Next-Generation Technical Services (NGTS)

POT1 LT3B:
Evaluate the Ability of Selected Existing Systemwide Access Systems to Meet the Discovery and Display Features and Requirements of the UC Library Digital Collection (UCLDC)

Final Report

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Contents

Executive Summary

The Power of Three (POT1) Lightning Team 3B (LT3B) was given the following charge:

> "Evaluate the ability of selected existing systemwide access systems to meet the discovery and display features and requirements of the UC Library Digital Collection, as defined by the work of Lightning Teams #1.A and #3.A. Included in the analysis should be a description of the existence of any mechanisms to contribute records, through deposit, harvesting or other means. Systems to be evaluated are: WorldCat Local (http://melvyl.worldcat.org/), Calisphere (http://www.calisphere.universityofcalifornia.edu/), UCSD Digital Library Collections (DLC) https://libraries.ucsd.edu/digital/ and the UC Office of the President's online digital image repository http://ucop.webdamdb.com/."

To conduct our evaluation, LT3B created a heuristic that combined widely accepted website usability standards with the discovery and display requirements from Lightning Teams 1A and 3A. Working in small groups, each system was evaluated against the requirements. That data was then grouped into requirements categories, and the findings were then analyzed by a differing combination of team members. The teams' overall findings were that no one system met the majority of the requirements, but that each had areas of strength that could be referenced in the design and development of the UC Library Digital Collection (UCLDC) access interface. Finally, the team recommends that because WorldCat Local is explicitly a discovery system and not a display system and because it is so widely used across the UC campuses, it should be used in concert with the final UCLDC application and attention should be paid to ensuring that metadata records for UCLDC content can be efficiently ingested into WorldCat.

Discussion of Charge

The Power of Three (POT1) Lightning Team 3B (LT3B) was given the following charge:

> "Evaluate the ability of selected existing systemwide access systems to meet the discovery and display features and requirements of the UC Library Digital Collection, as defined by the work of Lightning Teams #1.A and #3.A. Included in the analysis should be a description of the existence of any mechanisms to contribute records, through deposit, harvesting or other means. Systems to be evaluated are: WorldCat Local (http://melvyl.worldcat.org/), Calisphere (http://www.calisphere.universityofcalifornia.edu/), UCSD Digital Library Collections (DLC) https://libraries.ucsd.edu/digital/ and the UC Office of the President's online digital image repository http://ucop.webdamdb.com/."

Based on this charge, the overall goal of LT3B was to evaluate the four identified existing systems in order to understand their individual potential to meet the discovery and display needs of the proposed UC Library Digital Collection (UCLDC).   The group was originally charged with just evaluating WorldCat Local, but because of the existence of other robust access systems within UC, POT1 decided to expand that initial charge. This expanded task changed the nature of the evaluation work, since through the process of assessing the individual systems the team also ended up assessing the requirements themselves. Our final report, therefore, includes not only conclusions and findings regarding the evaluated systems, but some input on the relative importance of the requirements against which that evaluation was conducted. Our hope is that this second area of analysis will contribute to the effort to prioritize features when design and development work for the UCLDC begins.

System Descriptions

LT3B evaluated four separate systems, which span a range of functionality and service delivery approaches.

WorldCat Local (http://melvyl.worldcat.org/)

The University of California campus libraries and the California Digital Library collaborate together to provide a union catalog in order to share library resources across the UC system via OCLC's WorldCat Local (WCL) service. Melvyl WorldCat Local provides users a search interface into UC's shared library catalog records as well as the option to search the records of all other non-UC libraries that are members of WorldCat Local. As the UC libraries have invested considerable resources in this shared service, evaluating the role it could play in relation to the UCLDC not only made sense, but seemed absolutely necessary. While WorldCat Local is a discovery service and not an access service (in the sense of displaying digital objects to users), it is a commonly used, powerful tool that UC researchers are already familiar with; therefore, it clearly can contribute towards one of the overall UCLDC goals of achieving broader awareness of UC digital materials.

