

Regional Aggregation and Discovery of Digital Collections: The Mountain West Digital Library

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The Mountain West Digital Library (MWDL) is a digital collaborative of over 180 partners from five states in the U.S. West, sharing free access to over 775 digital collections with over 950,000 resources. Partners of the MWDL work together on providing regional discovery via an online portal at mwdl.org and facilitating, on behalf of the region, the on-ramp to national discovery via the Digital Public Library of America (DPLA) portal at dp.la.

MWDL was organized around these common goals:

- Establish a distributed digitization and hosting infrastructure to support memory institutions in sharing their digital collections
- Increase public access to digital collections materials through aggregation and discovery via open search portals
- Promote interoperability of metadata via common standards and enhancements
- Share expertise and training

This chapter describes how these goals have been met for MWDL partners, through a coordinated network of distributed repositories supporting collections and a central harvesting system for searching. Key to the success of regional discovery has been the establishment of common standards and practices, along with the development of useful data enhancement practices, also described below. How MWDL has adapted over its years of growth and adoption of changing technologies, and particularly how it has served the emergence of the new national digital library, are also discussed. Finally, future directions for collaborative discovery are suggested, with notes about the challenges ahead.

Building a Regional Collaborative for Digital Discovery

The Mountain West Digital Library was created in 2001 as a collaborative program among the member libraries of the Utah Academic Library Consortium (UALC). Several of the libraries had started digital collections and wanted to learn from each other's efforts. Leaning on the Consortium's lengthy history of successful collaboration among higher education libraries in Utah and Nevada, leaders of the nascent digitization centers in UALC libraries looked to each other for support in establishing servers running CONTENTdm software for digital asset management and in sharing the costs of training and purchasing of equipment and software. Initial partners in the network included the University of Utah J. Willard Marriott Library, Brigham Young University Harold B. Lee Library, Southern Utah University Gerald R. Sherratt

Library, and Utah State University Merrill-Cazier Library. Other libraries in UALC were also represented on the UALC Digitization Committee, which met regularly to set standards and policies for the new network (Arlitsch and Jonsson 2005).

Working with DiMeMa Inc., the creators of CONTENTdm, the digital assets management system, the UALC partners implemented the CONTENTdm Multi-Site Server to harvest and share the indexed metadata from all the repositories in a central search interface, which they named the Mountain West Digital Library. Partners were encouraged to share digital resources openly, with clearly assigned usage rights and other metadata assigned according to agreed-upon standards. In 2007 harvesting moved to the Public Knowledge Project's Open Archives Harvester, to allow for aggregation of non-CONTENTdm repositories as well, using the harvesting protocols of the Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH). As the size of the central index grew, PKP Harvester proved inadequate for harvesting, and in 2011 harvesting moved again to the more robust discovery system, Primo by Ex Libris Group, Inc.

The early work of these UALC pioneers led to a strong, distributed network of regional hosting hubs, each providing digitization services and hosting not only for the digital collections of the host library but also for the collections of additional libraries, museums, and archives. This hub and spoke model is illustrated in Figure 1, below.

