

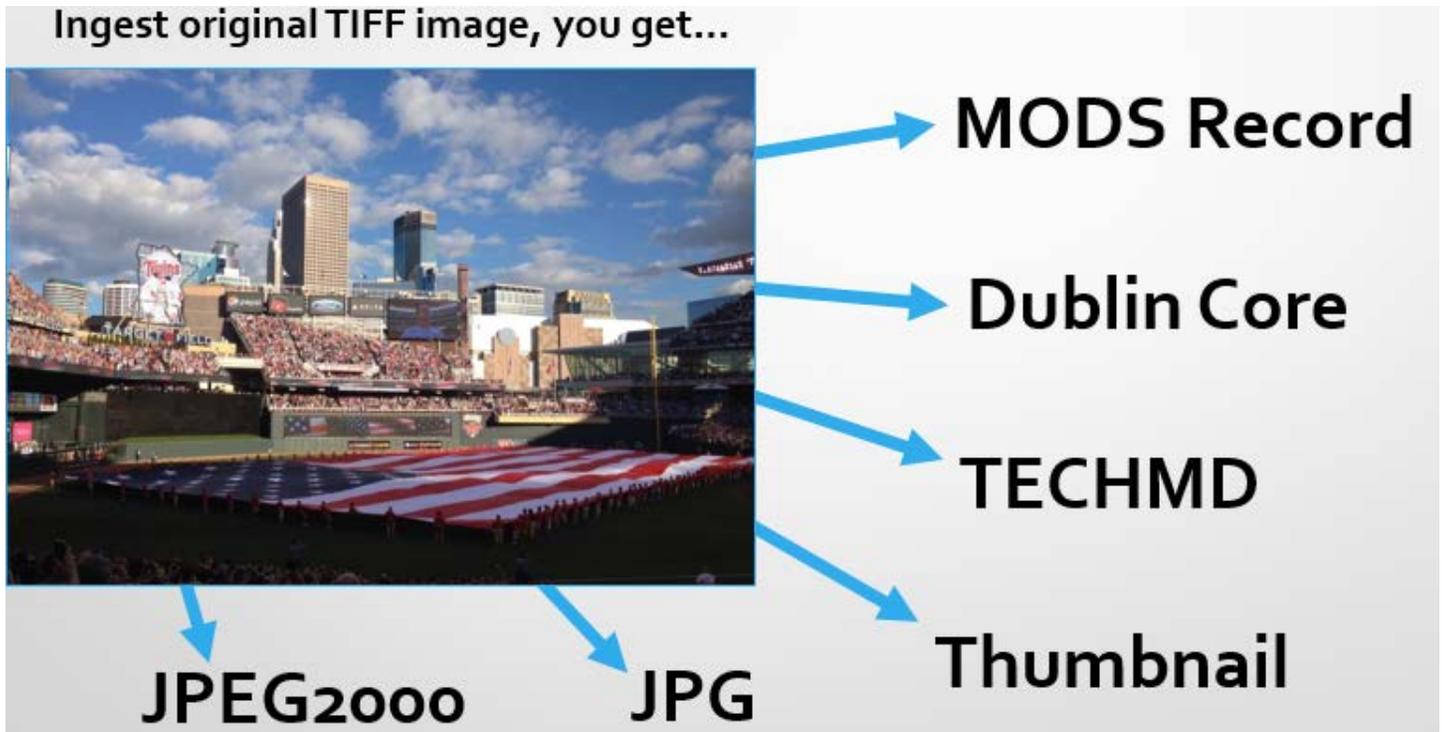
## PALS ISLANDORA DIGITAL ASSET MANAGEMENT SERVICES DETAILED FAQ

### Overview

1. Provide a brief introduction to Islandora, particularly to its applicability in an educational environment. Include anything that sets Islandora apart.

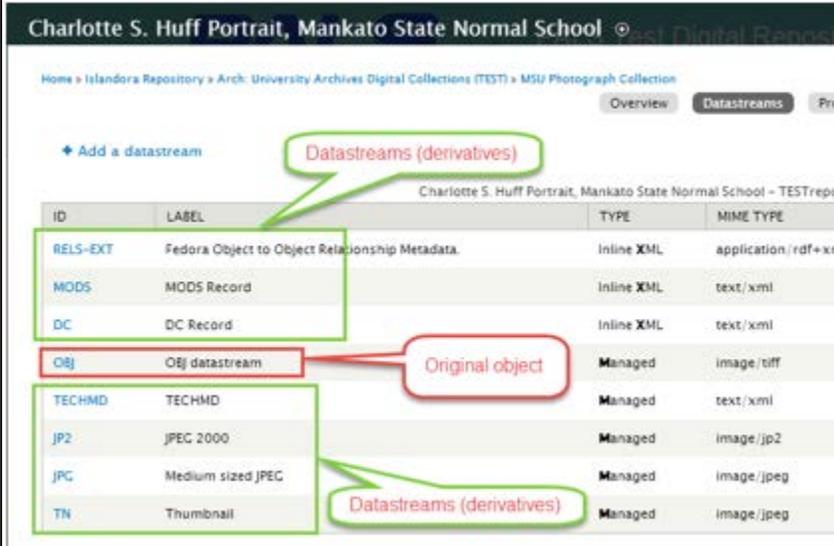
Islandora is a robust open source digital asset management system that stores, manages, showcases and preserves digital assets. Islandora leverages three core open source software components, all of which are well-supported and widely used. Fedora is the heart of the system and provides the digital asset management functions, Drupal provides for an extremely customizable user interface, and the fast searching and retrieval within Islandora is due to the use of Solr, which is also very scalable.