UC San Diego Digital Library Collections (https://libraries.ucsd.edu/digital/)

The UC San Diego Digital Library Collections (UCSD DLC) provides access to the digital materials from a growing number of collections on the UC San Diego campus. Currently nearly 48,000 items from three collections are represented--the Arts Library, Mandeville Special Collections and the Scripps Institution of Oceanography--with the expectation of additional content being added as digitization services progress. The UCSD DLC provides full search and

display services very much in line with the type of access interface expected to be a part of the UCLDC, so it was natural and instructive to evaluate it against the UCLDC requirements.

Calisphere (http://www.calisphere.universityofcalifornia.edu/)

Calisphere is a CDL-developed and hosted access service that connects the public to over 230,000 digitized primary sources contributed by UC based libraries and museums as well as other California cultural heritage institutions. Calisphere displays digitized primary source materials contributed by 120 libraries, archives, and museums in California. The materials reflect the collecting interests of these institutions, and therefore relate to a variety of themes and disciplines. Content is contributed to one repository for both the Online Archive of California (OAC) and Calisphere. Different content is then displayed, in different ways, on the respective websites. Calisphere focuses exclusively on presenting users the digital objects in a rich display environment and has a robust discovery system in order to get users to those objects.

UC Office of the President's Online Digital Image Repository (http://ucop.webdamdb.com/)

The University of California Office of the President's online digital image repository (UCOP ODIR) is a source of stock-photography style photos for the UC system provided through the WebDamDB vendor service. Through a basic search and browse interface, the UCOP ODIR provides free access to UC watermarked photographs; non-watermarked images are available to those with an account. The system is hosted and the UC instance represents a very lightly customized version of this product, which is quite extensible.

Evaluation Strategy

In order to ensure consistency and to make the effort more tractable, LT3B took a team based approach to evaluating the systems. Two people evaluated WorldCat Local and the UCSD DLC, three people evaluated Calisphere and the UCOP ODIR and the Lightning Team chair spot checked all of the reviews. With this approach, teams were able to work together to ask questions about areas of confusion and to discuss any opinions and experiences that seemed markedly different from one another.

In addition to ensuring reliability and consistency by working in teams, LT3B also determined that we needed a shared method of evaluating all four systems so that we could be sure that, as much as possible, we were evaluating the same things in the same way. A heuristic approach was ultimately chosen, described in more detail below. Once the heuristic was finalized, we spent approximately three weeks evaluating all four systems.

Heuristic Approach

A heuristic is a set of standards (in this case, user experience standards) used by individual evaluators to assess a given system for how well that system meets those standards. When there is more than one evaluator, the assessments are combined together and serve to smooth out the idiosyncrasies of any one evaluator's experience or preferences. In the case of the LT3B charge, the standards of interest can be generally defined as user experience standards. The team was additionally interested in evaluating how well the four systems in question could meet previously defined access requirements, and some ingest and contributor requirements were ultimately included as well.

In order to capture basic web site standards and the specific UCLDC requirements, LT3B created its own standard by combining Jakob Nielsen's widely recognized foundational heuristic for successful web sites (http://www.useit.com/papers/heuristic/heuristic_list.html) with the LT1A and LT3A requirements. Below is an example of one of the Nielsen heuristics:

> **"Recognition rather than recall**: Minimize the user's memory load by making objects, actions, and options visible. The user should not have to remember information from one part of the dialogue to another. Instructions for use of the system should be visible or easily retrievable whenever appropriate."

Since Nielsen's standards already included expectations of behavior related to a given attribute, LT3B simply extended the model by adding to it feature requirements that were transformed into standards that could be used for evaluation.

For instance, one of the stated LT1A/LT3A requirements is the ability to sort search results in specific ways. That description was restructured into the following standard:

> **Sorting:** Default sorting of search results should be by relevance; users should have option to sort by additional sorting criteria: collection, author, title, date

In addition to the Nielsen standards and the LT1A/LT3A requirements, we also gave ourselves the leeway to add in additional standards should the need arise. Ultimately only one was added, the number of clicks required to get to an object.   All of the standards were collected into a spreadsheet that was shared in Google Docs, to facilitate collaboration and to eliminate the need to synchronize document versions.