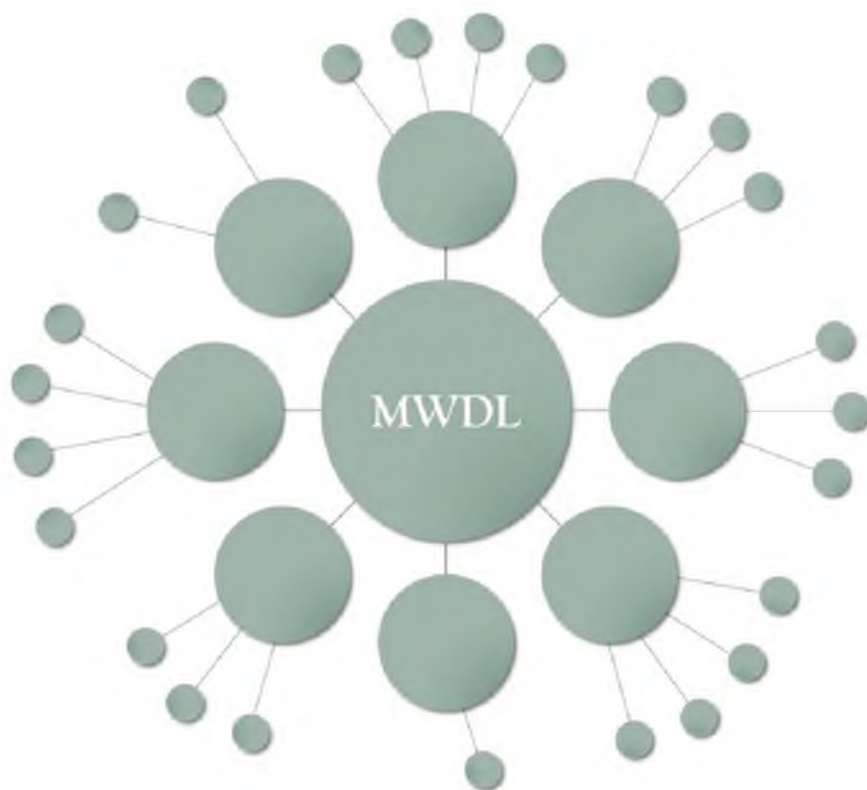


Figure 1. Hub and spoke service model of the Mountain West Digital Library, showing

aggregation of hosting hubs into a central MWDL portal. Smallest circles represent collection partners.

The supported partners are typically located nearby or, in the case of several hubs, within the hub's administrative structure, regardless of physical location. Over time the MWDL network added CONTENTdm repositories from more Utah and Nevada academic libraries, the Utah State Archives, and the Utah State Library, and then expanded in the late 2000s to harvest both more CONTENTdm repositories and more repositories based on other systems. Recently, collaboration has expanded again to include repositories using additional software systems, and the network has expanded to include partners in additional states. The network now includes collections from partners in six states – Utah, Nevada, Idaho, Arizona, Montana, and Hawaii (through BYU-Hawaii). Hosting hubs and supported partners include academic libraries, public libraries, archives, historical societies, museums, state agencies, and county and municipal governments (mwdl.org/aboutPartners.php).

From the start of collaboration in 2001, the UALC Digitization Committee has provided a forum for collaboration among the MWDL partners. Meeting twice a year, the group established common standards for metadata, ensuring the interoperability of the data created by many partners around the region. Members of the committee share information and advice about the decisions and tasks involved in running a digital curation center, including equipment purchases, digital assets management systems selection, digitization workflow, and digital imaging best practices. In addition, partners collaborate on training about content selection and metadata assignment. In 2008, to facilitate support of a growing number of partners, representatives of the hosting hubs created a common set of competitive prices for digitization and hosting services offered at all hubs; the MWDL Digital Services Price List was revised in 2014 and continues to help partners estimate the costs of working on digital projects.

In 2009, the Digitization Committee established the first of its task forces, and soon much of the practical work of the Committee was being accomplished via smaller working groups. These task forces and interest groups help the whole network to move forward on various topics of interest, typically at the forefront of new technology and practice, from geospatial metadata best practices and digital preservation policies, to institutional repository management, linked data, and research data curation.

As a collaborative enterprise, MWDL is funded and governed largely by the hosting hubs who maintain the repositories and digitization centers. Core funding is provided by the UALC Council from Utah legislative funds, and technology infrastructure and overhead has been provided by MWDL's host institution, University of Utah J. Willard Marriott Library. Grant funding has played an important role at several points. In the early years, Library Services and Technology Act (LSTA) grants from the Institute of Museum and Library Services via the Utah State Library helped to fund the new collaborative. Sub-awards to MWDL from four federal and private foundation grants accorded the Digital Public Library of America provided the foundation for growth of the MWDL network from 2013–2015. Through a recent six-month advisory committee process, the MWDL funding model was revised to include membership dues

from harvested repositories. Supporting one full-time and two part-time staff positions, the new model was implemented in the summer of 2015 and will maintain regional aggregation and data enhancement services, as well as provide a sustainable base for future growth.

