Evaluation of Alma Digital for CSU Digital Collections
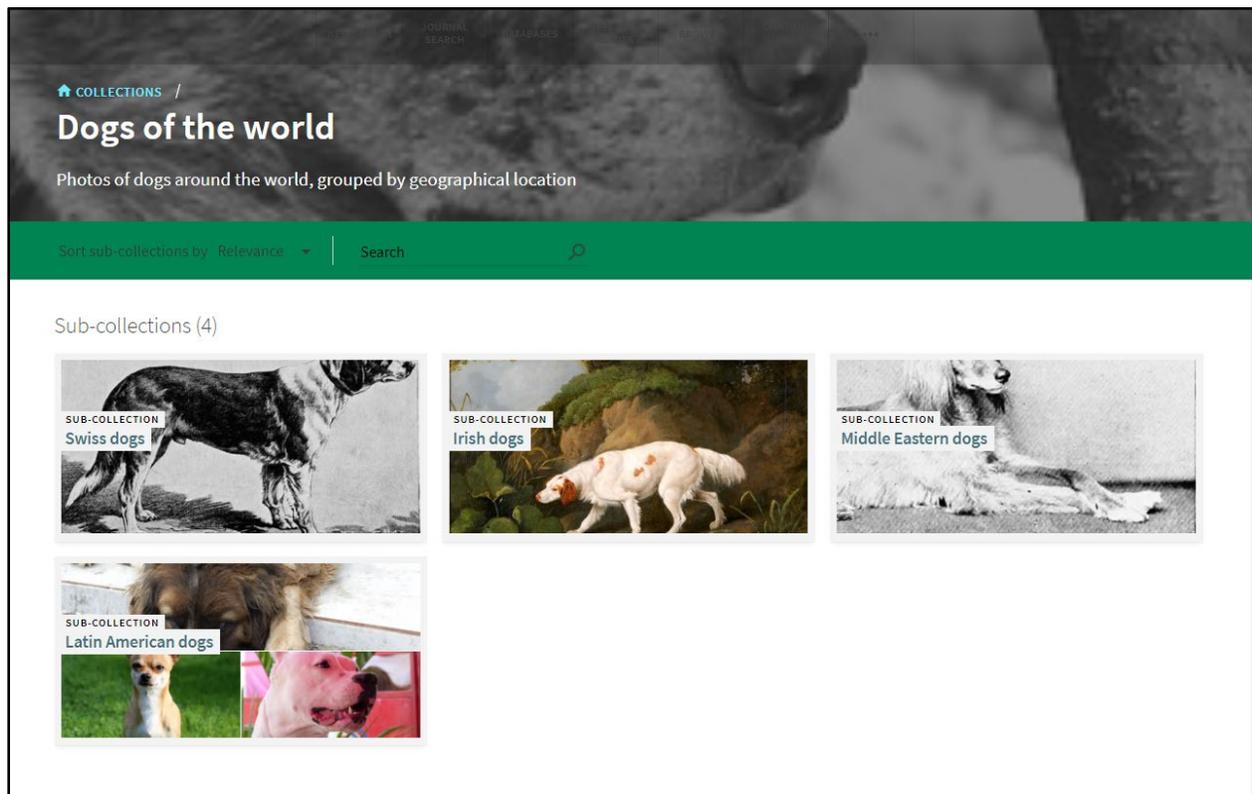
A Report

Image: Alma Digital Collection Manager page from CSUS University Library

Prepared by the Digital Archives Working Group

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Executive Summary

Backend Evaluation

None of the backend features that we identified as required are missing from Alma Digital. Some features are present but not as well-developed as we would have liked. We found no "deal-breakers" in our backend evaluation, but we did discover several weaknesses.

Notable weaknesses of the backend feature set are:
- No preservation system features. Inquire about Ex Libris' Rosetta for full preservation management.
- No support for 3rd party permanent URL services like DOI or Handle.net.
- Management of digital representations in Alma is difficult.

Notable strengths of the backend feature set are:
- Support for extremely varied content types.
- Flexible support for varied metadata schema.
- Excellent metadata editing tools.
- Full complement of record export and harvesting features.
- Excellent tools for reporting usage and engagement. Uses Alma analytics.

Frontend Evaluation

The frontend of Alma Digital exists across two environments. Primo can be used to search collections created through Alma Digital and is well known to CSU library stakeholders. The second interface is the Alma Digital Collection Manager which provides an introductory (or landing page) page for all collections and individual collections. Of the two search interfaces, Primo is by far the most advanced and both were assessed independently. Beyond this, there are three categories designated as *required* that failed our evaluation. However, two are remedied by features of the Primo discovery interface, and the third affects the integration of digital collections embedded outside Alma. Therefore, none of these failures constitute a "deal-breaker" according to the evaluators.