Islandora uses “Solution Packs”, which are groups of Drupal modules and helper applications that support various formats, including the necessary tools to display the content, ingest objects, create metadata, and automatically generate derivatives. When applicable, OCR is created automatically, allowing full text searching. Special scanners or additional software is not needed for OCR functionality.



Islandora is inherently designed to support preservation needs. Technical metadata is automatically generated when objects are added to the repository using the FITS module, which extracts information from the original object. PREMIS metadata is also created. Checksums are generated, and the Checksum Checker module is used to check digital objects for corruption. The checks can be set up to run automatically on a schedule.

A unique feature of the system is that the original object is stored in the Fedora repository, providing a managed copy in a robust environment. Derivatives are created automatically at ingest and are managed from the administrative interface in Islandora.



ID	LABEL	TYPE	MIME TYPE
RELS-EXT	Fedora Object to Object Relationship Metadata	Inline XML	application/rdf+xml
MODS	MODS Record	Inline XML	text/xml
DC	DC Record	Inline XML	text/xml
OBJ	OBJ datastream	Managed	image/tiff
TECHMD	TECHMD	Managed	text/xml
JP2	JPEG 2000	Managed	image/jp2
JPC	Medium sized JPEG	Managed	image/jpeg
TN	Thumbnail	Managed	image/jpeg

Islandora supports granular access control. It is possible to restrict entire collections, individual objects, or derivatives from public view using XACML policies. For example, one could restrict the full text of an article and allow access to just the metadata.

Part of what sets Islandora apart is its balance between extensibility and usability. It can be used out of the box or customized to meet the institution's needs. Repository administrators have a great deal of control over the look and feel of the site, its access and authorization settings, and the preservation policies.

With Islandora comes access to the expertise and support of the open source international Islandora community. PALS has found this community to be well organized, welcoming, innovative, supportive, and responsive. The Islandora Foundation was set up to ensure ongoing funding, manage software releases, and help set up educational opportunities for the community. Communication occurs through Google Groups and mailing lists, and there are plenty of opportunities to meet in person through "Camps" and conferences. The community has helped PALS move forward with developing new features and resolving issues.

PALS has shown that Islandora is a viable solution for colleges and universities through our work with five partners in Minnesota. We are building and managing digital repositories for Minnesota State University, Mankato, Southwest Minnesota State University in Marshall, The College of St. Scholastica in Duluth, St. Cloud Technical and Community College, and Winona State University.



A strong example of PALS' expertise and Islandora's viability and flexibility happened recently, when MSU, Mankato asked if PALS could set up a video collection titled "Vikings Stories" as soon as possible. They were hoping to collect oral history interviews of Vikings fans and players during the 50<sup>th</sup> Anniversary of training camp in Mankato. Within three days the collection was ready, and resulted in over a hundred videos of Vikings players and fans.

PALS considers Islandora to be a perfect fit for educational institutions due to its focus on preservation and its ability to meet local needs. With Islandora a user has complete control over the long term preservation of their digital assets. Islandora also provides a robust web-based digital repository solution that facilitates easy access to manage, preserve, and showcase your materials.

What really makes Islandora stand out is the ability to make it a customized repository. Every institution is unique, with diverse needs and assets. Islandora meets those unique needs and also offers an experienced and innovative international community to help achieve goals.

## 2. Describe your software's hosting, storage, backup, and data security features.

### Introduction

PALS assumes responsibility for the hardware and software needed to ensure the ongoing availability and quality of Islandora instances and related services that we host and support. In addition, PALS provides storage space for all ingested objects and their derivatives, metadata, and indexes. Administrative access to the system is available to our customers via the Islandora web interface, which can be used to configure Islandora and the Drupal interface. System and support functions and tasks are divided between the customer and PALS staff as mutually agreed upon.