Benefits of Regional Discovery

Fourteen years after the formation of the Mountain West Digital Library, the benefits of regional collaboration for discovery are readily apparent. The diversity of curators who contribute collections to MWDL ensures a variety of viewpoints and representation, while the hub and spoke model has enabled growth to a large scale. The MWDL portal at mwdl.org now provides close to one million records of unique and historical content available for discovery.

The MWDL collaboration is largely imperceptible to end users, yet provides them great benefits in terms of online access and usability. Prior to widespread digitization of historical content, searching for archival materials was the province of dedicated researchers and historians. These privileged few would correspond directly with institutions likely to have materials of interest and would travel, sometimes great distances, to view special collections in person. To the general public, these collections were largely invisible. While the physical items in special collections are still of great interests to scholars, digitized special collections are now available to anyone with an Internet connection.

In the Mountain West Digital Library, the metadata records for large and small special collections sit side-by-side in a navigable user interface driven by interoperable metadata. The aggregation of these metadata records greatly enhances serendipitous discovery for users who may have previously searched the digital collections of only one or two institutions. For example, Mormon pioneer history is an important area of interest for researchers investigating the settling of the American West. Materials of interest to these researchers include pioneer diaries, hand-drawn maps, personal correspondence, and drawings, and these materials are held by hundreds of collecting institutions around the West. Using the single MWDL search portal, a user can search the collections of larger institutions such as Brigham Young University, Utah State University, and the Utah State Historical Society, alongside those of smaller institutions such as the Darby Community Public Library, Emery County Archives, and the Sharlot Hall Museum. In fact, a search for “pioneer history” in MWDL provides metadata records from 40 different partners (Figure 2). With access to so many records from multiple institutions, the Mountain West Digital Library has become an obvious starting point for regional research.

Refine Search x

Include	Exclude	Collection Partner
<input type="checkbox"/>	<input type="checkbox"/>	University of Utah - J. Willard Marriott Library (1,021)
<input type="checkbox"/>	<input type="checkbox"/>	Brigham Young University - Harold B. Lee Library (717)
<input type="checkbox"/>	<input type="checkbox"/>	Utah State Library (167)
<input type="checkbox"/>	<input type="checkbox"/>	Utah State University - Merrill-Cazier Library (157)
<input type="checkbox"/>	<input type="checkbox"/>	Brigham Young University-Idaho (77)
<input type="checkbox"/>	<input type="checkbox"/>	Utah State Historical Society (61)
<input type="checkbox"/>	<input type="checkbox"/>	Arizona State Library, Archives and Public Records (43)
<input type="checkbox"/>	<input type="checkbox"/>	Weber State University - Stewart Library (28)
<input type="checkbox"/>	<input type="checkbox"/>	Idaho Commission for Libraries (25)
<input type="checkbox"/>	<input type="checkbox"/>	Uintah County (UT) Library (17)
<input type="checkbox"/>	<input type="checkbox"/>	Utah State Archives (16)

Figure 2. A partial list of MWDL institutions that have materials related to “pioneer history.”

The benefits of a regional library collaborative are just as significant to MWDL partners as MWDL users. While the discoverability of their content is the primary reason most partners join MWDL, the benefits of partnership within a robust digital library community provide equal value. Many new partners approach MWDL when they are considering how to digitize their first collection and offer it online. After conducting a new partner interview, MWDL staff present options for creating a digital collection. Although some partners choose to create their own digital repository, MWDL staff members often pair the new partner with an established partner for training, digitization, and hosting assistance. Over time, as new partners gain expertise, many of them go on to assist other institutions with their new collections. This ripple effect, along with the distributed, tiered nature of provided services, has allowed MWDL to continue to expand with minimal central staff.

MWDL creates an invaluable platform for leveraging expertise and equipment across the regional network. Many partners have invested significant resources into developing new digital library skills, tools, and workflows. Rather than working in isolation, MWDL partners have a venue to share their recent discoveries and accelerate progress for other partners by leveraging both in-person and virtual training. In 2014, MWDL hosted 20 webinars on digital library topics, featuring guest speakers from both inside and outside of the network. The MWDL Webinar Series was a great opportunity for our partners to stay on the cutting edge of digital library topics and share their expertise with a broader audience. Some partners have also invested in specialized equipment such as high-speed robotic scanning, that others in the network can use for a reasonable fee.

