <https://perma.cc/K6G6-2Q9X>; 2018 program is no longer available.

- ⁶⁴ Emily Jaycox, "DPLAFest 2019 Recap," Missouri Hub, April 30, 2019, <https://missourihub.org/2019/04/30/dplafest-2019-recap>, captured at <https://perma.cc/C5G7-KANQ>.
- ⁶⁵ Digital Public Library of America, "Membership Program," <https://pro.dp.la/hubs/membership-program>, captured at <https://perma.cc/VG7H-H4YP>.
- ⁶⁶ Digital Public Library of America, "Our Hubs," <https://pro.dp.la/hubs/our-hubs>, captured at <https://perma.cc/D443-4AWP>.
- ⁶⁷ Calculations based on members listed at <https://pro.dp.la/hubs/our-hubs>, and membership fees listed at <https://pro.dp.la/hubs/membership-program>. Twenty single-state hubs pay \$10,000 annually; seven multistate hubs pay \$12,500 annually. DPLA's Form 990 for 2019 reports program income of just under \$322,000.
- ⁶⁸ IRS form 990 for the Digital Public Library of America, 2019, <https://pdf.guidestar.org/PDF/Images/2019/461/160/2019-461160948-202011979349305676-9.pdf>, captured at <https://perma.cc/F5S3-64FW>. The total of all salaries reported (not including benefits) is \$1,171,712 for seven positions: executive director, director of business development, director of technology, ebook consultant, technology specialist, program manager, and principal interaction designer.
- ⁶⁹ Central NY Library Resources Council, "Important Announcement Regarding DPLA," <https://clrc.org/important-announcement-regarding-dpla>, captured at <https://perma.cc/83ZA-88T5>. Note that its content was harvested before it shut down and continues to be accessible in the DPLA public interface.
- ⁷⁰ Mark Dahl and Zachariah Selley, "DPLA in the Pacific Northwest: The Orbis Cascade Alliance Case," *OLA Quarterly* 24, no. 4 (2019): 13–20, <https://doi.org/10.7710/1093-7374.1959>. In 2021, an Alliance working group recommended that the organization not continue to serve as a hub, but instead seek other partners to serve its members. (Personal communication, Maija Anderson to Jodi Allison-Bunnell, September 13, 2021.)
- ⁷¹ Roger C. Schonfeld, "Learning Lessons from DPLA," *The Scholarly Kitchen* (blog), November 13, 2018, <https://scholarlykitchen.sspnet.org/2018/11/13/learning-lessons-from-dpla>, captured at <https://perma.cc/MNE8-DGPX>.
- ⁷² DPLA Board of Directors to Authors and Signers of the DPLA Letter of Concern, regarding Community Letter of Concern, November 21, 2018, <https://www.infodocket.com/wp-content/uploads/2018/11/DPLA-Community-Letter-Response.pdf>, captured at <https://perma.cc/5KY8-6EYA>. Commentary on the LITA Forum: Thomas Dowling, "Thomas @ LITA Forum: Oh, It Was Plenty Warm Inside," ZSR Library, <https://zsr.wfu.edu/inside/2018/thomas-lita-forum-2018-oh-it-was-plenty-warm-inside>. Recording of the LITA Forum discussion at <https://ala-events.zoom.us/recording/play/qfRXa16zfj0YpKRHCncjGYnLY7MDRsqDAfHMzv08jB7cXMSXQ5f7SV20ORKSfX5q?startTime=1541875173000>.
- ⁷³ Digital Public Library of America, "Strategic Roadmap 2019–2022," <https://pro.dp.la/about-dpla-pro/strategic-plan>, captured at <https://perma.cc/7F64-BJJQ>.
- ⁷⁴ Digital Public Library of America, "DPLA Membership IDEAS Statement," <https://pro.dp.la/hubs/dpla-membership-ideas-statement>, captured at <https://perma.cc/XD75-CAYT>.
- ⁷⁵ The appendix to the NAFAN report has a complete profile of SNAC; Allison-Bunnell, "Crossroads," 273–82. Also see the SNAC website, "About SNAC," <https://portal.snaccooperative.org/about>.
- ⁷⁶ Karen F. Gracy and Frank Lambert, "Who's Ready to Surf the Next Wave? A Study of Perceived Challenges to Implementing New and Revised Standards for Archival Description," *American Archivist* 77, no. 1 (2014): 96–132, <https://doi.org/10.17723/aarc.77.1.b241071w5r252612>.