Rating System

The heuristic provided a standard to measure against, but LT3B also needed a rating system for expressing a given evaluation, and chose the simple scale below:

> 1-good
>
> 2-mediocre
>
> 3–bad
>
> 3-N/A

The double usage of the "3" rating reflected ambiguity regarding how to evaluate a system if it didn't have a particular requirement. On the one hand, the group felt that if a system wasn't designed to provide a specific piece of functionality, then it shouldn't receive a low rating. On the other hand, since systems were being evaluated against a set of desired criteria, not having functionality that met criteria was quite similar to providing it poorly. Ultimately this was sorted out in our analytical efforts, which required a different team member to review and then synthesize the initial evaluation work.

Testing/Calibrating/Refining

LT3B tested the heuristic by applying it together against one or two requirements for one or two sources. This group exercise allowed us to discuss how we made our decisions, to learn from each other and to develop common approaches. As we proceeded in our evaluations, we explored any confusion or evaluation problems over email with team members or if needed, with all Lightning Team members and during group conference calls. Because all of our work was

recorded in a shared document, we were also able to check our own assessments against others to make sure we were taking similar approaches or to identify places where we were at odds and sort out why.

Ingest Assessment

LT3B originally anticipated having to conduct a separate evaluation of ingest mechanisms; however, the final heuristic used to assess each service included publishing related activities that we felt sufficiently addressed ingest concerns. That evaluation is detailed in the findings below.

Findings

Analysis

In order to achieve a degree of triangulation and to make the effort more tractable, the analysis of our assessment findings was organized in a different manner from our assessment effort. First, the assessment standards were sorted into larger categories, since looking at each element of the heuristic independently did not feel like a meaningful approach. Performance for all of the heuristic requirements in each of the areas below was then evaluated and summarized, using the results for the specific heuristic elements in a given area as the data for that synthesis:

- Design principles
- Search
- Search Results
- Object View
- Object Tools
- Attribution
- Access Control
- System Status/Error handling
- System Documentation
- Publishing
- Discoverability

Second, where we had worked in teams to look at the degree to which each service met each item in the heuristic, in the analysis phase each LT3B member was given an independent area to work in. Four team members were assigned a single service to evaluate and the other team members divided up the eleven heuristic categories and compared how each service met the standards in those categories. As with the testing of the heuristic, in this phase of work we each conducted a small bit of analysis and shared our results to discuss any differences in our approaches and to answer procedural questions. For instance, in the assessment we used a 1, 2, 3 or N/A rating to help us gauge how well the service met the heuristic. As we did our first pass at analysis, we had a conversation about attempting to use those ratings in a more formal way, such as averaging them. Through a discussion about the risks and merits of this approach, we decided not to use the numeric ratings as numeric measures, but as guidelines, for several reasons:

- **The Illusion of Precision**: in our rating system, a "1" meant that the service met this requirement very well. However we were concerned that higher numeric ratings are often unconsciously considered better, so that ultimately the averaged rating result would be counter-intuitive.

- **The Impossibility of Averaging**: any average would imply more precise numeric measurements than were actually conducted. It would be impossible for us to explain the difference between a 2.5 and a 2.75 rating, for instance. Again, our numeric ratings were more guidelines than exact measurements.

- **The Need to Revisit and Revise**: as we each conducted our analysis we often revisited the system in question in order to reassess its performance against a given standard or to better understand the notes left by the original team that had conducted the assessment. This occurred as our shared understanding of both the tools and the desired behavior improved over time. Rating changes were made through a consensus process after an LT3B member brought the need to revise the assessment to the attention of the team.

Below are summaries of our analysis across areas of the heuristic and for each given service. Summaries for each service can be found in Appendix B.

Summary of Findings for Each Area of the Heuristic

Design Principles

The standards grouped under the category heading of "Design Principles" address how the overall presentation and relative ease of use of a site impacts its usability, including attributes such as consistency, a match between the system and the user world, flexibility, and an inclination to prompt users as opposed to relying on their memory. All four systems had strong points in this overall area, but in assessing all of the elements together, Calisphere was more frequently evaluated as a strong performer. However, weak points were identified with that system as well, particularly in supporting experienced users.