The most recent benefit to the partners in the network is the opportunity to have their records included in the national digital library, the Digital Public Library of America (DPLA). The Mountain West Digital Library was one of the inaugural six service hubs for the DPLA and the largest contributor of records to DPLA at its April 2013 launch. As a result of this new

partnership, the metadata records of MWDL partners are now available at local, regional, and national levels, greatly increasing the discovery of their collections. The process of serving records to DPLA and the impact of this partnership is explored in more detail below.

Enhancing Discovery through Metadata Aggregation

The Mountain West Digital Library has a history of collaboration in developing best practices for discovery through metadata aggregation. The regional network provides a forum for librarians and library staff engaged with digitization and metadata creation to explore best practices and metadata improvements in a supportive environment. The collaborative adopted the Western States Dublin Core Best Practices, a document developed in 2003 by organizations in eight western states, including early MWDL partners, led by the Colorado Digitization Project, later called the Collaborative Digitization Project. These best practices were complemented by a locally developed document, “Metadata Guidelines for the Mountain West Digital Library,” which provided example metadata records for various types of digital objects in conformance with the Western States standards.

The need to expand to metadata standards to include Dublin Core Metadata Terms refinements led to the founding of the Metadata Task Force of the UALC Digitization Committee (sites.google.com/site/mwdlmetagroup), which developed the *Mountain West Digital Library Dublin Core Application Profile*, first released in 2010 and revised in 2011 (mwdl.org/docs/MWDL_DC_Profile_Version_2.0.pdf). The MWDL standard calls for eight required fields: date, description, format, identifier, rights, subject, title, and type, along with two mandatory-if-applicable fields: conversion specifications (for local use only) and creator. These fields are searchable, along with several others that are not required but commonly included, such as language and geospatial location. The greater specificity of Dublin Core Metadata Terms allows for a finer granularity for discoverability. For example, while in Dublin Core Metadata Terms the properties temporal and spatial refine the core element coverage with distinct meanings, the metadata provision in Dublin Core Elements conflates the two, making an accurate harvest of geospatial information impractical.

The extensive instructions in the *MWDL Dublin Core Application Profile* assist MWDL partners in creating robust and consistent metadata records at the local level, where librarians and archivists are most familiar with the materials. Training and support to local memory institutions are enhanced by the specific directions in the profile, along with additional, less formal information in the *General Guidelines for Digital Collections Metadata* provided on the MWDL website (mwdl.org/getinvolved/guidelines.php). The combination of standards documents continues to be widely used.

There is high awareness of the *MWDL Dublin Core Application Profile* in the Mountain West region, and it is often used as a base for customization by other digital libraries. For example, the Montana Memory Project Guidelines (msl.mt.gov/Statewide_Projects/Montana_Memory_Project/Documents/15.MMPMetadataGuidelines.pdf) were informed by MWDL’s standards, with additional required local fields added to

reflect Montana-specific information. The Consortium of Church Libraries and Archives for the Church of Jesus Christ of Latter-day Saints (ccla.byu.edu) has also adopted the MWDL document with the addition of fields specific to the church's worldwide hierarchy for administration and worship. An MWDL task force is currently exploring controlled vocabulary and best practices for geospatial metadata (sites.google.com/site/mwdlgeospatial), and the conclusion of that process is likely to lead to a new revision of the *MWDL Dublin Core Application Profile*.

Records are normalized by MWDL at the time of aggregation to provide additional discoverability. Minor normalization routines are run to standardize item type, separate subjects for faceting, display date ranges in an expected fashion, and to enable other search and display functionality within Ex Libris Primo.