### The Data Center

The PALS data center is co-located with the Minnesota State University, Mankato data center. We continuously work to ensure that our servers and the network perform at optimal levels. Processing power, memory and space allocations are based on customer requirements and can be adjusted dynamically as needed. The operating environment allows PALS to quickly scale our systems up to meet increasing demands. The University/PALS data center is on a 1 Gb State trunk line with redundant routing available through a local ISP. The trunk line is part of the statewide network managed by the State of Minnesota Office of Information Technology.

The main data center is located in the Memorial Library building along with the University IT and PALS office space. The redundant data center is located in a different building on campus and is built to tornado shelter specifications. The data centers are secured using an RFID card access system and are separated from the office space and other building locations. Access to the data centers is restricted to essential University/PALS server and network administrators and campus security personnel. Access to the redundant data center and off-site backup storage is restricted further on a need-to-access basis.

### Application servers

PALS is in the process of migration to a Linux Container (LXC) infrastructure. All of our new services entering production are based on this technology. LXC is a robust and reliable method of managing multiple software servers running concurrently on the same hardware without the need for virtualization. Our LXC implementations run on Pogo Linux server hardware. Pogo Linux is a trusted vendor with hardware designed specifically for use by Linux operating systems.



### Environmental and power controls

The data center environment is controlled by dual Liebert DS Precision cooling units. The fire detection and suppression system is a 3M NOVEC Fire Suppression System. Backup power is provided by a Powerware UPS unit.

The Memorial Library building that houses the University/PALS data center is protected by a standby power generator wired to supply power specifically to the data center and key building locations in the event of a power failure. The University has the capability of generating power using the campus Facilities Services' power plant to run off the grid when necessary.

All maintenance and testing procedures for HVAC, fire detection and suppression systems, UPS backup power, the building power generator, and campus power plant are carried out by the University IT and Facilities Services.

### Server monitoring

Continuous server monitoring is done at the service level using NAGIOS software. Production systems are tested every 5 minutes, development systems are tested every 10 minutes. Logs are reviewed daily by system administrators.

### Maintenance and repair

All of the PALS-administered hardware is covered by warranty and includes at least next-day on-site parts service. PALS will be responsible for replacement and repair of hardware components.

### Network and security

System security consists of:

- 4 CISCO Catalyst redundant gigabit switches
- CISCO perimeter firewall
- Host-based firewall rules using IP tables on each host
- The PALS network is separated from the University network

PALS takes various infrastructure security measures to prevent unauthorized access to systems we manage and data we host. The PALS network is protected by a perimeter firewall that limits access to allowed ports and services. Access to individual servers and hosts is limited by port and IP to the minimum access required to perform the intended function. User access is limited within PALS only to server administrators, and production system access is limited further. Access to our database servers is limited by IP address only to application machines and local IPs for administrator access. System passwords are stored in encrypted form and access is limited on a need-to-know basis. Passwords have minimum requirements and are updated periodically.

PALS practice is to install security patches to system software within 24 hours. If a server reboot is required for a patch to be applied, the reboot may be postponed until the next maintenance window, depending on severity. To avoid unnecessary security vulnerabilities and patching, we do not install stock server configurations and do our best to limit the software installed only to software packages and dependencies required for the specific server purpose.

### Disaster recovery

In the case of a catastrophic failure which would cause the primary University/PALS data center to be unavailable for a significant amount of time, PALS would restore hosted applications to the



University/PALS secondary data center. In the case of a catastrophic failure which would cause both University/PALS data centers to be unavailable, PALS would restore hosted applications to a previously agreed-upon hosting environment (e.g., Amazon AWS).

### Backups

PALS currently uses disk-to-disk backup systems for Islandora, using an ORACLE SunFire Storage Server.

Our current backup procedures are as follows:

- Weekly (Saturday mornings) PALS takes full data dumps of all databases and data files, production and development
- The data dumps are copied to two separate Virtual Tape Libraries
- PALS has archive logging turned on for all production databases
- The files are copied to multiple physical locations as they are generated.

### Offsite data replicates

PALS stores all weekly backups off-site going two weeks back, and is willing to customize this process to meet customer needs based on reasonable assessment of risk to our primary data center.

### Data ownership

PALS makes no ownership claims to customer data. Under no circumstances would PALS share customer data outside of our organization without customer authorization.

### Data Integrity

All data stored on the PALS servers is subject to PALS, University, MnSCU and State security and privacy regulations.

### Patron Privacy

All data hosted on PALS servers is subject to the Minnesota State Colleges and Universities Security and Privacy of Information Resources policy. The full policy and additional related materials are available at <http://www.mnscu.edu/board/policy/523.html>.

### Scheduled Downtime

Routine maintenance, that requires server rebooting, is performed on Sunday mornings. Any downtime required for software upgrades is scheduled around customer hours and currently is performed on Saturday evenings or Sunday mornings. PALS fully accommodates the customer's schedule for any planned service interruptions.