- ⁷⁷ For instance, until ArchivesSpace became capable of creating and hosting EAC-CPF records in 2019, no tool was commonly available for creating, exporting, and editing EAC-CPF records. This capability in ArchivesSpace emerged over several years, beginning in 2017. Christine di Bella, "EAC-CPF in ASpace," June 4, 2019, ArchivesSpace Users Group listserv, http://lyralists.lyrasis.org/pipermail/archivesspace_users_group/2019-June/006792.html, captured at <https://perma.cc/93EM-BYFA>.
- ⁷⁸ Daniel Pitti et al., "Social Networks and Archival Context: From Project to Cooperative Archival Program," *Journal of Archival Organization* 12, no. 1/2 (January 2015): 77–97.
- ⁷⁹ This assertion is largely by inference as the SNAC site does not offer a way to determine the number of institutions represented by the contributed records. However, it is certainly a much larger number than fifty-four. An example of the issues with the inability to update metadata: all Resource links to Archives West still point to URLs that have not been in use since 2012; so long as the resolver at the former

- hosting site continues to operate, they will remain valid. Archives West has added a significant number of participants since it contributed EAD metadata to SNAC. Those participating institutions can only contribute metadata through regular membership; there is neither a means to update the existing metadata nor to add to it. There is no consortial membership structure for SNAC; the California Digital Library appears on the members list because CDL was an early partner in the project.
- ⁸⁰ Allison-Bunnell, "Crossroads," 278-279.
 - ⁸¹ Allison-Bunnell, "Crossroads," 22.
 - ⁸² See SNAC, "Current Members," <https://portal.snaccooperative.org/node/482>, captured at <https://perma.cc/WJD7-T6WC>, for a list of current SNAC members. Note that the list includes primarily large and well-resourced institutions such as Stanford University, the Smithsonian, Brigham Young University, and Harvard University.
 - ⁸³ The University of Virginia staff number 3.5 FTE; NARA contributes 2.0 FTE from its Office of Innovation. Allison-Bunnell, "Crossroads," 277.
 - ⁸⁴ SNAC, "Becoming a SNAC Cooperative Member," <https://portal.snaccooperative.org/node/483>, captured at <https://perma.cc/YU55-CMGV>.
 - ⁸⁵ Stanford Libraries, "Lighting the Way," <https://library.stanford.edu/projects/lightingtheway>, captured at <https://perma.cc/QZ45-3NCL>.
 - ⁸⁶ Stanford Libraries, "Arclight," <https://library.stanford.edu/projects/arclight>, captured at <https://perma.cc/GBD6-JKAN>.
 - ⁸⁷ Stanford Libraries, "Announcing the ArcLight Phase II Work Cycle Kickoff," <https://library.stanford.edu/blogs/digital-library-blog/2019/08/announcing-arclight-phase-ii-work-cycle-kickoff>, captured at <https://perma.cc/G9CZ-UGRZ>; "ArcLight Persona Overview," <https://stacks.stanford.edu/file/druid:hk349dn1751/ArcLight-Personas-2017-01-11.pdf>, captured at <https://perma.cc/CA58-PQFX>; "ArcLight Design Documents," <https://samvera.atlassian.net/wiki/spaces/samvera/pages/405211891/ArcLight+Design+Documents>.
 - ⁸⁸ The collaborating institutions on this phase were (besides Stanford) Georgia Tech, the University of Michigan, the Chemical Heritage Foundation, and the National Library of Medicine, "Arclight Design Process," <https://samvera.atlassian.net/wiki/spaces/samvera/pages/405211892/ArcLight+Design+Process>.
 - ⁸⁹ ArcLight project lead Mark Matienzo was an expert adviser in the NAFAN project's planning phase. "Symposium Summary," June 2019, <https://docs.google.com/document/d/1kqGVv5qAQ6F57YH5PEA8KCedw43Q8GoOvyXVgSP5jV8/edit>.
 - ⁹⁰ Lighting the Way, "Forum (February 2020)," <https://library.stanford.edu/projects/lightingtheway/forum-february-2020>, captured at <https://perma.cc/4HRW-28PW>.
 - ⁹¹ Mark A. Matienzo and Dinah Handel, eds, *The Lighting the Way Handbook: Case Studies, Guidelines, and Emergent Futures for Archival Discovery and Delivery* (Stanford, CA: Stanford University Libraries, 2021), <https://doi.org/10.25740/gg453cv6438>.