More significantly, MWDL adds values that indicate the context of individual resources. Since the default architecture of the Primo discovery system did not support the exploration of collections from a single partner or source repository, MWDL hard-codes fields for hosting center, repository, collection, and partner identifiers, allowing resources to be retrieved according to the context under which they were provided. For example, the hard-coded value "usu-16-363-2166" attached to all items in one collection coordinates retrieval of values from four customized Primo mapping tables, with "usu" identifying the hosting center at Utah State University Merrill-Cazier Library, "16" identifying that library's CONTENTdm repository, "363" identifying North Logan Public Library as the partner, and "2166" identifying the North Logan History Collection (mwdl.org/collections/2166.php). Users can retrieve all items in this collection if they wish, or all items from this partner, or repository, or hosting center. Likewise, they can limit their advanced searches to a specific collection, partner, etc., or facet their search results after a search to narrow to a specific context. MWDL users can use these search strategies to retrieve only resources from selected — presumably the most trusted — partners. Each partner and each collection is represented with a landing page on the MWDL web site, providing valuable information to search engine crawlers as well as end users of the portal. This assignment of values also allows users to browse and discover materials across platforms for a given partner. For example, they need not consider that a hosting center may provide metadata from one or more repositories, or that a partner may work with more than one hosting center because of available equipment or bandwidth for digitization. Similarly, if a collection moves from one repository to another, because of changing preferences or technology, the user can continue to find the materials by searching on the collection name.

The tiered nature of the MWDL network creates opportunities for users to encounter digitized objects in a variety of contexts. For example, while a public library may host a collection web page with local branding, collection materials may also be hosted within the technical infrastructure of a larger statewide collaboration like the Montana Memory Project (mtmemory.org). Likewise, a hosting hub like Utah Valley University Library will also host collections for local memory institutions like the Utah Territorial Statehouse State Park Museum (mwdl.org/partners/351.php). Users may encounter digital objects through a Google search, direct links on a partner's web page or library catalog, via search on the hosting repository, via

search at MWDL.org, or through DPLA search. Rodger C. Schonfeld explored the variety of places where discovery for library users happens in a 2014 Ithaka report (Schonfeld and Ithaka S+R 2014). Recognizing that driving traffic to a single portal like MWDL.org will not capture all the users of digital collections in the area, MWDL encourages metadata improvements and best practices at the local level, as opposed to taking on more complicated metadata normalization and transformation at the repository level. Since users of MWDL are directed to the local repository to view the digital object, the metadata is best improved at the location of the source object, and then updated through frequent harvesting and re-indexing.

To ensure consistency of application of metadata standards across hundreds of collections, MWDL staff members audit metadata at different stages of ingestion. A detailed audit report is prepared for a small number of pilot collections for each new repository before harvest, including suggestions for changes in field mapping and find-and-replace routines for field values. For already harvested repositories, new collections offered for harvest are reviewed for conformance as well.

Serving as a regional aggregator of metadata for a variety of partners and service hubs across multiple states creates challenges when approaching the goal of providing a consistent index for discovery. MWDL currently harvests from twenty repositories, and is actively working on adding ten more. While more than half of the aggregated repositories use CONTENTdm, MWDL also harvests from other systems, including other vendor products and open source systems, often adapted with locally coded OAI-PMH provision. To date MWDL has harvested from ArchivalWare, APPX AXAEM, IxiaSoft, and bepress, and efforts are underway to adapt Equella, Salesforce, and SimpleDL repositories for harvest. MWDL staff members are often called upon to consult on OAI-PMH support and development issues, especially for new repositories that have not been harvested before.

National Discovery: Serving Metadata to the Digital Public Library of America

The idea of a national digital library had been discussed for almost a decade and after a three-year planning process, the Digital Public Library of America (DPLA) launched in April 2013. Rather than create a centralized digital library akin to the Library of Congress, the DPLA founders elected to build a lightweight portal aggregating metadata records from digital records sources around the country. DPLA's metadata records are harvested from content hubs and service hubs (dp.la/info/hubs/). Content hubs are large institutions, such as the Smithsonian Institution, that contribute over 200,000 records directly to DPLA. Service hubs, like MWDL, are records sources that have content from a variety of institutions and provide an on-ramp to DPLA for many institutions' materials, as illustrated in Figure 3. Service hubs are critical to the scalability of DPLA, as they remove the need for DPLA to maintain a one-to-one relationship with every memory institution in the country. Like MWDL, DPLA's hub and spoke structure has allowed DPLA to increase the amount of shared content rapidly and to focus on discoverability. In its first two years, DPLA harvested over ten million records and became a force for innovation on library technology, standards, and discoverability (Matienzo and Rudersdorf 2014).

