



# Florida Statewide Digital Action Plan: Technology Work Group Report

Prepared by: Jason Kucsma and the  
Technology Work Group.

May 13, 2014

## Contents

Executive Summary .....	3
Key Technology Findings from Statewide Survey .....	5
Information Technology Resources .....	5
Funding Resources .....	5
Access to Collections .....	6
Support for Metadata Harvesting .....	6
Collaboration Culture .....	7
Additional Considerations .....	8
Examining Technology Solutions and Models .....	9
Digital Asset Management .....	9
Metadata Aggregation .....	11
Existing Aggregation Models .....	13
Recommendations .....	16
Conclusion .....	18
Appendices .....	19
Appendix A: <i>Florida on Florida</i> Technology Considerations .....	19
Appendix B: <i>Digital Public Library of America</i> Technologies .....	20

## Florida Statewide Digital Action Plan: Technology Work Group Report

### Executive Summary

On January 9-10, 2014, the *Florida Statewide Digital Action Plan* Steering Committee convened an in-person meeting where the group: drafted a project mission; identified key program plan elements; identified elements for model initiatives; identified strategies for developing Florida statewide digitization guidelines; and identified strategies for developing a single point of discovery for digital collections. As a product of a series of exercises and discussions over the course of a day and a half, the Steering Committee established four work groups intended to address critical components for a statewide plan: Content Creation; Metadata; Collection Development; and Technology.

While the boundaries between each of the work groups are somewhat fluid and key issues overlap, the recommendations herein will focus on the outcomes of the Technology Work Group. Two discussions during the January meeting were particularly salient to the Technology Work Group. First, the Steering Committee addressed the practice of metadata aggregation as a means for providing a single point of access for digital collections. The [Digital Public Library of America \(DPLA\)](#)<sup>1</sup> was identified as a model worthy of investigation, owing to its hub-and-spoke model that distributes the workloads to regional service hubs, and larger institutions work as content hubs. Additionally, the Steering Committee discussed the feasibility of Florida's participation in the *DPLA*. Second, an impending need to chart the course for the future technology solution for the [Florida on Florida](#)<sup>2</sup> project, and the aforementioned single point of discovery for digital collections, presented the Steering Committee with an opportunity to identify some functional requirements for these solutions.

Following the January Steering Committee meeting, a *Florida Statewide Digitization Survey* was conducted. Top administrators and professionals from over 100 Florida institutions responded to the survey. Of those, 71 reported that they were creating or acquiring digital collections.

With work from the Steering Committee discussions, Statewide Survey data and research into other models employed nationwide, the Technology Work Group spent approximately eight weeks addressing a discrete, two-part charge: *present recommendations for what Florida on Florida's next iteration may look like, and identify models and opportunities for statewide aggregation of digital collection metadata for a single point of discovery.*

From this charge, the work group recommends two key directions. First, the Division of Library and Information Services (DLIS) should issue a detailed Request for Proposal (RFP) for a system to replace the current *Florida on Florida* platform. A seamless and cost-effective transition to a new platform for *Florida on Florida* would lay the groundwork for an expansion of DLIS funding to expand shared digital collection management solutions. Access to digital asset management systems for cultural heritage organizations remains a critically important void to be filled within the state. Without access to these systems, cultural heritage organizations have no

---

<sup>1</sup> [dp.la](http://dp.la)

<sup>2</sup> [fof.fcla.edu/cqi/b/bib/bib-idx](http://fof.fcla.edu/cqi/b/bib/bib-idx)

way to deliver digital collections to users. Pre-existing initiatives may be scaled up to fill that void, and new initiatives may be launched to fill in statewide gaps, both of which will require increased financial support at the state or national level.

Second, aggregation of digital collections throughout the state must be expanded. A laudable amount of work has already been invested in metadata aggregation initiatives, and this group recommends a renewed and revised commitment to these aggregation efforts. Ideally, existing and future aggregation projects should model national and international projects where there are commitments to metadata standards, shared or distributed work via regional hubs and a commitment to openness in providing access to the aggregation efforts.

Each of these recommendations reinforce underlying needs for educational initiatives aimed at helping libraries and other cultural heritage institutions host digital collections, adopt statewide standards, and envision a single point of discovery for Florida's rich digital collections—all in the service of its constituent communities. Details for these recommendations, and the reasoning to support them, are included in the following report.

The project consultants would like to thank Amy Johnson and Sondra Taylor-Furbee from the Florida Department of State's Division of Library and Information Services for their support during this project, as well as the contribution of the Technology Work Group members.

# Key Technology Findings from Statewide Survey

## Information Technology Resources

The Technology Work Group reviewed the data from the Statewide Survey to understand the current state of digitization and digital initiatives throughout the state. From the survey data, some clear themes emerge that will inform the recommendations from this group.

Information Technology (IT) resources vary between institutions. Many institutions have their IT needs met most often through an internal IT department (28); 12 outsource IT needs to an external organization or vendor; eight outsource to an internal IT unit other than the library/museum/cultural heritage organization; and four don't have an IT department.

IT services for digital collection management that are supported by responding institutions included: digital imaging (scanning, direct digital capture and digital photography) at 35 institutions; a collection management system/digital asset management system at 30 institutions; Web development/design at 29 institutions; an institutional repository at 18 institutions; and a preservation repository at 11 institutions.