### Operating System Patches and Updates

Routine Ubuntu patches, including security patches, are released several times a week and are applied as they become available. The patches are first applied on development servers. If the patches have no impact on the application or underlying services, they are pushed to production after light testing.

Any major version upgrades to operating systems and hardware changes that directly impact customers would be coordinated with the customer.

3. *Provide a typical implementation timeline.*

Implementation typically takes five weeks from the onset until a collection of digital objects is online and “live.” If migration of data is required, an additional four or more weeks is needed, as most institutions prefer to have their migrated data in place before they begin with other collections. Variation in the amount of time between contract signing and publicly available objects depends, in part, on the speed at which decisions occur. Critical decision points include metadata planning and mapping, input form design and testing, user interface design, and the development or customization of needed scripts or features.

Below are descriptions of the typical stages of an implementation.

Description	Approximate Time Allowance
<b>1. Initial setup of Islandora website</b>	<b>1 Week</b>
a. Initial setup includes "out of the box" features with basic custom theme	
<b>2. First planning meeting</b>	<b>1-2 days</b>
a. Includes discussion on website theming and branding, metadata planning, designing of ingest forms	
b. Includes basic training on Islandora (ingesting objects, editing, deleting, etc.)	
c. Includes discussion of vision and goals, overall repository structure, strategy	
d. Meetings held in person, generally on-site	
<b>3. Additional training as needed</b>	<b>3 days</b>
a. Online sessions on various Islandora functions	Each session is 1-2 hours
<b>4. Metadata planning and mapping for ingest forms</b>	<b>2 weeks</b>
a. This stage includes discussions on the ingest form, metadata elements, and testing of the forms	
b. This stage requires test loads of objects from partner to learn ingest process, and make decisions on forms	
c. Efficiency of this stage depends on both PALS and partner communication	

NOTE: Stages 5 and 6 are only applied if migration is required.

If Migration is required	Description	Approximate Time Allowance
	<b>5. Develop and test migration scripts</b>	<b>2-3 weeks</b>
	a. This stage allows for development and testing of migration script(s)	
	b. This stage will sometimes require testing from partner	
	c. This time allows for unforeseen issues during testing	
	<b>6. Ingest migrated data</b>	<b>1-4 weeks</b>
a. Time will vary depending on volume of data		

Description	Approximate Time Allowance
<b>7. Customization of website theme</b>	<b>1 week</b>
a. This stage includes discussion of goals for branding website, investigation of other sites, and planning	
b. This stage concludes with theme "going live" on site	
<b>8. First collection available to public</b>	<b>1 day</b>
a. After all planning, testing, ingesting, and initial customizations are complete, the site can go live	
b. Site can go live at any time during any stage	

Description	Total Time Allowance for Typical Implementation
<b>First collection available to public with no migration of data</b>	<b>5 weeks</b>
a. This time allowance is optimal and requires efficient communication to move project forward	
b. This time allowance refers to the first implementation of a collection	
c. The setup and planning for additional collections (with no migration) can happen more quickly	
<b>First collection available to public with migration of data</b>	<b>8-10 weeks</b>
a. This includes development and testing of migration scripts and migration of data	

## Islandora Functionality

### *1. Describe the methodology your software employees to manage access.*

Islandora supports highly granular access control. Each customer may restrict access to entire collections, individual objects, and individual derivatives. Administrator access and authorization can be limited at the individual or group level.

#### Access control for viewing and searching

Staff can limit public viewing by collection, individual object, metadata record, or derivative. This is accomplished using XACML policies, which can be modified at any time. These restricted items will not appear in search results. For example, it is possible to prevent the viewing of the full text of an article but still allow users to see the metadata.

Within the Island Scholar Solution Pack, which is used to set up institutional repository functionality, one can also set up IP embargoes and have them expire on a certain date. IP embargoes can be set up at the collection level or for an object, or even for specific derivatives.

#### Access control for roles and permissions

Islandora allows control over who has access to administrative functions. One could set up, for example, a staff user with many administrative privileges, and then a student user with minimal privileges. It is also possible to set up ingest forms and assign them to different roles – a simpler form for students, and a more complex form for staff. These roles and permissions are highly flexible.

In summary, Islandora allows access control over the repository, from the collection level to the individual objects, datastreams, and searches. It is also possible to configure staff roles and permissions. Islandora supports granular access control to content.

### *2. The software must support a wide range of file formats. What file formats does your software support?*

Islandora supports a wide variety of file formats through the use of “Solution Packs”. Solution Packs are groups of Drupal modules that enable the correct functionality to support and view each format.