Notable weaknesses of the frontend feature set are:
- No advanced search on Collection Manager pages.
- Searching sub-collections is unintuitive.
- Landing pages are under-developed.
- Possibly no full text searching (must confirm).
- No exhibits functionality nor integrations.
- No object embedding by default.

Notable strengths of the frontend are as follows:
- Unified access point through Primo discovery interface allows digital collections and associated items to be discoverable among all other library catalog resources.

- Strong search features through Primo discovery interface.
- Multiple high-quality media viewers, including IIIF.
- Supports streaming media.
- Supports complex/compound objects.

Conclusion

Alma Digital is a good choice for digitized archives file management and delivery for institutions with limited labor or expertise for managing an external digital asset management system (DAMS). Utilizing Alma's familiar workflows and analytics are particular strengths when compared to other DAMS. However, the Collection Manager interface may prove to be too limited for institutions that want to provide heavier context such as robust and flexible landing pages, as well as advanced searching of archival materials outside the library's catalog.

Objectives

This report is the result of a request made by the CSU Digital Repositories Steering Committee regarding expressed interest by some CSU library representatives in Alma Digital as an alternative digital asset management platform for managing, searching, and delivering digitized archives associated with digital collections. This report, prepared by members of the Digital Archives Working Group, provides an evaluation of Alma Digital for the above purposes against the *CSU Libraries DAMS Report Requirements for Implementing Shared Digital Library Services* prepared by the Digital Archives Interest Group in 2019. A rubric designed to evaluate a CSU shared Hyrax/Samvera digital repository for digital collections was deployed in order to record the level with which Alma Digital is commensurate with the published functional requirements of the 2019 report (see Methods). The intent of this report is to assist CSU personnel when considering the Alma Digital product.

This report is NOT intended to persuade or dissuade CSU campus personnel in their consideration of committing to a shared CSU DAMS. The Digital Archives Working Group supports campuses in using the DAMS of their choice. We do, however, hope that users of DAMS external to a CSU shared repository will consider allowing harvests of their collections metadata in order to unify searching digital archives across all campuses of the CSU system.

Methods

Rubric

In preparation for a CSU shared digital repository, the Digital Archives Working Group created an assessment tool to identify conformance with the 2019 DAMS functional requirements report. Given differences in functional complexity of any single feature in a DAMS, the tool deploys three strategies within its rubric. A binary scale applies to services that are simple, that is, they are either functional or not functional, for example, authentication. A trinary scale applies to features that are slightly more rich and could potentially be developed beyond our minimum requirement, thus a rating of 'Optimal - Advanced features' could be assigned. A third, granular strategy, is applied to complex features, such as advanced search capabilities, that could be functional, but still not meet our minimum requirements. Points are given to each rating from "0" to "3" depending on which scale (strategy) is used. See figure 1.

	Scoring (points applied)			
Strategy	0	1	2	3
1 (Binary)	Not functional	x	Meets requirements	x
2 (Trinary)	Not functional	x	Meets requirements	Optimal - Advanced features
3 (Granular)	Not functional	Does not meet requirements	Meets requirements	Optimal - Advanced features

Figure 1: Scoring rubric features multiple strategies depending on the complexity of the function assessed.

Digital Repository Assessment Tool

The rubric is accompanied by the Digital Repository Assessment Tool. Each feature assessed in the tool requires a rating label assigned by selecting from a drop down menu. The labels include: 1) Not functional (0 points); 2) Does not meet requirements (1 point); 3) Meets requirements (2 points), or; 4) Optimal - Advanced features (3 points). Upon selecting a rating label, the tool auto-populates points as well as calculates the difference between the number of points possible and the number of points assigned to the rating. If the difference is above 2 (i.e. the assigned rating is either 'Not functional', or 'Does not meet requirements'), the cell will automatically display in red, indicating a feature that requires attention for system developers (see figure 2). By incorporating a point system into the tool, multiple evaluations of the product can be averaged among multiple evaluators from the CSU libraries.

ALMA DIGITAL	Discovery in Alma Digital Collections Manager			
	Advanced search (R)	Title, keywword, author, search (R)	Customizable filters (R)	NOTES
Rubric Strategy deployed	2	3	1	
Assessment score	Not functional	Meets requirements	Not functional	Alma collection
Numerical Score	0	2	0	
Points possible	3	3	2	
Difference	3	1	2	

Figure 2: Example of assessed category with subcategories. Selection of assessment score auto-populates a numerical score subtracted by the points possible in order to identify pain points in red.