*Given the central role that IT plays in the implementation and maintenance of the infrastructure for digital initiatives, careful consideration will need to be given to the varying levels of IT support across the state. For example, remotely hosted and administered digital asset management systems might be more appropriate for some regions, or sectors, of cultural heritage organizations. In other instances, there may be opportunities for institutions with increased IT support to leverage that support for smaller or medium sized institutions, either on a cost/recovery basis, or as a revenue generating service.*

## Funding Resources

If we consider dedicated funding as a sign of vibrant and sustained support for an organization's program, a dedicated budget for digitization programs (as opposed to projects) speaks well to that institution's commitment to sustainable access to digital resources. Looking at operating budgets for the digital collection initiative, including staffing and technology, the largest number of respondents 15 (across all staff sizes, and mostly in public and special libraries) indicated no funding. Ten organizations said they did not know. Seven said \$2,501-5,000; six said \$1-2,500; and five organizations indicated between \$50,001-100,000 and \$250,001-500,000. Three organizations indicated digital collection initiative budgets of \$500,001 and above.

*Any recommendations from this work group will necessarily need to account for the fact that there are organizations with rich digital (or digital-ready) collections throughout the state at both ends of the funding spectrum. Leveraging available funds to increase capacity for some organizations, or create capacity in others, will be essential for maximal impact. This is especially true when funding for digitization projects has decreased nationwide in recent years.*

## Access to Collections

Providing access to digital collections can be a significant hurdle for some institutions. According to the Statewide Survey, nearly half of respondents said they had no Digital Asset Management System (DAMS). While it is encouraging to note that 34 organizations reported that they *did* have access to a DAMS, this is an adoption rate that is lower than what the project's consultants have seen in other states and regions. DAMS can be used to manage the full life cycle of digital objects, including: management of data creation; metadata repository; image repository, or linkage to the image repository; registry of preservation metadata; and as a means of providing access to users. The top types of systems used by survey respondents included:

- OCLC's CONTENTdm (11 organizations)
- *Islandora* (8 organizations, all of which are academic libraries)
- Locally developed systems (7 organizations)
- *PastPerfect* (6 organizations)
- *SobeK* (5 organizations)
- *Omeka* (4 organizations)
- *ExLibris DigiTool* (4 organizations)
- *D-Space* (3 organizations)
- *Fedora* (1 organization)
- Other systems include *Bepress Digital Commons* (4 organizations) and *Archon* (2 organizations)

*Respondents could select more than one option.*

*In addition to other considerations around metadata standards, funding or IT support, any Statewide Digital Action Plan will need to consider the opportunity presented by so many organizations without access to a DAMS or comparable digital collection hosting solution. Recommendations in this area might include a consortial hosting solution for smaller organizations, or a larger institution providing DAMS service to medium-sized and smaller institutions (as mentioned above).*

## Support for Metadata Harvesting

One consideration for the Technology Work Group is the likelihood that a statewide metadata aggregation project might help address the need for a single point of discovery. According to the Statewide Survey, metadata harvesting strategies supported by responding institutions (most often in organizations with larger budget and staff sizes) included:

- Don't know (10 organizations)
- Open Archival Information Protocol for Metadata Harvesting (*OAI-PMH*) (9 organizations, mostly academic libraries)
- HTML (data export) (9 organizations)
- File Transfer Protocol (FTP) (7 organizations)
- Z39.50 (8 organizations)
- System supports *OAI-PMH*, but institution has not implemented it (6 organizations)
- System supports FTP, but institution has not implemented it (6 organizations)

- Organizations does not support any metadata harvesting capability (3 organizations)
- System supports Z39.50, but institutions has not implemented it (2 organizations)

*Respondents could select more than one option.*

*Metadata aggregation projects, and the idea of an automated digital library, are certainly not new to the field, though recent developments in metadata aggregation, the availability of robust remediation tools and linked data, present new opportunities for consideration. Florida is currently supporting a number of aggregation projects throughout the state, and the relationships built through these programs may serve as the foundation for even greater collaboration, and additional use of the aggregated collections. Florida, like many other states, features entrenched institutional silos, and it is the citizens of Florida, and interested educators and researchers, that suffer from this disaggregation. Regional aggregation of metadata and thumbnails in tandem with a statewide aggregation program that brings all these collections together, stands to benefit the participating institution. Perhaps more importantly, the greatest beneficiaries would be the potential users of these rich digital collections.*

## **Collaboration Culture**

While not specifically related to technology, the culture of collaboration in Florida may inform the likelihood that certain recommendations from this group may be successful. Over half (22, including almost all of the academic libraries taking part in the survey) of the institutions participating in the survey questions about collaborative digital activities (22, including almost all of the academic libraries taking part in the survey) said they collaborate with other libraries or cultural heritage organizations on their digital initiative. Fifteen (the majority of which are organizations with smaller staff sizes) do not collaborate, and one organization did not know.