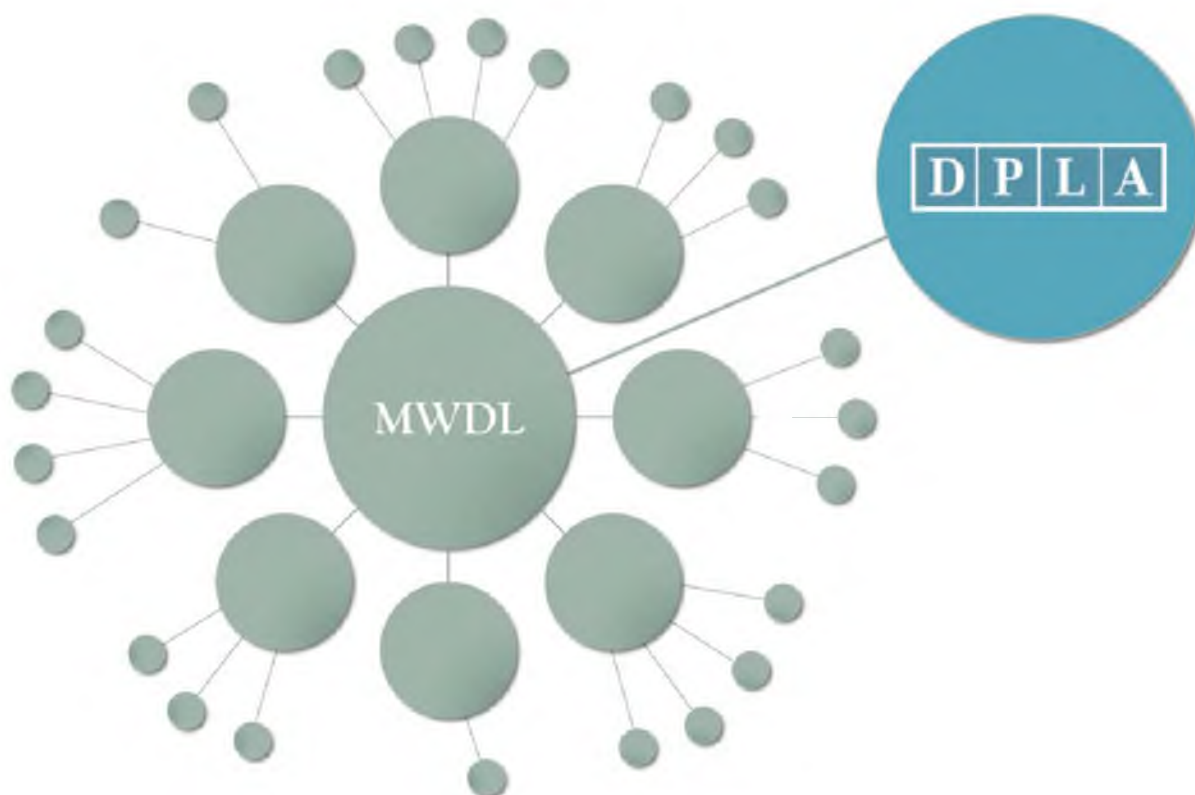


Figure 3. Hub and spoke service model of the Mountain West Digital Library, extended to show how MWDL serves to provide aggregated metadata to the Digital Public Library of America as one of DPLA's service hubs.

MWDL was selected as one of the DPLA's six inaugural service hubs as part of the DPLA Hubs Pilot Project in 2012 and is still the only hub that represents a multi-state regional collaborative. The other five initial hubs — Minnesota Digital Library, Digital Commonwealth (Massachusetts), Digital Library of Georgia, Kentucky Digital Library, and South Carolina Digital Library — were established as state-based collaboratives with more centralized models for digitization and hosting services. These other service hubs are often supported primarily by a single institution and have dedicated state-based or institution-based funding for staffing. In contrast, MWDL is affiliated with all institutions of higher learning in Utah, represents partners throughout the Mountain West, and has a more distributed funding model.