Each feature included in the evaluation contains the definition of the functional requirement it represents through comments embedded in the feature title. Hovering over each feature title will display the requirement definition. **(R) indicates a required feature and (P) indicates a preferred feature.** The definitions used are from the DAMS functional requirement report of 2019.

The CSU Repository Assessment Tool was selected for use in this evaluation of Alma Digital in order to provide a basis for satisfying minimum functional requirements in a DAMS used in the CSU.

Referenced Resources

Features were evaluated using an Alma Digital collection created at the University Library at California State University, Sacramento. In addition, sources provided by Ex Libris were also consulted. They include: 1) Alma Digital Knowledge Center to review available documentation, and 2) Collections Alma University that provides an additional demonstration site to test frontend features.

Limitations

limitations to this evaluation of Alma Digital are as follows:

Resources

This evaluation was conducted by CSU library personnel voluntarily serving the Digital Archives Working Group. As such, time and commitment to the evaluation were limited, given continued responsibilities of the evaluators at their home institutions. Because of this, some conclusions are ambiguous and will require further consultation to resolve.

Independence

To preserve integrity, the evaluation was conducted independently of direct input from Ex Libris, the Alma Digital developer. Nor was this evaluation influenced by current users of the system. As such, gaps in our analysis exist that could otherwise be filled with direct inquiries to the above in order to clarify ambiguous findings identified within this report.

Subjectivity

Despite the application of a rubric and assessment tool to guide this evaluation, the deployment of individual rubric strategies and the subsequent scores selected by the evaluators is inherently subjective, Relative experiences of any evaluator can lead to somewhat different results.

Costs

Typically, Library and Information System service costs are negotiated. As such, the financial impact of deploying Alma Digital at any one institution was not a part of this evaluation. Those interested in the Alma Digital service should consult appropriate sales representatives at Ex Libris for costs and associated terms of use.

Results - Alma Digital Backend

(R) indicates a required feature, (P) indicates a preferred feature

Alma Digital (AD) is an added component of Alma, meaning that AD is maintained along with, and as a part of, Alma.   There are several advantages to integrating a library's digital archive into its existing ILS. AD uses all of the same tools and features that staff are familiar with from working in the Resource Management module in Alma. They can use the same metadata editor to create and edit records. They can also use the same norm rules to define display logic in the record interface. Developing collections in Alma Digital allows libraries to repurpose their existing technical services workflows to build digital collections. If catalogers are already familiar with Alma Resource Management, they need only make a few small changes to their usual methods to add digital representations to bib records.

User Management

Roles

- Functional requirement: User roles should include: 1) Super-User(or administrative equivalent) that has complete configurable access; 2) Project Administrator to provide the highest levels of database maintenance and assign users with subsequent permissions; 3) Users with levels of regulated access to specific features and collections in the system, and; 4) Public User accounts to enable personal tagging/organization of online items. (R)
- Score: 3/3, Optimal (Advanced features)
- Dependent upon library patron type, which in the CSUs are populated in user records by automated patrons loads of data originating from universities' HR records. On the one hand this can be very useful because you can use an existing permissions structure that is highly relevant to the library's operation. On the other hand, it limits permissions and access control to roles that are not specific to digital collections. Combining digital collections roles with LMS roles could limit flexibility.

Authentication

- Functional requirement: While the vast majority of collections will be freely accessible to the public, the system should leverage authentication technologies to restrict applicable collections to an institution's user base as needed. The application of effective authentication technologies, such as Shibboleth, should be used to manage access across variable user groups, thus expanding the overall flexibility of the DAMS to serve a variety of educational purposes otherwise confined by restrictive access relating to embargoes, copyright, etc. (R)
- Score: 2/2, Meets requirement
- Uses ULMS login, which in most instances in the CSU, integrates with campuses' single sign on process.

Content Types

Format Agnostic

- Functional requirement: Both born-digital and digitized content will be migrated to IR and digital collections environments. Therefore the DAMS must be format-agnostic to ensure all file types can be managed as needed. (R)
- Score: 2/2, Meets requirement
- No restriction on file formats in the uploader. However, content viewers needed to expose representations to the end user can only compile a limited set of file types.

File Swapping

- Functional requirement: In the event an ingested file must be changed, the system should accommodate the swapping of new versions of files. (P)
- Score: 2/2, Meets requirement
- Digital Representation managed separately from record. Can delete and match record with different representation if needed.

Streaming

- Functional requirement: System should effectively serve streaming media content of audio and video formats. (R)
- Score: 2/3, Meets requirement
- Media viewer comes built into Alma Digital. Allows for streaming video and audio to users through a link in the asset record. Viewer offers standard features: conversion to streaming format, file compression, viewer windows, controls, etc. No robust sharing features.