There were 36 collaborative, or partner, institutions listed. The digital collaboratives that respondents organize/participate in (or institutions that they collaborate with) include: [Publication of Archival Library & Museum Materials](#) (PALMM)<sup>3</sup> with 11 collaborators, *Central Florida Memory* (2 participants) and the *Digital Library of the Caribbean* (4 participants). Partner institutions most often named were the University of Florida and Tampa Bay History Center.

Those who collaborate, participate in a wide variety of activities, including:

- Promotion of shared collections (16)
- Using common sets of standards and best practices for metadata (15)
- Using common set of standards and best practices for content creation (14)
- Submitting collaborative grant proposals (12)
- Shared digital asset management system (11)
- Shared digital preservation program (10)
- Creating exhibits from shared collections (9)
- Shared institutional repository (5)

*Respondents could select more than one option.*

---

<sup>3</sup> [palmm.fcla.edu/](http://palmm.fcla.edu/)

Those organizations that collaborate were asked to rank the importance for a number of collaborative digitization project goals. All of the goals listed received a majority of ranking at the “Most Important” level. By number of responses, these were the most popular goals:

- To increase visibility and expand the audience for our collections and organization (14 responses)
- To share collection resources among members of a collaborative, providing visitors/end users access to collections (12)
- Identify and share standards and best practices for improving access to collections (11)
- To share the cost of developing digital infrastructure and collections (11)
- To participate in a grant that supports collaborative initiatives (10)
- To develop the capacity and resources to digitize materials (10)
- To share technical resources including server space; infrastructure (10)
- To provide implementation assistance, ongoing training, and consulting on digitization (9)
- To identify and share standards and best practices for the digitization of different types of media (9)
- To expand personal and organizational networking capabilities (6)

*Respondents could select more than one option.*

*The existing culture of collaboration in Florida is not something to be taken for granted. Perhaps one of the greatest strengths that this Digital Action Plan will hold is the ability to use these pre-existing relationships as the building blocks for a statewide digital initiative. These essential relationships may be able to grow to incorporate additional collaborators, or serve as replicable models for other new relationships. Regardless of how they are cultivated and nurtured, the collaborative relationships in Florida are assets in critical need of additional investments. Most of these partnerships are between similar, or complementary, types of organizations, and it is hard to overstate the challenges of bringing smaller organizations into larger collaboratives. Still, these challenges should not preempt attempts to pursue these collaborations.*

## **Additional Considerations**

Throughout all of these observations, there is one common through point, the need for education and heightened awareness throughout the state. As data from the survey indicates, there are immediate opportunities for increased education around standards, best practices and copyright issues related to digital collection building, access and preservation. To the last point, it is worth noting that just over 30 percent of the survey respondents completed the digital preservation portion, and of those respondents, just over 50 percent of the institutions had dedicated digital preservation programs in place. While digital preservation concerns fall just outside the scope of the *Digital Action Plan*, considerations around the long-term stewardship of the state’s digital collections must be part of the conversation for subsequent phases.



## Examining Technology Solutions and Models

With the aforementioned assessments in mind, this work group sees its charge as twofold: address the need for digital asset management support throughout the state, and propose possible directions for using metadata aggregation to provide a single point of discovery for Florida's digital collections. As a program that intersects with both of these concerns, future directions for *Florida on Florida* will necessarily be addressed in these recommendations. Similarly, any recommendations will inherently need to address the varied access to IT resources, diversity (or lack) of digital collection hosting solutions and the pre-existing collaborative relationships

For the purposes of this discussion, we will be focusing exclusively on the parts of the digital collection building lifecycle *after* resources have been digitized. We recognize that there is a good deal of work that remains to be done statewide to help organizations digitize collections, and that work should absolutely be considered the logical next phase following this *Digital Action Plan*. That work will also be informed by recommendations of the Collection Development Work Group and the Content Creation Work Group. We also recognize that there is a formidable immediate challenge in providing a single point of access to Florida's disparate digital collections, and that it makes sense to address existing resources and the challenges they pose. On a related note, we will not be addressing metadata schemas or descriptive standards. The Metadata Work Group will be making recommendations around best practices for digital resource description.

While this group's recommendations may not be specifically related to the *DPLA*, that nationwide project uses a metaphor for digital collections that is useful as we think about the digital collections environment in the state of Florida. The metaphor positions digital collection builders as part of a water ecosystem where [ponds feed into lakes, which feed into oceans](#).<sup>4</sup> Libraries, archives, museums and other cultural heritage organizations (ponds) feed digital content to regional or statewide consortia (lakes) work, as service hubs that then feed aggregated (and remediated) metadata into the *DPLA* (ocean). We might apply this similar metaphor to Florida where digital collections from libraries, archives and museums (ponds) feed into lakes like *Publication of Archival, Library and Museum Materials (PALMM)*, *Florida Virtual Campus (FLVC)* and *Florida on Florida*. The missing component of this ecosystem is obviously the statewide "ocean," and we hope the following recommendations help this Statewide Digital Action Plan realize the goal of creating that ocean.

### Digital Asset Management

We mentioned earlier that there are two primary issues related to digital collection hosting in Florida, according to the survey data. In addition to the disparate systems being used throughout the state for digital asset management, there is an additional concern that the majority of smaller cultural heritage organizations have no systems for managing and providing access to digital collections. Existing DAMS in Florida range from best-in-class repository

---

<sup>4</sup> [dancohen.org/2012/10/16/the-digital-public-library-of-america-coming-together/](http://dancohen.org/2012/10/16/the-digital-public-library-of-america-coming-together/)

solutions, to off-the-shelf proprietary systems, to locally developed solutions; all of which present their own challenges for harvesting their content, but we will address that shortly.