Search

The "search" category encompasses the following functions:

(1) Basic search, consisting of a single search box, a la Google which is intended to be used for simple keyword searches.

(2) Advanced search, allowing the patron to specify unique fields for his/her search and allowing the combination of search terms from a variety of different fields.

(3) Scope control, allowing searches to be performed across all collections as well as allowing a user to limit to one or more specific collections.

(4) Multilingual search, supporting searching in different languages, including the ability to search non-Roman scripts.

(5) Highlighting of the desired search terms in the object view.

(6) A "more like this" feature that allows patrons to easily broaden their search and find similar materials once they have identified a useful item.

Overall, each service tested varied on each of these categories. However, the UCSD DLC performed best in the categories related to the search heuristic, as it is the only service that has a true Advanced Search (the UCOP ODIR product is limited). None of the services tested displayed all of the metadata named in the LT1A Requirements document, but the group questioned if all of these metadata must be searched in a basic search. If the definition of the Basic Search is revised, the services might score better on this feature.

Search Results

The "Search Results" dimension includes the type of information presented for each item in the search result list and the types of controls given to the user to work with that list. Key aspects of this dimension include: the availability of meaningful facets, sorting options, paginated results with the ability to change the number of items on a page, and the availability to view themed or topic-centered sets of items. LT3B had concerns about specific aspects of some of the requirements. For instance, some of the elements enumerated for "Item level information" may be too detailed for a usability result set list. Additionally, some of the information suggested for facets, such as "descriptions," doesn't lend itself to that type of presentation. All sites provided paginated search results very well, but most of them struggled with providing easy access to thematic collections of UC material. Overall, WorldCat Local and the UCSD DLC had the strongest handling of Search Results, followed by Calisphere and then the UCOP Dams.

Object View

The "Object View" category covers features such as the availability of thumbnails, image viewing capabilities, audio and video support, and the level of detail available in the metadata display. WorldCat Local does not provide any of these features. Thumbnails are available in the other three services. Full metadata, including rights information, is available in the UCSD DLC and can be available in the WebDamDB product underlying the UCOP ODIR, since that is an implementation decision. The UCOP ODIR is also, according to the documentation, supposed to support Audio/Video (AV). The UCSD DLC provides robust AV support. AV is being tested in a pilot for Calisphere.

Object Tools

The "Object Tools" category relates to the tools and actions available for working with retrieved objects. Elements include the availability of RSS feeds, so the patron can automatically learn of new objects added to the database, as well as the ability to send an object to social media sites, such as Facebook. More traditional elements include object level citations and the ability to download, print, and "purchase" objects. Only the UCOP ODIR product might allow for RSS feeds, according to the documentation. WorldCat Local provides RSS feeds for lists, but not objects newly added to the database. Calisphere was the one system that did not have the ability to send an object to a social media site. Only WorldCat Local provided an easy way to export a citation. For downloading actual objects, the UCSD DLC has a clear link for performing this function. The UCOP ODIR has this available on a per folder basis, and at the time of this report, only one folder allowed downloads with an account. The UCSD system and Calisphere both provide an easy-to-print function for the objects. None of the systems provided useful purchasing tools with contact information.

Attribution

The "Attribution" area involves: (1) branding at the UC Libraries level, the campus/institution level, and the collection level; (2) ensuring that consistent attribution to the owning campus and

collection are available; and (3) providing easy-to-locate information about contributing institutions. LT3B feels that attribution at all levels is critical and that branding is secondary. In our evaluation, we were able to readily observe the degree of attribution in a system, but not the demonstration of branding capabilities beyond the primary service brand. WorldCat Local, because it does not function as a repository, does not have some of the desired functionality, such as PDFs displaying branding and attribution. The UCSD Digital Library Collections and Calisphere scored well in most of these categories. The UCOP ODIR product displayed some of the desired qualities, but as configured, doesn't consistently display attribution. Calisphere scored highest out of the four services in providing documentation about the contributing institutions.