Object Handling

Derivatives

- Functional requirement: The processing of preservation quality formats as access derivatives, such as TIFFs to JPGs, will provide an optional workflow for digital preservation of analog materials as well as valuable automation. (P)
- Score: 2/3, Meets requirement
- Multiple files can be attached to a single representation and multiple representations can be attached to a single bib record.

Object Rights Management

- Functional requirement: Object level rights management and branding should be enabled through the automatic processing of watermarks and/or embedded banners at the time of ingest. (P)
- Score: 0/3, Not functional
- No automatic embedding at ingest. Others have requested this feature.

OCR/Full text

- Functional requirement: The system should provide automated OCR at ingest for full-text searching of applicable textual materials with typeface. (R)
- Score: 2/2, Meets requirement
- Full text can be extracted as desired through a setting prior to ingest.

Permanent URL

- Functional requirement: Each item record is associated with a fixed and permanent universal resource locator (URL) to ensure external links to an item record are not broken.
- Score: 2/2, Meets requirement
- PURL generation not an automatic component of ingest process. Special integration needs to be created for handle.net, ARK ID, or DOI creation.

Embargo
- Functional requirement: Enables the ingest of items that are subsequently suppressed from viewing for a predetermined period of time in order to accommodate issues pertaining to copyright, or permission to publish.
- Score: 2/2, Meets requirement
- Can set embargo criteria with access rights rules. Part of the Digital Resource Management workflow.

Modeling

Data modeling
- Functional requirement: With a single Hyrax implementation serving up to 23 campuses, a common (shared) data model ensures that all campuses agree upon how content is structured and understood by the system. This allows updates to work equally across all campuses rather than updating multiple Samvera instances with different code to operate with disparate data models for each campus. Using the Resource Description Framework, the model should represent classes (i.e. collections, objects, files) and associated properties (members, relationships). (R)
- Score: 3/3, Optimal (Advanced features)
- This is one of the main advantages of Alma Digital. One can use the same resource description standards and workflows for adding metadata to the ULMS. Uses the same metadata editor and record loading tools.

Metadata

Common Schemas
- Functional requirement: Descriptive schemas Dublin Core, VRA Core 3.0, PBCore are commonly used for non-bibliographic materials. (R)
- Score: 2/2, Meets requirement
- Default data models are MARC and Dublin Core. One can define new data models with custom norm rules.

MODS
- Functional requirement: Bibliographic descriptive schemas such as MODS will add to the extensibility of the platform. Incorporate nested data. (P)
- Score: 2/2, Meets requirement
- MODS supported. Not clear if nested elements can be used.

Controlled Vocabulary
- Functional requirement: As a best practice of resource description, the DAMS system must enable the management of controlled vocabularies derived from both standard thesauri and local controlled vocabularies. (R)
- Score: 2/3, Meets requirement
- Can enforce controlled vocabulary through metadata configurations. Same as cataloging for LMS. Not clear if you can import profiles.

Linked Data
- Functional requirement: Linked data implementation that provides direct access to standard vocabularies will promote consistent descriptive practice between items and collections. (P)
- Score: 2/3, Meets requirement
- Linked data integration creates a tab in the metadata editor that displays information about vocabulary, Linked data URI and ISBN/ISSN/OCLC label.

Remediation/editing
- Functional requirement: The platform should offer object level editing capabilities to facilitate metadata updates to ingested materials. (R)
- Score: 3/3, Optimal (Advanced features)
- Uses the same metadata editor that CSU libraries use for original cataloging.

Find & Replace
- Functional requirement: The platform should offer global metadata editing capabilities within specific fields, such as searching and replacing existing values within a single field, as well as blanket changes to entire field values, such as rights statements.(R)
- Score: 3/3, Optimal (Advanced features)
- Uses Alma norm rules to make global changes to record sets.

Ingest
Bulk ingest (simple)
- Functional requirement: The system should provide batch (or bulk) ingest of multiple items of simple objects of files and metadata. (R)
- Score: 2/2, Meets requirement
- Can execute bulk ingests using import profiles.

Bulk ingest (complex/compound)
- Functional requirement: The system should provide batch (or bulk) ingest of multiple items of compound objects of component files and metadata. (P)
- Score: 2/2, Meets requirement
- Multiple file associations can be made with single records in import profiles.

Add object interface
- Functional requirement: The system should provide batch (or bulk) ingest of multiple items of compound objects of component files and metadata. (P)
- Score: 2/2, Meets requirement
- Digital Resource Editor and "Manager Collection" tools can be used to move, remove and substitute digital objects.