Florida, like most states, is not in a position where it could expect all cultural heritage organizations to use a common platform for digital asset management. In fact, such a recommendation may be undesirable, as it could have the unintended consequence of overburdening smaller organizations by mandating they use a system that exceeds their own basic needs for collection management and access. We could not expect a smaller cultural institution to have the resources needed to manage a complex digital repository, such as a *Fedora* repository, but there are solutions tailored more to organizations of this size and means.

To address the considerable number of organizations with no access to DAMS, there are a few possible solutions, each with their own benefits and challenges. Each of our recommendations here are based on a fundamental need for a DAMS to support the creation and management of structured metadata, host digital surrogates and provide some means for metadata harvesting or export.

According to the survey, 11 institutions are currently using *CONTENTdm* for their DAMS, and it is to-date, likely the most widely used DAMS by libraries today. This proprietary solution can be either hosted on local servers, or hosted by *OCLC*, who is responsible for the development and maintenance of this software as well. This host service allows small organizations without IT resources at their disposal to work with a DAMS without the additional burden of managing a server environment, manually upgrading software, and the related work associated with a locally hosted solution. Perhaps the biggest barrier to use for *CONTENTdm* is annual license costs (and hosting costs if an organization were to go that route). For this reason, a number of regional consortia and statewide systems have purchased unlimited hosted *CONTENTdm* instances to allow their members to build collections on a remotely hosted platform, and reduce the costs to individuals through scale. This model is currently in use by programs like [Mountain West Digital Library](#)<sup>5</sup> and [New York Heritage](#),<sup>6</sup> though there are other technology solutions that provide similar consortial benefits.

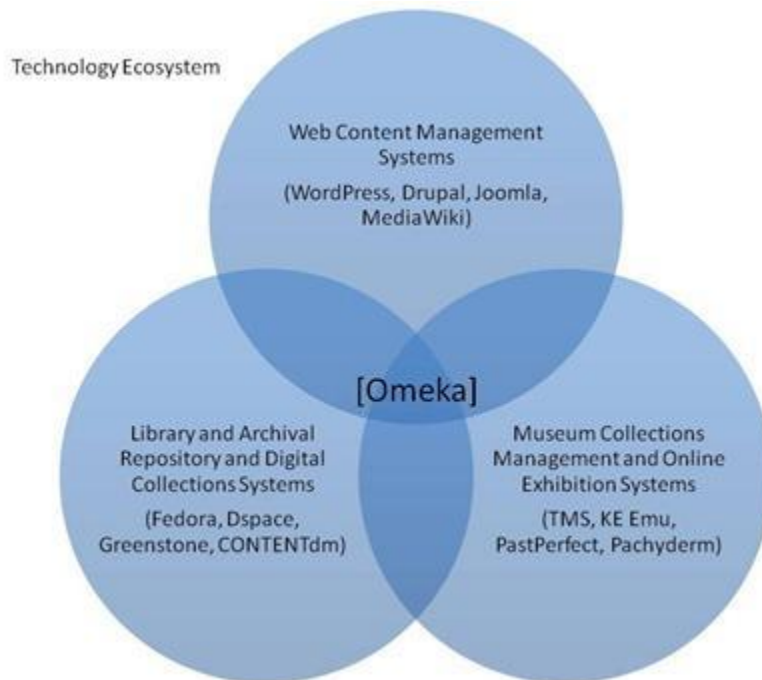
Another option, though not technically a DAMS, is the open source *Omeka* platform. Unofficially dubbed, “*Wordpress* for cultural heritage” by some, *Omeka* is a, “free, flexible, and open source Web-publishing platform for the display of library, museum, archives, and scholarly collections and exhibitions.” Because of its easy five minute setup, part of the appeal of *Omeka* is that it’s as easy to make an online collection as it is to launch a blog. According to their [“About” documentation](#),<sup>7</sup> “*Omeka* falls at a crossroads of Web Content Management, Collections Management and Archival Digital Collections Systems.”

---

<sup>5</sup> [mwdl.org](http://mwdl.org)

<sup>6</sup> [newyorkheritage.org/](http://newyorkheritage.org/)

<sup>7</sup> [omeka.org/about/](http://omeka.org/about/)



*Omeka* may be hosted on local servers where IT support is available, hosted in the cloud with commercial Web hosting companies, or hosted remotely via the [Omeka.net project](http://Omeka.net).<sup>8</sup> *Omeka.net* provides functionality as a virtually hosted subscription service. As was mentioned, *Omeka* is not recognized as a proper DAMS, but its Web standards-based platform meets our requirements for a solution that provides a means for structured metadata, hosting of digital surrogates, and a means for harvesting or export of metadata.