For example, there is a “Large Image Solution Pack” that is for TIFF images. This Solution Pack includes everything needed to manage, view, and add TIFF images to your repository. The image below is an illustration of how Solution Packs work. Essentially, you start with the master TIFF file, load it, and all the derivatives get created automatically.

Islandora currently supports audio files (WAV, MP3), photographs (JPG, TIFFs), videos (MP4, MOV, OGG, QT, M4V, AVI, MKV), newspapers (TIFFs), pdfs, and WARC (web archive) files. This means, any format can be added. Examples include photographs, oral histories, speeches, maps, student newspapers, newsletters, dissertations and theses, journal articles, and faculty and student publications.

A “Binary Solution Pack” has just become available. It will handle any file format. This is ideal when handling research data, as there can be a myriad of formats involved. With the Binary Solution Pack, Islandora can support any format.

In addition, the Compound Solution Pack allows users to assign parent-child relationships to objects. This allows consolidation of objects with different formats. For example, with an oral history, the audio file could be the parent object. Then the transcript could be assigned the status of child to the parent audio file, linking them together. A video file of the oral history interview could be assigned as a child to the parent, and all three files would be treated and displayed as one object.

There are numerous solution packs in development by the community that support additional formats, including the Manuscript Solution Pack, Database Solution Pack, Chemistry Solution Pack, and Serials Solution Pack. Our current partners have a wide variety of formats in Islandora, including videos, newspapers, photographs, alumni newsletters, college accreditation documents, marketing materials, and yearbooks. Minnesota State University, Mankato has photographs, student magazines, student newspapers, videos, and yearbooks. Explore their site at <http://arch.lib.mnsu.edu/>. Southwest Minnesota State University in Marshall, MN has newspapers and their alumni newsletter, at <http://archives.smsu.edu/>.

### *3. Describe how users can manipulate, track changes to, and share content.*

Islandora supports some manipulation of photographs in-platform (online). It is possible to zoom in on a certain area of the photograph, and crop to create a zoomed-in image of that area. Users are also able to download or print out the cropped section of the photograph.

Islandora provides the ability to download the original object, make changes, than reload the edited object (replacing the original).

Islandora tracks all versions of the object and each derivative, and it is possible to revert back to previous versions if needed by clicking on the version number. This takes you to a revision history, where you can revert to the desired version.

This is an example that shows the original object (OBJ) and datastreams with versions.

Home » Islandora Repository » Oral History

Overview **Datastreams** Properties Compound Object Policy PREMIS Technical Metadata

+ Add a datastream

Islandora Staff Guide St. Olaf Second Draft – MSURepository:2028

ID	LABEL	TYPE	MIME TYPE	SIZE	VERSIONS	OPERATIONS
RELS-EXT	Fedora Object to Object Relationship Metadata.	Inline XML	application/rdf+xml	550 B	1	download
MODS	MODS Record	Managed	text/xml	729 B	2	replace download edit delete
DC	DC Record	Inline XML	text/xml	505 B	2	replace download
OBJ	Islandora Staff User Guide Version 1.3 First Draft.pdf	Managed	application/pdf	2.53 MiB	3	replace download delete
TECHMD	TECHMD	Managed	application/xml	4.12 KiB	5	replace download delete regenerate
TN	TN	Managed	image/jpeg	4.64 KiB	5	replace download delete regenerate
PREVIEW	PREVIEW	Managed	image/jpeg	13.88 KiB	5	replace download delete regenerate

a. Can users track and manage versions of content that users edit in-platform?

Yes, Islandora tracks versions of content that was edited. This shows a screen shot of the administrative menu where versions are tracked.

Home » Islandora Repository » Photographs

Overview **Datastreams** Properties Compound Object Policy PREMIS Technical Metadata

+ Add a datastream

A young Vikings fan putting a chin strap onto a Minnesota Vikings football helmet at Mankato State University – MSURepository:53

ID	LABEL	TYPE	MIME TYPE	SIZE	VERSIONS	OPERATIONS
RELS-EXT	Fedora Object to Object Relationship Metadata.	Inline XML	application/rdf+xml	567 B	1	download
MODS	MODS Record	Inline XML	text/xml	3.96 KiB	3	replace download edit delete
DC	DC Record	Inline XML	text/xml	1.89 KiB	3	replace download
OBJ	OBJ Datastream	Managed	image/tiff	60.9 MiB	1	replace download delete
TECHMD	TECHMD	Managed	text/xml	6.03 KiB	1	replace download delete regenerate
TN	Thumbnail	Managed	image/jpeg	6.69 KiB	1	replace download delete regenerate
JPG	Medium sized JPEG	Managed	image/jpeg	60.61 KiB	1	replace download delete regenerate
JP2	JPEG 2000	Managed	image/jp2	1.27 MiB	1	replace download delete regenerate

To return to a previous version of the metadata, click on the number and select the version to revert to.