Workflow moderation
- Functional requirement: Can save and revisit projects before completing ingest or updates. (R)
- Score: 2/2, Meets requirement

- No ingest queue, but you can activate and deactivate digital representations after they have been uploaded.

Quality Control
- Functional requirement: The system should provide quality control functions to administrators for approving, removing, or updating submitted objects within a queue prior to the final stage of ingest, or the building of a collection's index. (P)
- Score: 1/3, Does not meet requirements
- Does not appear to be an ingest queue from which an approver can review submissions and publish them.

Exports

Full metadata export
- Functional requirement: A collection's full metadata should be exportable for external remediation, preservation, or as downloadable files for public use such as research and machine learning operations. (R)
- Score: 2/2, Meets requirement
- Same export features as Alma.

Selected metadata export
- Functional requirement: Results from a search of a collection's contents should be exportable for external remediation, or entry into other collections within the system. (R)
- Score: 2/2, Meet requirements
- It is possible to run an export job on defined record sets.

Multi format metadata extraction
- Functional requirement: Exports should be offered in multiple formats such as delimited text, XML schemas, and METS to provide flexibility when working with databases, or for long-term preservation. (R)
- Score: 2/3, Meets requirement
- Supported data formats - MARC21, Dublin Core (simple), BIBFRAME Bibliographic, RDA/RDF.

Technical metadata extraction
- Functional requirement: System exports should include the extraction of technical metadata of items within the database.(P)
- Score: 2/3, Meet requirements
- Does not appear to be an option for administrative metadata export; however, this function could be performed with Alma Analytics. Matching to representation or re-using technical metadata elsewhere might be a problem.

Bulk file Export
- Functional requirement: System enables the export of files at the collection level, campus level, or results from a search.
- Score: 3/3, Optimal (Advanced features)

- Files and digital representations can be exported along with metadata. Export functions between universities in NZ is a special advantage of Alma D.

Back-up/Sustainability

Redundancy
- Functional requirement: Redundancy of files and metadata to protect against catastrophic loss. (R)
- Score: 2/2, Meets requirement
- Uses Amazon Web Services Simple Storage Solution (S3) to store digital resources.

Recoverability
- Functional requirement: Databases must be fully recoverable in the event of catastrophic failure. (R)
- Score: 2/2, Meets requirement
- S3 service offers versioning. Ex Libris customers can request to restore digital objects for up to 90 days from a previous version.

Fault Tolerance
- Functional requirement: System should be fault tolerant to continue operation during erroneous or compromised performance. (P)
- Score: 2/3, Meets requirement
- Since the service is hosted in Alma, its performance would be just as reliable as all of our other library functions that run through the LMS.

Network storage
- Functional requirement: Can Connect to external storage environments within a network such as local drives, cloud/web services, etc. typically to complete ingest or swap files. (P)
- Score: 2/2, Meets requirement
- It is possible to gain access to the institution's AWS storage and to replicate it in another 3rd party storage system. No out of the box synchronization. Would have to develop synch job independently.

External System Integration (Interoperability)

OAI-PMH
- Functional requirement: The system must enable the crawling of a collection's metadata and URLs as desired via OAI-PMH to be used within an external discovery systems such as Calisphere and the Digital Public Library of America.(R)
- Score: 2/2, Meets requirement
- Alma both exposes metadata in OAI-PMH and can harvest other systems' OAI-PMH feeds.

ULMS harvest
- Functional requirement: Records within the system should be harvestable by the CSU Unified Library Management System (Ex Libris Alma) via an external API or another protocol. (P)
- Score: 2/2, Meets requirement
- Records can be pushed to the network zone same as any other record in our local catalogs.

API Support
- Functional requirement: Support available to campus personnel that create customizations. (R)
- Score: 2/2, Meets requirement
- API used for system integration, like a preservation system or ArchivesSpace: https://developers.exlibrisgroup.com/alma/integrations/digital/remote/

Reports

Analytics
- Functional requirement: Collection-level and item-level usage statistics and analytic reports will provide valuable data to enable administrators to strategize development and promotion of their collections. (R)
- Score: 2/3, Meets requirement
- Robust usage tracking available through Alma Analytics. Can create a report using "Digital Usage" subject area. List of possible metrics: https://knowledge.exlibrisgroup.com/Alma/Product_Documentation/010Alma_Online_Help_(English)/080Analytics/Alma_Analytics_Subject_Areas/Digital_Usage

Technical/Administration
- Functional requirement: Reports such as items added, file types, objects per collection, users, etc. (R)
- Score: 3/3, Optimal (Advanced features)
- Comprehensive list of data tables for technical metadata. Can be accessed through Analytics.