A third option relies on growing existing collaborations. The *Florida Virtual Campus (FLVC)* recently transitioned to the *Islandora* platform. [Islandora](http://Islandora)<sup>9</sup> is, “an open-source software framework designed to help institutions, organizations and their audiences collaboratively manage, and discover digital assets using a best-practices framework.” This is by far the most robust and fully featured of the three recommendations, and is likely not a solution that smaller collecting institutions would be able to administer on their own. *Islandora* is available as a hosted service from several service providers, and could be implemented by a regional cooperative that has appropriate technology expertise. As *FLVC* grows into this relatively new platform, there may be future opportunities for *FLVC* to provide collection hosting for medium-sized organizations’ collections using a software-as-a-service delivery model.

### Metadata Aggregation

Approximately 10 years ago, *Florida on Florida* was introduced as a single point of access to digital collections through metadata aggregation, and it remains today an example of the power of metadata aggregation to provide access to collections, regardless of where those collections reside. Today this work is also being done on a national scale by regional collaborative

<sup>8</sup> [info.omeka.net/about/](http://info.omeka.net/about/)

<sup>9</sup> [islandora.ca/](http://islandora.ca/)

initiatives nationwide through *DPLA*. Metadata aggregation projects are not new to libraries, but recent work done by *Europeana* and *DPLA* have presented models and resources that make aggregation a more viable solution for creating that single point of discovery for Florida collections.

This work group sees the aggregation opportunity as tri-tiered, and best realized in three *phases*. In the first tier, we consider basic resource aggregation, where “resource” represents metadata and digital surrogates in the form of thumbnail images. In this tier, we are focusing on the various means by which aggregation might be accomplished. In the short-term, this may involve manually collecting resources via *OAI-PMH*, or retrieving manually generated exports. At the second tier, we address the management of resources, which in the short-term may focus explicitly on file storage for the raw resources with some moderate remediation done to the metadata. At the third tier, we focus on the dissemination of the aggregated resources, which in the short-term may include making this repository harvestable via *OAI-PMH*, or via a bulk export of remediated or augmented resources for ingest into another system. All three of these short-term activities may be accomplished by readily available frameworks, like [ResourceSync](#),<sup>10</sup> or open source tools like [REPOX](#),<sup>11</sup> to name a few.

The midterm and long-term phases continue with the similar activities from the first, second, and third tier. However, at these later terms the activities become more coordinated and expand the reach of the aggregation project. For example, resource aggregation moves from manual collection of resources (short-term) to managed aggregation via *OAI-PMH* harvesting, targeted APIs (midterm); with the ultimate goal that this activity become a part of a larger automated workflow management system (see Table 1). Each of these stages will require varying personnel expertise and commitments. Ideally the work would be incorporated into institutional digital programming, sitting alongside other traditional and emerging digital collection work at these organizations.

**Table 1: Resource Aggregation, Management and Dissemination**

<b>Problem</b>	<b>Short Term</b>	<b>Midterm</b>	<b>Long Term</b>
<b>Resource* Aggregation</b>	Manual collection of resources via <i>OAI-PMH</i> and other methods	Managed aggregation via: <i>OAI-PMH</i> , Targeted APIs and Static repositories for non <i>OAI-PMH</i> organizations	Automated workflow management system
<b>Resource Management</b>	File storage for raw/augmented resources	Augmentation workflow management	Hosted digital library systems for non-local organizations

<sup>10</sup> [openarchives.org/rs/toc](http://openarchives.org/rs/toc)

<sup>11</sup> [rebox.ist.utl.pt/](http://rebox.ist.utl.pt/)

		Digital library system, or DAMS, for aggregated resources	
<b>Resource Dissemination</b>	Access to collections via <i>OAI-PMH</i> , or Bulk Download of Augmented Resources	Public-facing interface, open API <i>ResourceSync</i>	

\* Where resources are metadata and/or thumbnail/preview materials

### Existing Aggregation Models

In areas of resource aggregation, Florida is in an opportune position to learn from what has worked, and what hasn't, with other models running nationwide, regionally or statewide aggregation projects. A through point for any of the models examined below is that they are all platform agnostic, meaning that the harvesting of collections (manually or via automation) is not dependent on a particular type of software solution or technology environment. As mentioned above, aggregation overcomes a key obstacle to providing a single point of discovery for digital collections, namely that cultural heritage organizations invariably host their digital collections on myriad platforms. In this section, we will discuss national and regional aggregation projects that may be worth emulating, or modifying, for Florida's *Digital Action Plan*.

DPLA likely represents the most contemporary aggregation project for consideration. DPLA uses regional Service Hubs, and larger content partners, to distribute the aggregation and metadata remediation work out to those partners. Service Hubs provide a range of services to contributing partners, but the critical activity of these hubs is to provide a single feed of metadata to DPLA. Some Service Hubs strictly aggregate metadata, do some augmentation or remediation to the metadata and pass this along to DPLA. Others provide more fully featured services including digitization, digital collection hosting, and related services intended to bring cultural heritage organizations current with digital collection creation and access practices.