Access Control

"Access Control" covers the ability for collection owners to determine which categories of users can see which categories of content. This includes specifications such as restricting access to UC-affiliated users only, displaying only metadata and not objects, and a tight coupling between a collection and its affiliated campus. All content on Calisphere is publicly available, so there are no access control mechanisms. As of December, the site has a page listing all contributors with links to contributor landing pages showcasing content. WorldCat Local does not have any direct means for managing access; any restriction controls are determined by licensing agreements on the part of member institutions and third-party sources. Communication with UCSD DLC staff revealed that the UCSD DLC has four levels of access control: including open access, UCSD only via IP restrictions, and login based access for administrator groups. The UCOP ODIR has the greatest access control, allowing for restrictions for viewing and/or downloading to groups on a folder by folder basis. UCSD DLC and the UCOP DAMS strongly support access based on affiliation by offering browsing of contributing entities and/or collections.

System Status/Error Handling

Elements in the "System Status/Error Handling" dimension include clear messages about errors, the ability to re-enter a search easily, and clear, easily accessible documentation to help researchers use the system. Calisphere fared the best in its ability for a patron to easily re-enter a search from the results page, and for the most part it had clearly marked "back" buttons (on the larger image view the patron must use the browser's back button). None of the systems tested performed better than average in this category. All systems provide some sort of clear error message, but none of them provide a "did you mean" service to help patrons realize they may have mistyped their queries. Also, both WorldCat Local and the UCSD DLC provide methods to submit feedback and both had a link to "Chat with a Librarian," so that a patron could ask for help. Finally, the availability of robust Help Documentation seemed non-existent in all of the systems. The UCSD DLC had the best search tips, with a link offered on every page near search box.

System Documentation

The "System Documentation" category includes detailed documentation to help content owners contribute to the site, as well as overall technical documentation describing the service. None of the services provided access to contributor guides, though presumably this is a relatively easy lapse to address. Of the four services evaluated, the UCSD DLC was the only one to provide

technical documentation. Currently, that description is a very limited entry in a FAQ, but much more extensive documentation is currently in draft and will be made available.

Publishing

The "Publishing" dimension includes the ability to publish as well as take-down (or "unpublish") and the speed of both processes. Because we were not actually experimenting with the uploading and managing of content, this element was difficult to assess. Based on descriptions from service providers, the UCSD DLC and Calisphere publishing processes are almost exactly the same and appear to provide a nice balance of consultation and speed and therefore are the strongest systems in this category. The UCOP ODIR has a simple file upload process as well as a batch upload process that can include content and the associated metadata or just content. WorldCat Local's Digital Gateway Tool offers the ability to harvest content exposed via an OAI-PMH interface into WorldCat Local, but while the syncing and ingest process occur within hours, the mapping to the MARC elements is somewhat problematic and there is no way to remove records. OCLC's traditional batch load process can take anywhere from a day to three months, depending upon the need to have a database specialist involved in the mapping of the metadata. Incremental updates are much quicker. Finally, removing records is possible, but difficult, and is highly discouraged. The UCSD DLC also involves a metadata mapping consultation phase and quality control consultation step. For first time collection submission, this entire process averages about three to four weeks. Content can be taken down and requests are fulfilled in that same day. The Calisphere ingest process is essentially the same as UCSD's. If collections already conform to a METS profile that is already supported for ingest into Calisphere, then the content is pulled onto a staging server, tested and quality control checked by the contributor; if approved for publication, the content can go into production overnight. If the collection uses a new METS profile, the metadata mapping consultation phase can take several weeks to several months depending upon the availability of content owners. Content can also be removed within a day.

Discoverability

The "Discoverability" category refers to: (1) content discoverability via web search engines and (2) how well the system appears on mobile devices. In our testing only Calisphere seemed to be crawled by Google; the other three had very poor marks in this area. Only the UCOP ODIR product scored well for its functionality on a mobile device.

Conclusion and Recommendations

After assessing the four systems (WorldCat Local, Calisphere, the UCSD Digital Library Collections, and the UC Office of the President's online digital image repository), LT3B determined that no one system met all, or even a majority, of the display and discovery requirements of the UC Library Digital Collection as defined by the work of Lightning Teams #1.A and #3.A. Below we outline our key findings.