Preservation Management

File Redundancy
- Functional requirement: Redundant file storage of preservation files (P)
- Score: 2/2, Meets requirement
- Backed up in AWS, storage network on AWS east coast.

XML/METS
- Functional requirement: Structured metadata exports in XML/METS (see Exports) (R)
- Score: 0/2, Not functional
- Preservation metadata only available in Ex Libris' Rosetta.

Fixity
- Functional requirement: Integrity checksums (e.g. MD5, SHA256) (P)
- Score: 2/2, Meets requirement
- Ex Libris relies on Amazon S3 service to perform checksums and report discrepancies.

Validation
- Functional requirement: Format validations (e.g. JHOVE) (P)
- Score: 0/2, Not functional
- No file format restrictions on ingests. Tests found that it is possible to ingest an invalid file format.

Format Obsolescence

- Functional requirement: Automated reformatting of obsolescent formats (P)
- Score: 0/2, Not functional
- No mediated file format migrations.

Born-digital ingest

- Functional requirement: Ingest of born-digital materials for preservation (P)
- Score: 1/3, Does not meet requirement
- No automated process for capturing born digital content as digital representations.

Results - Alma Digital Frontend
(R) indicates a required feature, (P) indicates a preferred feature

Alma Digital uses Primo to deliver digital assets. Instead of directing users to an alternative interface or domain to access digital collections, libraries can use their own discovery platform as a unified access point for all holdings. AD does provide a specialized collection page for browsing digital collections, but in most use cases, the primary method of access for most users would be submitting a Primo search and retrieving objects with the discovery interface.

Discovery (Primo)
Note: Primo Search was evaluated for initial discovery. Apply the "Collections" filter to view ALL collections independent of other library resources.

Advanced search
- Functional requirement: Search engine should provide advanced search (multiple Boolean and specified field search bars). Search across specific fields. (R)
- Score: 3/3, Optimal (Advanced features)
- Primo offers a full complement of advanced search features,

Title, keyword, author, search
- Functional requirement: Search engine should provide, specifically, keyword, author and title search capabilities. (R)
- Score: 3/3, Optimal (Advanced features)
- Primo offers searching across the most common metadata fields.

Customizable filters
- Functional requirement: Discovery layer should provide customizable filters and facets. (R)
- Score: 3/3, Optimal (Advanced features)
- Primo offers a full complement of search filters and limiters.

Discovery (Alma Digital Collections Manager)
Note: Alma Digital collection level search was evaluated in addition to Primo. It is a simple search box for inputting terms.

Advanced search
- Functional requirement: Search engine should provide advanced search (multiple Boolean and specified field search bars). Search across specific fields. (R)
- Score: 0/3, Not functional
- No Boolean searching or specific field searches enabled

Title, keyword, author, search
- Functional requirement: Search engine should provide keyword, author, and title search capabilities. (R)
- Score: 2/3, Meets requirement
- From the overall collections page and individual collection page, Alma Digital Collections Manager search box searches only title terms for grouped subcollections, not terms associated with individual items. Once a subcollection is chosen, individual metadata fields can be searched to populate a list of items.

Customizable filters
- Functional requirement: Discovery layer should provide customizable filters and facets. (R)
- Score: 0/3, Not functional
- No filters or limiters deployed in the Alma Digital Collections Manager.

Delivery Interface

Zooming, Downloading, Printing
- Functional requirement: PDF viewers should be enabled and effective regarding zooming, downloading, and printing. (R)
- Score: 2/3, Meets requirements
- Ambiguous. No direct printing link located in demo environments. Documentation does not confirm direct printing. Printing is, however enabled in Primo.

Advanced Analysis
- Functional Requirement: IIIF and other embedded viewers will facilitate advanced analysis of image files. (P)
- Score: 2/3, Meets requirement
- The default viewer is very basic, however other improved viewers can be configured.

Display sizing, rewind, fast forward (AD Collections Manager)
- Functional requirement: Audiovisual media players should enable basic functions such as display sizing, rewind and fast forward. (R)
- Score: 2/3, Meets requirement
- Default media player is basic. No forward and rewind, but the timeline is navigable. Video resizing enabled. No caption support on default player.

Web Pages

Displaying Lists

- Functional requirement: The system should provide the means for displaying lists of collections (e.g. splash pages) as well as the means for displaying these according to each participating campus. This could be a native function of the software and/or a customizable web-based option. (R)
- Score: 2/3, Meets requirement
- Collections can be viewed via Primo. The AD Collections Manager also lists collections and sub-collections as thumbnails, as well as items in the collection.