There are many strengths of the DPLA model, including the fact that it is a program informed by the lessons learned by [Europeana](http://Europeana.eu/),<sup>12</sup> an online portal to millions of: books; paintings; films; museum objects; and archival records that have been digitized throughout Europe. One of its strengths exceeds digital collection aggregation projects to date, the DPLA Metadata Application Profile (DPLA MAP). This [DPLA MAP](http://dp.la/info/wp-content/uploads/2014/03/Intro-to-DPLA-metadata-model-2014.pdf)<sup>13</sup> is able to interface with nearly any metadata standard, and by being based, in part, on the *Europeana* model, collections included in DPLA may also interact with DPLA collections. Without delving too far into the (open source) technology that supports DPLA, it's worth noting that this DPLA MAP allows for aggregation of

<sup>12</sup> [europeana.eu/](http://europeana.eu/)

<sup>13</sup> [dp.la/info/wp-content/uploads/2014/03/Intro-to-DPLA-metadata-model-2014.pdf](http://dp.la/info/wp-content/uploads/2014/03/Intro-to-DPLA-metadata-model-2014.pdf)

collections as long as they adhere consistently to nationally recognized standards, regardless of what that standard might be.

One example of a statewide project that is also a DPLA Service Hub is the North Carolina Digital Heritage Center. From the Center's "About" page:

*The North Carolina Digital Heritage Center is a statewide digitization and digital publishing program housed in the North Carolina Collection at the University of North Carolina at Chapel Hill. The Digital Heritage Center works with cultural heritage organizations across North Carolina to digitize and publish historic materials online. The Digital Heritage Center provides libraries, archives, museums, historical societies, and other cultural heritage organizations with the opportunity to promote and increase access to their collections through digitization. The Center is supported by the State Library of North Carolina with funds from the Institute of Museum and Library Services under the provisions of the Library Services and Technology Act, and by the UNC-Chapel Hill University Library."*

North Carolina Digital Heritage also provides some of the aforementioned services for partners, like digital reformatting and collection hosting. This model is interesting because it sits alongside another statewide project for North Carolina called [NC ECHO](#)<sup>14</sup>. NC ECHO was a 12+ year project funded in part by a Library Services and Technology Act (LSTA) grant, and Institute for Museum and Library Services (IMLS) resources, to provide a single point of access to North Carolina's rich digital cultural heritage. At present, this program is still supported, but activities related to this program have been absorbed into the statewide Service Hub. Still, North Carolina State Library points to NC ECHO from its website as a portal to information on all of NC cultural heritage organizations, gathered through an extensive, multiyear survey of the state. The NC ECHO site also provides links to resources on standards, digital preservation guidance, and other resources essential to providing digital access to cultural heritage resources. For its time (in 1999), NC ECHO was at the forefront of aggregation projects, but 15 years later, it begs the question of whether an NC ECHO of today would have pursued the same trajectory, or looked more like the current North Carolina Digital Heritage Center Service Hub. This is a critical question facing this work group, and the *Digital Action Plan* Steering Committee as a whole.

The Mountain West Digital Library (MWDL) Project presents a similarly interesting model for consideration. As the largest contributing DPLA Service Hub, MWDL is currently contributing over five million resources from over 1,100 institutions. In a way, MWDL is like a regional DPLA, relying on its own regional hubs for providing metadata to the central MWDL hub. In some ways, MWDL looks a lot like a regional version of what Florida might be, in the sense that it aggregates other regional access points to provide a single point of access to myriad cultural memory collections. Contributing institutions need not be on specific software platforms, though many of the regional collaboratives provide some sort of hosting solution. Instead, organizations need only contribute valid *OAI-PMH* feeds adhering to a standards-based metadata profile.

---

<sup>14</sup> [ncecho.org/](http://ncecho.org/)

MWDL, like North Carolina Digital Heritage Center, also provides digitization and hosting services for interested participants.

There are projects native to Florida worth considering as models, or as projects that might be expanded to include more participants. *The Publication of Archival, Library & Museum Materials (PALMM)* is, “a cooperative initiative of the public universities of Florida to provide digital access to important source materials for research and scholarship. *PALMM* projects may involve a single university, or may be collaborative efforts between a university and partners within or outside of the state university system. *PALMM* projects create high-quality virtual collections relevant to the students, research community and general citizenry of Florida.” *PALMM* also includes access to deeply curated collections that provide unique points of entry to digital collections that might not be otherwise realized. Case in point, the [Literature for Children](#)<sup>15</sup> collection uses digital collections to help children analyze illustrations from the artists’ perspectives, and also includes a wealth of information about how the collection was created. This dedicated curatorial work is only possible *after* an organization is able to provide access to the collection online, reinforcing how critical this *Statewide Digital Action Plan* is for increasing the likelihood that projects like this can be emulated and amplified.

Another model program is the [Digital Library of the Caribbean](#)<sup>16</sup> (*dLOC*). *dLOC*, “is a cooperative of partners within the Caribbean and circum-Caribbean that provides users with access to Caribbean cultural, historical and research materials held in archives, libraries and private collections. *dLOC* comprises collections that speak to the similarities and differences in histories, cultures, languages and governmental systems.” The project brings together multimedia resources to form an international community of scholars, students and peoples who work together to preserve, and to provide, enhanced electronic access to: cultural; historical; legal; governmental; and research materials, in a common Web space with a multilingual interface. Both *PALMM* and *dLOC* are consortially hosted digital collection platforms that offer multi-institution access to digital collections at a single point of discovery.