Involvement with the new national network of DPLA hubs has offered greater opportunities to connect with and share best practices with other librarians and information professionals engaged with issues of providing resources for discovery. Similar issues arise for all service hubs with regard to standardization, normalization, and OAI-PMH, and exploring these topics as a community of practice has been beneficial. Hubs have also developed and shared new tools for metadata management, for example the Metadata Aggregation Tools (github.com/ncdhe/dpla-aggregation-tools) developed by the North Carolina Digital Heritage Center (Gregory and Williams 2014). These tools allow service hubs engaged in OAI-PMH metadata harvesting to

check for required fields and locate areas for improvement by providing a visual way to browse the contents of OAI streams of collections prior to harvest.

Having our records included in DPLA makes the digital collections of our partners visible to a national audience and increases the chances of serendipitous discovery by providing an additional high-profile access point. In its first year, the DPLA website and open application-programming interface (API) received over ten million hits, and, among all DPLA hubs, the Mountain West Digital Library received the second highest usage. Of the top twenty-five partners in DPLA, five of them were from the Mountain West Digital Library (mwdlnews.blogspot.com/2014/06/mwdl-statistics-from-dpla.html). This additional visibility predictably boosts the use of digital collections in MWDL and provides new opportunities for promotion and press. At the one-year anniversary of the DPLA launch, an MWDL image was featured in both *The Chronicle of Higher Education* and *The New York Times* “ArtsBeat” blog. The image, shared by a museum in Murray, Utah (population 48,612), became the most viewed item in DPLA in April 2014. Inclusion of MWDL partners’ images in DPLA’s well-curated national exhibits (dp.la/exhibitions) has also raised their visibility and demonstrated the complementarity of content from around the country. Some of the recent exhibits, such as “Staking Claims: The Gold Rush in Nineteenth-Century America” (dp.la/exhibitions/exhibits/show/gold-rush) rely heavily on contributions from MWDL partners and highlight the depth of our collections in the Mountain West.

DPLA’s experimentation with new user-friendly interfaces has also been a boon to MWDL partners, staff, and users. Unlike a traditional digital library interface that tends to require some searching expertise, DPLA has integrated user-friendly search features such as map and timeline interfaces. Users can search for materials by zooming in on a map interface to locate items in a particular part of the country or scroll through the timeline to find primary source material from a particular year. Traditional facets can still be exposed if the user would like to narrow a search, but the default search mechanisms are more visual and intuitive than traditional library tools.

DPLA actively supports experimentation and use of the harvested and enhanced metadata available through its API (dp.la/info/developers/codex/). To the extent that DPLA partners may hold any rights to the metadata, they agree to dedicate those rights to the public domain; a Creative Commons public domain dedication (CCo) is applied upon harvest. At the time MWDL initially explored providing records to DPLA, partners were given the opportunity to opt out of dedicating metadata to the public domain. Not a single partner opted out. Since DPLA metadata is dedicated to the public domain, this has the effect of encouraging innovation and creativity with the use of that metadata. Hackathons have frequently been hosted to encourage development of new uses of the API via apps, which point to new possibilities in discovery. DPLA apps range from twitter bots centered on specific topics such as Historical Cats, (dp.la/apps/20) to the virtual scrapbook Culture Collage (dp.la/apps/7), discovery through a user’s geolocation with DPLA Map (dp.la/apps/5), a Wikipedia Editing browser extension (dp.la/apps/22), and a variety of metadata visualization apps (deanfarr.com/viz/index.php). Recent creative usage of DPLA’s API have resulted in discovery interfaces such as Color Browse

([colorbrowse.club](#)), to explore selected photos by color, and Disaster View, which browses the Library of Congress and DPLA for images of catastrophes ([disasterview.laurawrubel.org/](#)).