Islandora does not support the ability to make edits to most objects (documents, video, etc.) in-platform. One can, however, replace objects, track derivatives, and revert to previous versions.

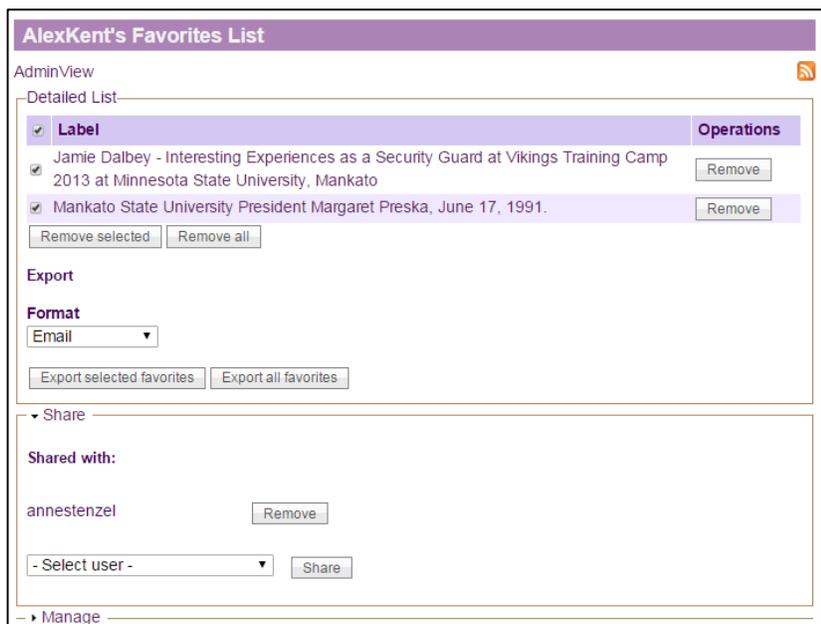
b. Describe how users can share or embed content in external applications.

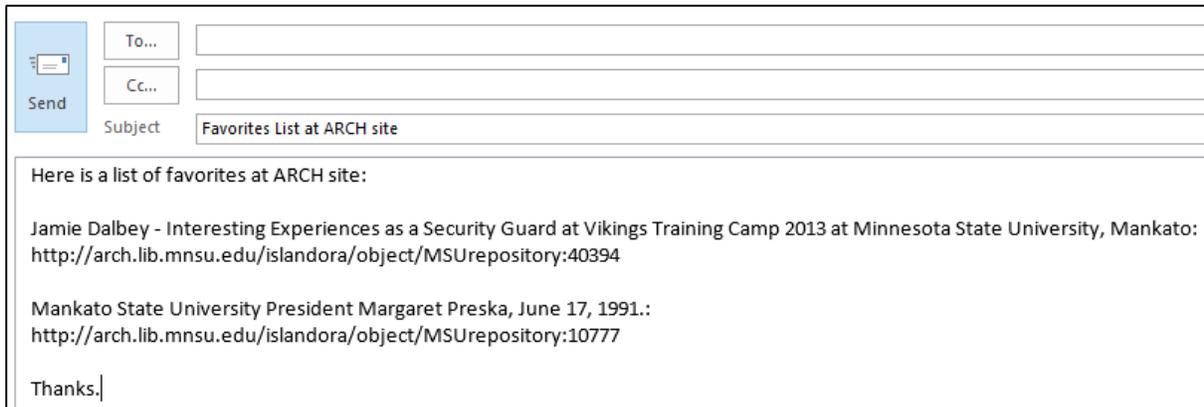
Users can share content over numerous (200+) social media platforms, including Facebook, Twitter, Tumblr, and Google+. Material can be shared with personal Facebook and Twitter accounts, or accounts associated with the library.

Here is an example of how an object (in this case a video) is shared over Twitter.



Another way to share objects is by creating a saved list of favorite objects that can then be saved and emailed to any researchers or other users.





Persistent URLs are generated for all objects in Islandora.

PALS is currently in the process of planning the development of embedding objects to increase functionality.

4. *The software must provide contributors robust and flexible metadata management.*

a. *What standard metadata schemas does your software support?*

Islandora supports any metadata standard, from Dublin Core and MODS to PBCore and VRACore. In addition, it can be structured to adhere to the EAD, Minnesota Digital Library guidelines, and others.

b. *Describe how metadata schemas can be created or customized.*

The Islandora XML Form Builder is used to map metadata in Islandora. Through it, schema are defined, and the XML Form Builder maps the data entered to the schema selected and automatically transforms it to Dublin Core, which is required by Fedora. Any metadata scheme can be defined with the XML Form Builder. So far, all of our sites have used the MODS metadata schema.