Textual Descriptions

- Functional requirement: The system should provide the means for context through textual descriptions (e.g. landing pages) of the collections in order to give users critical context associated with the materials contained therein. This could be a native function of the software and/or a custom web-based option, such as a WYSIWYG editor. (R)
- Score: 2/3, Meets requirement
- The AD Collections Manager allows for textual descriptions, however, the space for these descriptions are built into a limited header space. We could not determine at this time if word or character limitations restrict the length of the collection descriptions.

Campus Branding

- Functional requirement: The system should provide the means for campus branding of the collections through graphics, wordmarks, and color assignments (P)
- Score: 2/3, Meets requirement
- Branding is enabled in both Primo and Collection Manager environments.

Web Standards

- Functional requirement: The user interface must be responsive according to web standards.(R)
- Score: Meets requirement
- Alma is certified among leading browsers. It uses Angular and HTML5 and can be used on Android, IPhone, iPad, and iPod Touch.

Accessibility

- Functional requirement: The system must be compliant with the Americans with Disabilities Act (ADA) to ensure accessibility, or is committed to reaching full compliance. (R)
- Score: 2/2, Meets requirement
- No capture support on default video player. Alma documentation states that it follows W3C Web Content Accessibility Guidelines 2.0, level "Double-A" Section 508 of the Rehabilitation Act (29 U.S.C. 794d).

- ○ 1. HTML Standards and Accessibility
- ○ 2. XHTML 1.0 Transitional
- ○ 3. WCAG 2.0 Guidelines Priority 2 (with exceptions)
- ○ 4. Section 508 (with exceptions)
- ○ 5 CSS 3

Image Rendering/Object Embedding

- Functional requirement: With each item created, the system should be able to associate that item with a direct link to the fully rendered object file that can then be reused in third party tools (e.g. exhibit platforms, webpages) for image rendering and object embedding using a stable URL. (R)
- Score: 0/3, Not functional
- The URL is associated with the combo page of the image thumbnail and metadata. No unique URL is assigned to the fully rendered image. Embedding this URL results in embedding the entire page. This means that basic embedding of media into external pages is not supported by default.

Flip Reader

- Functional requirement: Special object display such as side-by-side page flip view, or news article highlight/selection.
- Score: 2/3, Meets requirement
- The Internet Archive book reader can be enabled

Exhibits

- Functional requirement: As an identified priority of the survey respondents, it is requested that the system provide the means for curating exhibits online. One complicating factor is that no mutually agreed upon definition of what constitutes an exhibit online was achieved. Some digital asset management systems offer the means to create web pages, however limited, toward an exhibit-like function. In the absence of a dedicated exhibit function, the system should utilize plug-ins, extensions, or integrated applications designed for this purpose. (P)
- Score: 0/2, Not functional
- Alma Digital does not offer an exhibit platform or alternative.

Downloads

Resolution Downloads

- Functional requirement: The system should provide full and partial resolution downloads of the materials within the database to enable flexible use in research and course learning objectives. (P)
- Score: 2/3, Meets requirement

- If a file has multiple resolutions or formats stored, then users can select to download their preferred version. However, it has not been determined in this assessment if the system can render reduced file sizes or resolutions in real time upon request.

Printing
- Functional requirement: The system should enable printing of reasonably of file types within the database. (R)
- Score: 2/3, Meets requirement
- The system enables printing via Primo or alternate text/PDF viewer.

User Tags/Annotations
Tag items

- Functional requirement: User functionality is greatly improved by the ability for the public to tag individual items for future use. (P)
- Score: 2/3, Meets requirement
- Tagging is enabled through the interface. Users can also pin items for later recall/use in Primo.

Annotate
- Functional requirement: Users and custodians of archival materials benefit significantly from the ability of users to annotate. (i.e. provide public descriptions) of the database items therein. (P)
- Score: 2/3, Meets requirement
- If enabled, annotation is supported through advanced IIIF viewers.

Social Media Support
- Functional requirement: The system should enable sharing through social media by building in links to popular social media sites accessible at the item level through the use of stable URLs and embed codes, or in the least, provide easy access to stable URLs and embed codes. (P)
- Score: 2/3, Meets requirement
- The system provides multiple ways to copy a resource link from an Alma record or through a share icon in the Collection Manager that can be customized to utilize specific social media apps.

Summary Findings

Backend Evaluation

None of the backend features that we identified as required are missing from Alma Digital. Some features are present but not as well-developed as we would have liked. We found no "deal-breakers" in our backend evaluation, but we did discover several weaknesses. These are as follows:

- **No preservation system features**. Ex Libris packages preservation functionality separately in their Rosetta product. We performed a brief review of the Rosetta documentation and found that the two systems do not integrate as well as one might expect. Rosetta and Alma Digital still function as separate systems and as such require separate workflows. Inquire about Ex Libris' Rosetta for full preservation management.
- **No support for 3rd party permanent URL services like DOI, ARK, or Handle.net**. It is possible to use norm rules to automate creation of PURLs on ingest, but the URL strings that are created still need to be registered manually with the PURL services. AD offers no compatibility with these services' APIs.
- **Management of digital representations in Alma is difficult**. Digital representations are stored separately from bib records and metadata but can only be retrieved using those records. With larger collections, it could be difficult to find digital objects within the administrative interface.