- Out of the four evaluated systems, no single one stood out as significantly better and the UCOP ODIR was the least desirable.

- Item level access control, which will be a significant requirement for the UCLDC, was not well supported by any of the four systems. The needs in this area will have to be

carefully scoped out and iterative strategies for addressing them will likely need to be applied.

- Documentation was not well addressed by the any of the evaluated systems, but will be a critical piece of this new service in order to encourage widespread adoption.

- The UCSD DLC and Calisphere did a good job with attribution and with branding at the system level. Because attribution and branding are both so important yet different, basic requirements for each at different levels (system, campus, department, collection, funder, etc.) will have to be clearly defined in order to ensure that they can be met.

- From a public services perspective, search and search results functionality are key differentiators. The UCSD DLC performed very well in both of these categories and WorldCat Local was very strong in the search results category.

- Discoverability in Google and Google Scholar will be key, so Calisphere's success here can serve as an exemplar in how to achieve this.

- The two UC based systems, UCSD DLC and Calisphere, seem to offer an optimal balance of consulting and "self-serve" for the publishing functionality.

Finally, LT3B spent some significant time considering the role of WorldCat Local, which should represent all materials, both archival and traditional library materials, housed or owned by the University of California libraries. As WorldCat Local is the platform for the Melvyl system, the Lightning Team believes that archival items should be represented in this system, no matter what system is used for the UCLDC, which is in keeping with the July 2011 SOPAG *University of California Libraries Discovery Systems and Services: Principles and Goals* statement. Leveraging WorldCat Local in this way would likely entail the use of a more robust system specifically designed for record management and item display, and importing those records into Melvyl (WorldCat Local). We believe customization will be required of any system that is used for UCLDC in order to have materials discoverable in Melvyl.

Appendix A: Evaluation Heuristic

Color Code
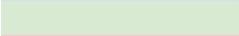
	System Status/Error handling
	Design principles
	Search
	Object Tools
	Discoverability
	Search Results
	Attribution
	Object View
	System Documentation
	Publishing
	Access Control

Heuristic

General Heuristics	
Heuristic	**Standard**
Match between system and the real world	The system should speak the users' language, with words, phrases and concepts familiar to the user, rather than system-oriented terms. Follow real-world conventions, making information appear in a natural and logical order.
User control and freedom	Users often choose system functions by mistake and will need a clearly marked "emergency exit" to leave the unwanted state without having to go through an extended dialogue. Support undo and redo.
Consistency and standards	Users should not have to wonder whether different words, situations, or actions mean the same thing. Follow platform conventions.
Error prevention	Even better than good error messages is a careful design which prevents a problem from occurring in the first place. Either eliminate error-prone conditions or check for them and present users with a confirmation option before they commit to the action.

Heuristic	Standard
Recognition rather than recall	Minimize the user's memory load by making objects, actions, and options visible. The user should not have to remember information from one part of the dialogue to another. Instructions for use of the system should be visible or easily retrievable whenever appropriate.
Flexibility and efficiency of use	Accelerators -- unseen by the novice user -- may often speed up the interaction for the expert user such that the system can cater to both inexperienced and experienced users. Allow users to tailor frequent actions.
Aesthetic and minimalist design	Dialogues should not contain information which is irrelevant or rarely needed. Every extra unit of information in a dialogue competes with the relevant units of information and diminishes their relative visibility.
Help users recognize, diagnose, and recover from errors	Error messages should be expressed in plain language (no codes), precisely indicate the problem, and constructively suggest a solution.
Help and documentation	Even though it is better if the system can be used without documentation, it may be necessary to provide help and documentation. Any such information should be easy to search, focused on the user's task, list concrete steps to be carried out, and not be too large.
LT1A Requirements	
Heuristic	**Standard**
Search	
Basic search:	Every page should include a single text box for simple keyword searches that may include single or multiple search terms. When a keyword search is submitted, the following fields will be searched: title, subject, description, contributor, date, format, rights (LT3B thinks that format and rights should be a facet, and not part of a keyword search).