Involvement with DPLA has provided MWDL staff an additional forum for exploring best practices for discovery at a national level. The new community formed by the service hubs and content hubs of DPLA often consists of the only individuals for a particular state or region concerned with harvesting metadata and working with a variety of local partners. MWDL has relied on DPLA expertise when developing our emerging recommendations for Geospatial metadata, and representatives from other DPLA service and content hubs have contributed to MWDL task forces. The DPLA Metadata Application Profile ([dp.la/info/developers/map/](#)) provides guidelines for service and content hubs, and MWDL staff ensure that the MWDL Dublin Core Application Profile is conformant with DPLA's expected practices.

Assessing the Impact of Regional Discovery

MWDL staff members have explored several means to gauge the impact of providing aggregation for regional discovery, as well as the sharing of records on the national platform of DPLA. With each round of assessment, staff members have also implemented changes that enhance discovery. This process is an ongoing, iterative one.

Google Analytics usage tracking was put into place in 2013, and the GA configuration has been tailored by the search engine optimization team at MWDL hosting institution, the J. Willard Marriott Library at the University of Utah, to collect cross-domain statistics, i.e., to gather information about usage of metadata records pages in Primo and static "About" pages on a conventional web server. The staff produces usage reports with GA statistics, along with "Page Insights" statistics from the MWDL Facebook page. Similarly, DPLA provides GA statistics to all its hubs monthly.

Search engine optimization is an ongoing process as well for the MWDL portal. Basic sitemaps have been implemented, and MWDL staff members are working with Ex Libris staff to create a more crawler-friendly environment in Primo. Early actions for linked data readiness and exposure are also being investigated, such as inclusion of microdata elements and recommendations for linked data URIs in certain fields.

Because participation in the collaborative is motivated by increased exposure and usage for digital collection materials, MWDL will be expanding its assessment strategies in the coming year.

Success to Date and Evolving Issues

MWDL has succeeded in meeting its initial goals, serving as a locus for digital community, sharing valuable resources with the world, and tailoring retrieval for maximum discovery using current tools, systems, and standards. That strong foundation of collaboration will continue to

be highly useful as we plan improvements to our regional discovery services. As we look forward to new frontiers, we will continue to leverage our successful collaborative model and a history of collaborative goodwill and experience.

Future areas of growth include more integration with K-12 educational curriculum development and encouraging discovery for the classroom. This may involve integrating data delivery for learning management systems and developing metadata that reflects educational standards-specific learning objectives, learner level, and other fields. Also, MWDL will examine how to provide more focused collection development for building out important regional themes, as well as providing direct topic access to retrieve thematic materials.

Linked Data for digital collections is another emerging issue MWDL is keenly aware of. DPLA's infrastructure is moving from linked-data-ready towards direct implementation of linked data, and Ex Libris is creating mechanisms for MWDL and other customers to expose data as JSON, so a "perfect storm" of opportunity is likely to emerge shortly. MWDL is also interested in exploring the opportunities that a shared regional controlled vocabulary might provide for describing cultural heritage objects.

The role as a regional portal will doubtless adapt to complement the work of the DPLA on national discovery. Serving as a service hub to DPLA offers us the opportunity to experiment with frontiers for both levels of discovery. DPLA is developing better discovery options for digital items with its "Getting it Right on Rights" initiative (dp.la/info/about/projects/getting-it-right-on-rights/), and, along with other service hubs, MWDL will help to roll out recommendations for rights statements that will better help users locate items they can use or adapt. In addition, DPLA's Hydra-in-a-Box (imls.gov/assets/1/AssetManager/LG-70-15-0006-15_Proposal.pdf) development project, funded under a National Leadership Grant from the Institute of Museum and Library Services, has the potential to modernize digital repository software, as well as make the harvesting process more standardized and streamlined both for national portals like DPLA and regional ones like MWDL.

As the national context for sharing access to digital collections matures, whether the size of MWDL's regional scale continues to feel "just right" remains to be seen. Personal relationships and reciprocal services have been at the heart of MWDL's success, and it is difficult to predict how further expansion will affect the important trust, goodwill, and social aspects of the collaboration. As a discovery portal that started out with the focus on a single state, and then expanded to serve multiple states, retaining the right mix of staffing and services to collaborate on discovery at a regional scale is an ever-changing puzzle.

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