As mentioned above, *Florida on Florida* is an aggregation program aimed at providing a, “comprehensive digital collection of Florida’s history, culture and environment.” *Florida on Florida* catalogs: maps; photographs; postcards; books; and manuscripts held by libraries, archives, museums and historical societies. One of the projects contributing metadata to *Florida on Florida* is [Florida Memory](#)<sup>17</sup>. *Florida Memory* is a project of the State Archives. *Florida Memory* aims to, “provide free online access to select archival resources from the collections of the State Library and Archives of Florida [and] chooses materials for digitization that illuminate significant events and individuals in the state's history. [It also aims to] help educate Floridians, and millions of other people around the world, about Florida’s history and culture.” These resources include: photographs; video; audio; primary source documents; and more.

---

<sup>15</sup> [palmm.fcla.edu/juv/color.shtml](http://palmm.fcla.edu/juv/color.shtml)

<sup>16</sup> [dloc.com/](http://dloc.com/)

<sup>17</sup> [floridamemory.com/](http://floridamemory.com/)

## Recommendations

In the observations above, this work group intentionally refrained from suggesting there was any one model, tool or approach that the Division may employ in achieving the goals of the overall *Digital Action Plan*. This is intentional, primarily because a range of variables outside of this work group's knowledge will ultimately inform the Division's decisions on future direction. From this group's research, however, one thing remains clear: aggregation is the most effective and efficient method for providing a single point of access to digital collections. Not without its own challenges, aggregation programs can be successful and take myriad shapes. The following recommendations attempt to address a range of technology considerations for the *Digital Action Plan*.

As mentioned above, the *Florida on Florida* (one of the state's longer running aggregation projects) is running on a system that is nearing its sunset stage, and the next iteration of this program is one focal point of the *Digital Action Plan*. DLIS should issue an RFP for a system to replace the current platform. The RFP would seek a suitable replacement that would allow *Florida on Florida* to continue its aggregation activity and help extend aggregation from other regional programs (like *PALMM* and *FLVC* proper). The RFP should detail the current DLIS IT resources available to support this program, and also identify some of the basic functional requirements identified by the January 10 Steering Committee discussion ([see Appendix A](#)). This would allow DLIS to dedicate limited financial resources efficiently toward the maintenance of this aggregation point, and channel other financial resources toward educational initiatives aimed at helping libraries and other cultural heritage institutions determine the best DAMS solution for their needs and means, adopt statewide standards, and envision a single point of discovery for Florida's rich digital collections, all in the service of its constituent communities.

Aggregation work must be expanded. There are successful regional and institutionally focused aggregation initiatives that are ripe for unification into a statewide portal. In addition to the aggregation of these collections to provide a single point of access, there is also the opportunity to help other regions replicate existing models, or join those models when appropriate. This work group agrees that while creating a hub for DPLA may not be an immediate priority for the *Digital Action Plan*, there are a number of reasons why we recommend emulating DPLA's approaches to metadata, infrastructure and openness.

First, DPLA's Metadata Application Profile (MAP) was, according to a recent white paper, "developed in early 2013 by metadata specialists, in collaboration with *Europeana* staff and public data specialists who provided input during an open review period in late 2012." It is constructed using, "classes and properties which aid in structuring data hierarchy and managing information about data values." Perhaps most compelling, the MAP can interface with almost any metadata standard. If the Metadata Work Group is providing clear directives to cultural heritage institutions to retrofit descriptions of existing collections, and build future collections according to nationally or internationally adopted standards, the benefits of that work may be realized in the aggregation process. Collections that don't adhere will be considered lower priority in the aggregation queue.



A second reason is DPLA is [built on open source technologies](#).<sup>18</sup> That DPLA is a standards-based program may be reason enough to model its infrastructure. The platform: lives on *GitHub* (an open source hosting platform for software projects); uses *JSON-LD* (a lightweight Linked Data format); employs *Lucene* for search; and *Redmine* for issue tracking ([see Appendix B](#)). Additionally, DPLA supports an open Application Programming Interface (API) as a means for anyone to interact with the DPLA platform, and ideally build new and interesting projects for DPLA, or an entirely new iteration of the DPLA resources. DPLA makes this API available, [according to the API documentation](#).<sup>19</sup>

“To encourage the independent development of applications, tools and resources that make use of data contained in the DPLA platform in new and innovative ways, from anywhere, at any time. For inspiration, consider developing an application that visualizes metadata in compelling ways, or a recommendation engine that suggests similar cultural heritage content based on user preferences or criteria, or a lightweight front-end interface for mobile devices. Or pursue something entirely different! The possibilities are endless.”

A third reason Florida should emulate the DPLA’s aggregation model in its statewide efforts is to capitalize on the opportunities for institutional openness. Cultural heritage organizations have primarily expected people to come to them to engage in their collections. The pervasiveness of the Web made it easier to allow people to interact with digitized collections online, but our collections were still locked into proprietary DAMS that may not have the best search engine visibility, or worse, were terribly complicated to use. In the past five years, we have seen a growing trend in cultural heritage institutions to push our collections out into the world where people may use (and reuse) them in ways they had never been able to before. *Flickr Commons* and *Wikimedia Commons* projects, for example, allowed libraries, archives and museums to focus less on pulling people to their rich collections, and instead opening up to the benefits that pushing resources has for added exposure and engagement.