The ingest form is what users will use when creating metadata to describe objects. The form defines the mapping of the data to the metadata schema and is completely customizable. The XML Form Builder enables complete control over these ingest forms. Features include default text for common metadata fields such as copyright statements and drop down menus to help with consistent naming and controlled vocabulary lists. One can define which metadata elements are required and in what order they appear on the form. Links to external websites can also be included on the form.

For MSU, Mankato, PALS built an ingest form to follow Minnesota Digital Library guidelines. Through the XML Form builder, PALS also added functionality to make it easier for students to use the form. This consisted of adding the ability to copy data from one field to another.

This is the beginning of MSU, Mankato’s ingest form, following MDL guidelines:

[Home](#)

[Student ARCH Photo Ingest guide](#)

**MDL Identifier \***  
  
 Enter the file name without the file extension for this photograph. Example: msu00401

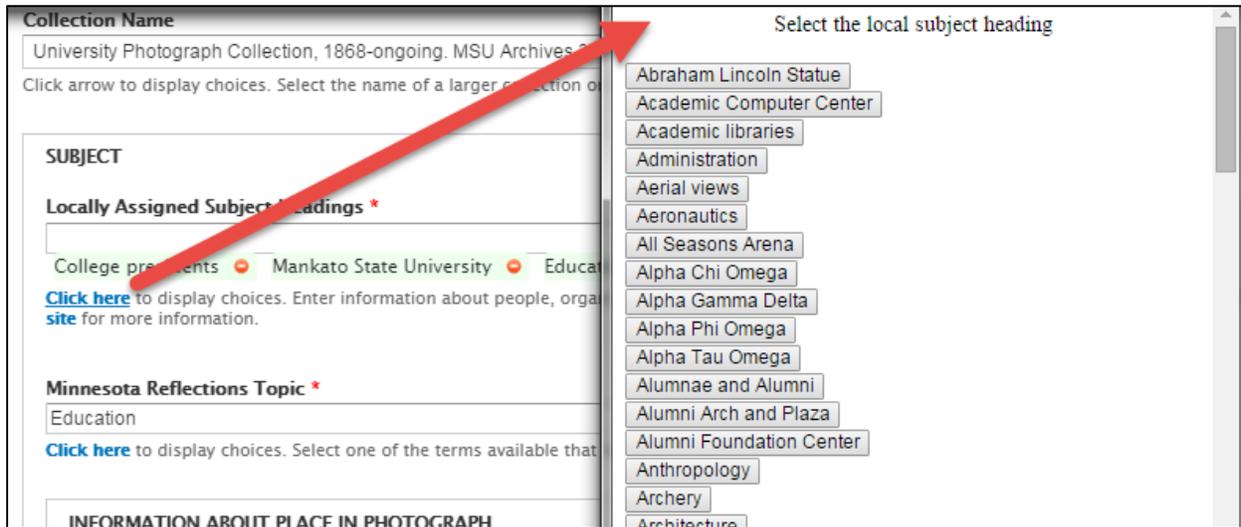
**Object File Name**  
  
[Click here](#) to copy the ID from the MDL Identifier. Enter the file name with the file extension for this photograph. Example: msu00401.tif

**Local Identifier \***  
  
[Click here](#) to copy the ID from the Object File Name.  
 Enter the photograph’s unique local identification number: Archives Collection Number and Photograph Number. Example: MSU-UA-309-16201 (UA=University Archives, 309=Archives Collection Number, 16201=Photograph Number).  
[Click here](#) to display prefix choices.

**Location \***  
  
 Enter the physical location of the original object. Enter the photograph’s unique Box Number followed by Folder Number. For example, 05-07 (05=Box Number, 07=Folder Number).

**Title \***

Example of a controlled vocabulary list:



The screenshot shows a metadata form with a 'SUBJECT' field. Below the field is a dropdown menu titled 'Select the local subject heading'. The dropdown list contains the following items: Abraham Lincoln Statue, Academic Computer Center, Academic libraries, Administration, Aerial views, Aeronautics, All Seasons Arena, Alpha Chi Omega, Alpha Gamma Delta, Alpha Phi Omega, Alpha Tau Omega, Alumnae and Alumni, Alumni Arch and Plaza, Alumni Foundation Center, Anthropology, Archery, and Architecture. A red arrow points from the 'SUBJECT' field to the dropdown menu.

Islandora supports any metadata standard, and the data entry forms used to create metadata can be customized to meet your needs.

c. *Does your software support bulk/global metadata changes?*

Currently, PALS provides bulk/global metadata service with a batch edit script run on the server. Upon request from a partner, PALS will investigate the Drupal module “Islandora XQuery.” Templates for bulk editing can be created with this module.