Notable strengths of the backend feature set are:
- Support for extremely varied content types.
- Flexible support for varied metadata schema.
- Excellent metadata editing tools.
- Full complement of record export and harvesting features.
- Excellent tools for reporting usage and engagement. Uses Alma analytics.

Frontend Evaluation

The frontend of Alma Digital exists across two environments. Primo can be used to search collections created through Alma Digital and is well known to CSU library stakeholders. The second interface is the Alma Digital Collection Manager which provides an introductory (or landing page) page for all collections and individual collections. Of the two search interfaces, Primo is by far the most advanced and both were assessed independently. Since OneSearch searches across all library resources, it is recommended that users seeking digitized archival materials select the "Collection" filter. The Collection Manager interface does not utilize the strengths of Primo, rather, it is used to provide collection information and context as well as simple searching of sub-collections within a collection and items within each sub collection.

There are three categories designated as *required* that failed our evaluation. The first two, "Advanced search", and "customizable filters", apply only to the Alma Digital Collection Manager, but are well-covered by Primo. The third, "Object embedding", does not specifically affect the performance of the

system , rather it does not support the embedding of fully rendered items in external platforms such as webpages or learning management systems. Because of this, these failures do not constitute a "deal-breaker" according to the evaluators. The overall weaknesses of the frontend discovery and delivery are as follows:

- **No advanced search on Collection Manager pages.** Users must navigate between a collection (landing) page and Primo in order to use advanced search functions and filters. This can present an inconvenience to inexperienced searchers who must search through all resources, thereby encountering very large search results. While individual items of a collection are discoverable through Primo, searching within a specific collection is provided by the Collection Manager. The primary function of the collection (landing) page is to provide context about the collection. This presents a potential disconnect to users when locating materials in Primo as it is discovered outside the context of the collection (landing) page.
- **Searching sub-collections is unintuitive.** The AD collection Manager offers a single search box. When viewing all sub-collections, the search engine only searches terms within the sub-collection titles. When searching within a single collection or sub-collection, searches target all metadata fields from items contained therein.
- **Landing pages are under-developed.** There does not appear to be much flexibility for configuring the AD Collection Manager. The horizontal top section allows for a background image and institutional branding as well as some space (2-3 sentences) to provide important contextual information about the collection. At the time of the evaluation, it was not clear if there are word or character limits to descriptive collection text. Many collection landing pages require a significant amount of text to convey important information. The AD Collection Manager template may not give institutions the flexibility they might otherwise prefer in this area.
- **Possibly of no full text searching in the AD Collections Manager (must confirm).** When testing the demo site for Alma University collections, full text searching did not appear to be enabled through the AD Collection Manager.
- **No exhibits functionality nor integrations.** Institutions must build homegrown exhibit pages, or use third party applications to construct exhibits. Additional issues exist with fully rendered media (see 'No object embedding by default').
- **No object embedding by default.** Alma delivery does not offer unique and stable URLs for fully rendered media apart from the thumbnail and metadata page view. This means that embedding full media without metadata into web platforms for exhibits is likely not possible by default. Any workarounds would have to be programmed by campus library personnel.

Notable strengths of the frontend are as follows:
- Unified access point through Primo discovery interface allows digital collections and associated items to be discoverable among all other library catalog resources.
- Strong search features through Primo discovery interface.
- Multiple high-quality media viewers, including IIIF.

- Supports streaming media as well as complex/compound objects.

Conclusion

Alma Digital is a good choice for digitized archives file management and delivery for institutions with limited labor or expertise for managing an external digital asset management system (DAMS). Utilizing Alma's familiar workflows and analytics are particular strengths when compared to other DAMS. However, the Collection Manager interface may prove to be too limited for institutions that want to provide heavier context such as robust and flexible landing pages, as well as advanced searching of archival materials outside the library's catalog.

Additional Resources

Alma Digital Overview (video)

Alma Digital Brochure

Alma Digital Knowledge Center

Presentations and Documents - Digital

Collections _Alma University (Alma Digital demo by Ex Libris)

Sacramento State Alma Digital Demo

Alma Digital evaluation tool

CSU Libraries DAMS Report Requirements for Implementing Shared Digital Library Services (2019)

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