A final reason we recommend following DPLA’s lead in establishing statewide aggregation is that Florida is already on this path. Statewide aggregation with *Florida on Florida*, unified access to library, archival and museum publications with *PALMM*, along with coordinated digital collection management with *FLVC*, each put Florida in a prime position to grow regional and systemwide aggregation (lakes) to create an ocean of statewide collections. Even if the project were to stop here, great strides will have been made in increasing accessibility to, and use of, digital collections. At this point, Florida will be in an ideal position to further increase engagement by contributing content to DPLA, should they choose to go this route. Should Florida decide to engage in DPLA even earlier, there are added benefits to working alongside other service hubs and sharing resources and experiences.

---

<sup>18</sup> [dp.la/info/developers/codex/policies/technologies/](http://dp.la/info/developers/codex/policies/technologies/)

<sup>19</sup> [dp.la/info/developers/codex/policies/philosophy/](http://dp.la/info/developers/codex/policies/philosophy/)

## Conclusion

This work group's recommendations do not exist in a vacuum. There are very real challenges facing the state around adoption of nationally recognized standards for metadata and digitization, for both existing and future projects. There are gaps in knowledge around what types of resources might be available for digitization in the state, and how those resources might reach curious researchers, educators and students via digitization. The recommendations from the Collection Development and Content Creation Work Groups will provide some invaluable direction here, and should be considered in concert with the recommendations of the Technology and Metadata Work groups. Each of these groups will undoubtedly identify opportunities and challenges that overlap with this group's recommendations. It is only through a wholesale assessment of the entire ecosystem of recommendations that this *Digital Action Plan* may fully realize its potential to revolutionize Florida's ability to provide local and global citizens with world-class access to the depth and breadth of Florida's rich digital cultural heritage.

## Appendices

### **Appendix A: Florida on Florida Technology Considerations**

(From the January 10, 2014 Steering Committee Discussion)

As part of the January 10 Steering Committee meeting, the group discussed a list of ideal functional requirements for the future system that provides management and access controls to *Florida on Florida*. The following lists represent some best case features, but does not necessarily reflect must-haves for the future solution for *Florida on Florida*.

On the administration/back end, the system should support:

- *Schema.org* mark-up/vocabularies;
- RDFa;
- Linked data capability;
- Documented API (DPLA or otherwise);
- Revert/link back to contributor;
- Contain a variety of material formats;
- Geocoding (GIS);
- External/public contribution;
- Thumbnails;
- Offsite backup (with geographic diversity);
- Metadata remediation/manipulation;
- ADA compliance; and
- Open source.

For users' experience, the system should:

- Be easy to use;
- Allow users to curate collections;
- Be responsive, and provide mobile access;
- Allow sort by date/creator/format/geography;
- Support carts or similar gathering function;
- Be compatible with Citation/Reference Management tools;
- Allow user likes/comments on an item;
- Allow full-text searching;
- Provide access to thumbnails;
- Support/provide visualization tools;
- Be social network compatible/embed capability: *Facebook*, *Pinterest*, and others as applicable;
- Have a "See also" function for recommendations;
- Allow for different "views" for target audiences, i.e. genealogy;
- Be a multilingual interface;
- Allow sort by search relevance;
- Provide descriptive metadata about contributing institution at the browse level;
- Support downloadable content.

## Appendix B: Digital Public Library of America Technologies

From the [DPLA Technologies page](#):

We have no problem using the **open-source** creations of others. In fact, we **embrace it**. So we've got a fully open technology stack. And here it is:

### **DPLA**

Our delightful little platform pulls lots of data from lots of places, ties our whole stack together, and lives comfortably at [our GitHub](#).

### **JSON-LD**

Everyone likes *JSON*, but it's not great for every purpose. Pointing from one *JSON* object to another is a good example (because we do that a lot). So we use **JSON-LD**.

No worries – it's still *JSON*; it just has a couple of standardized fields.

### **Lucene**

Search is hard. Good thing smart people are working on it, smart people like those at [Lucene](#). They do search so we don't have to.

Search is so complicated, in fact, that we don't actually touch *Lucene* all that much. For that we turn to...

### **elasticsearch**

How does one do distributed search with a handsome, coherent API?

You certainly don't write your own. We use [elasticsearch](#).

### **Redmine**

Holy cow! Even our [issue tracker](#) is open, and **open source**.

### **Standards**

Tech stuff may be hard, but the cat-wrangling, hair-pulling thunder dome of standards creation is a whole 'nother thing.

We do a bit of this ourselves, but we let other organizations do a lot of the heavy lifting. For that reason, you'll see a whole bunch of namespaces scattered throughout. Here's a de-acronymed list:

### **Namespaces**

- **dc:** *Dublin Core* elements
- **dcterms:** *Dublin Core* terms
- **dcmitype:** *Dublin Core* Metadata Initiative types
- **dpla:** *Digital Public Library of America*
- **edm:** *Europeana* Data Model
- **ore:** Open Archives Initiative Object Reuse and Exchange
- **rdf:** Resource Description Framework
- **rdfs:** Resource Description Framework Schema
- **skos:** Simple Knowledge Organization System
- **owl:** Web Ontology Language