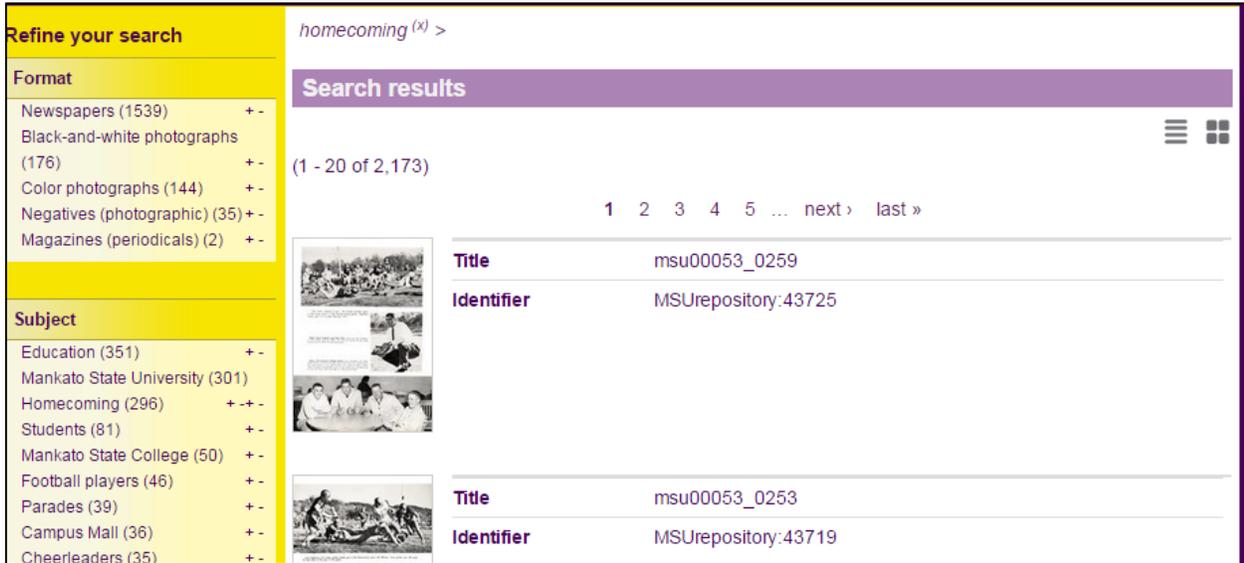
5. *The software must provide users a powerful yet intuitive search interface.*

a. *Describe the software’s search capabilities, advanced search features and filters.*

Islandora uses Solr for fast searching and indexing. Islandora has real-time indexing - when an object gets added, it will show up in searches. There is no delay.

Islandora provides complete control over configuring the site's search, advanced search, filters (or facets), sorting of results, and the fields that are displayed.

The following are examples of search results:



The screenshot shows a search interface for the term "homecoming". On the left, there are two filter sections: "Format" and "Subject". The "Format" section includes options like "Newspapers (1539)", "Black-and-white photographs (176)", "Color photographs (144)", "Negatives (photographic) (35)", and "Magazines (periodicals) (2)". The "Subject" section includes "Education (351)", "Mankato State University (301)", "Homecoming (296)", "Students (81)", "Mankato State College (50)", "Football players (46)", "Parades (39)", "Campus Mall (36)", and "Cheerleaders (35)".

The main search results area shows the query "homecoming (x) >" and "Search results" with a count of "(1 - 20 of 2,173)". Navigation links for pages 1 through 5, "next", and "last" are visible. Two search results are displayed:

	<b>Title</b> msu00053_0259
	<b>Identifier</b> MSUrepository:43725
	
	<b>Title</b> msu00053_0253
	<b>Identifier</b> MSUrepository:43719

# Digital Archives

SOUTHWEST MINNESOTA STATE UNIVERSITY

[Advanced Search](#)

homecoming (x) >

### You searched:

(-) homecoming

### Sort by

Date

### Refine your search

**Format**

Newspapers (281) +>

Magazines (periodicals) (35) +>

Magazine (20) +>

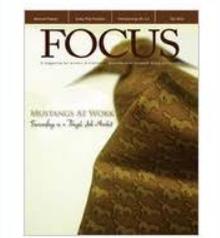
### Welcome!

Southwest Minnesota State University is digitizing select collections from the McFarland Library's Striegel Archives. The works currently in the digital collection highlight our alumni (FOCUS publication) and the campus, Marshall, and the surrounding communities

### Search results

(1 - 20 of 390)

1 2 3 4 5 ... next > last »

	Title focus-2009-spring_Page.6
	Title focus-2010-fall_Page.01

*b. Can users perform full-text searches across multiple text files?*

Yes. Users can search across multiple text files in one or multiple collections at a time.