 - ⁹² See particularly the work of the following group: Jodi Allison-Bunnell, Maureen Cresci Callahan, Gretchen Gueguen, John Kunze, Krystyna K. Matusiak, and Gregory Wiedeman, "Lost Without Context: Representing Relationships between Archival Materials in the Digital Environment," in *The Lighting the Way Handbook*, 55-72.
 - ⁹³ Liberating Structures, "Introduction," <https://www.liberatingstructures.com>, captured at <https://perma.cc/B236-J767>.
 - ⁹⁴ Since 2015, DACS has been in a continuous revision cycle to better respond to both major and minor changes needed. See Describing Archives: A Content Standard, "Changelog," <https://saa-ts-dacs.github.io/dacs/changelog.html#changelog>, captured at <https://perma.cc/A989-8U3D>.
 - ⁹⁵ Describing Archives: A Content Standard, "Statement of Principles," https://saa-ts-dacs.github.io/dacs/04_statement_of_principles.html#2-users-are-the-fundamental-reason-for-archival-description, captured at <https://perma.cc/PJ3V-8WD9>.
 - ⁹⁶ This is evident in the TS-DACS annual reports, Society of American Archivists Technical Subcommittee on Describing Archives: A Content Standard, "Annual Reports," <https://www2.archivists.org/groups/technical-subcommittee-on-describing-archives-a-content-standard-dacs/annual-reports>.

- ⁹⁷ Society of American Archivists Technical Subcommittee on Describing Archives: A Content Standard, "Proposed DACS Rights Statements Receive Overwhelming Community Support," <https://www2.archivists.org/groups/technical-subcommittee-on-describing-archives-a-content-standard-dacs/proposed-dacs-rights-st>.
- ⁹⁸ Roger C. Schonfeld, "More Scholarly Communications Consolidation as Institutional Repository Provider DuraSpace Merges into Lyrisis," *The Scholarly Kitchen* (blog), January 25, 2019, <https://scholarlykitchen.sspnet.org/2019/01/25/lyrisis-duraspace-merger>, captured at <https://perma.cc/H7UC-SVA8>.
- ⁹⁹ Roger C. Schonfeld, "Learning Lessons from DPLA," *The Scholarly Kitchen* (blog), November 13, 2018, <https://scholarlykitchen.sspnet.org/2018/11/13/learning-lessons-from-dpla>, captured at <https://perma.cc/C92X-4FMQ>.
- ¹⁰⁰ Skinner, "Community Cultivation: A Field Guide."
- ¹⁰¹ Skinner, "Community Cultivation: A Field Guide," 1.
- ¹⁰² Skinner, "Community Cultivation: A Field Guide," 17.
- ¹⁰³ Paul Conway, "Facts and Frameworks: An Approach to Studying the Users of Archives," *American Archivist* 49, no. 4 (1986): 393–407, <https://doi.org/10.17723/aarc.49.4.p21825jp21403087>.
- ¹⁰⁴ Mark A. Greene and Dennis Meissner, "More Product, Less Process: Revamping Traditional Archival Processing," *American Archivist* 68, no. 2 (2005): 208–63, <https://doi.org/10.17723/aarc.68.2.c741823776k65863>; Tim West, Kirill Fesenko, and Laura Clark Brown, *Extending the Reach of Southern Sources: Proceeding to Large-Scale Digitization of Manuscript Collections Final Grant Report* (Chapel Hill, NC: The University of North Carolina at Chapel Hill, June 30, 2009), https://docsouth.unc.edu/watson/archivalmassdigitization/download/extending_the_reach.pdf, captured at <https://perma.cc/LV3Y-HVBF>.
- ¹⁰⁵ For instance, the implementation of EAD3 consumed five years and produced some detailed revisions to expressions of dates, names, and other elements. It did not address any of EAD's fundamental issues.
- ¹⁰⁶ For all the OCLC updates on the NAFAN research, see <https://hangingtogether.org>.
- ¹⁰⁷ Christian Lange, "Internationalism" (Lecture, Nobel Peace Prize 1921, Oslo, Norway, 1921), <https://www.nobelprize.org/prizes/peace/1921/lange/lecture>, captured at <https://perma.cc/AUS4-XZML>.

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