Advanced search:	All metadata fields exposed in the search results display should be available to be searched independently or in combination from an advanced search page. The exposed metadata fields will include all available fields in a given metadata schema.
Scope:	By default searches should be conducted across all collections with the option of limiting to a specific collection.
Spelling correction:	Search term spelling correction should be provided.
RSS:	Users should have ability to subscribe to RSS feeds in lieu of stored queries.
Multilingual search:	Search should accommodate multiple languages. Unicode support. (NOTE: LT3B team felt it was difficult to test this thoroughly).
Search engines:	Content should be optimized for and discoverable via search engines.
Mobile devices:	Content should be discoverable and displayable via mobile devices.
Search Results	
Item level information:	Each item in a result set should be accompanied by the following primary metadata: title, subject, description, contributor, date, format, rights (NOTE LT3B team believes this information is too detailed for a results list.)
Facets:	Facets should serve to refine or expand search results and should be made available for the following primary metadata: title, subject, description, contributor, date, format, rights NOTE: THIS IS A SOMEWHAT FLAWED LIST; SHOULD WE REVISE?
Sorting:	Default sorting of search results should be by relevance; users should have option to sort by additional sorting criteria: collection, author, title, date
Items per page:	Users should be provided option to display pre-set items per page (e.g., 10, 15, 20)
Pagination:	Result sets should be paginated with users able to navigate back / forth through pages of results.
Visibility of system status	The system should always keep users informed about what is going on, through appropriate feedback within reasonable time.

Object View	
Context: Campus	Objects should be displayed in a view that provides UC Libraries Digital Collection, UC campus.
Context: Collections	Objects should be displayed in a view that provides collection-branding.
PDF display:	PDFs should be displayed within the branded area and not in a separate Adobe Acrobat Reader window.
Thumbnails:	Images should be represented by thumbnails that when clicked open to a full view of the image within an image viewer.
Image viewer:	Images should be easily optimized for viewing, including zoom in/out, rotate, mirror/flip, fit image, and full size. (NOTE: LT3B notest that not all of these features may be essential.)
Search terms:	Search terms should be highlighted in the object view, regardless of format.
"More like this":	Items similar or related to the displayed object should be linked to from the object view page allowed users to view "more like this".
Object level citation:	All objects should have an object-level citation. A "Citation" link or icon should be available that when clicked will display citation information. NOTE: LT3B believes that citations should be exportable, ideally into different known citation styles.
Download:	A link or icon should be available on all object views that when clicked will allow the user to save the selected content.
Print:	A link or icon should be available on all object views that when clicked will allow the user to print the selected content.
Purchase:	A link or icon should be available on all object views that when clicked will provide users with the contributing institution's contact information.
Item / book bag:	Users should be able to click a link associated with each object to add a citation and actionable URL to a session-based item / book bag page. NOTE: LT3B believes that the items included in a list/book bag should have as complete a citation as possible, because researchers will need this for referencing items.

Email item / book bag:	Users should be able to email to themselves or others the objects saved to a session-based item / book bag page. NOTE: LT3B believes that emailed lists should be in citation format.
Social media:	A link or icon should be available that when clicked will allow the user to send objects to social media targets (e.g., Facebook, Delicious, Pinterest)
Attribution	
UC Libraries:	The UC Libraries attribution/brand should always be present; all pages should have a branding area at the top that will include at minimum the UC Libraries brand.
UC campus:	UC campus attribution/branding should be present on all pages associated with that campus.
Contributing institution:	Objects contributed by or associated with a given entity will be identified on the object level page in the area containing associated primary metadata.
Feedback / Communication / Inquiries	
Help / feedback:	A link or icon should be available from all pages that when clicked provides a feedback form for submitting comments and questions to the UC Libraries Digital Collection staff.
Contributor / Collection Information	
Contributing institutions:	A full alphabetical list of contributing institutions should be made available, with each entry linked to a customized landing page including full contact information. The right to perform administrative activities relative to the landing page (e.g., institution contact information) should be granted to the contributing institution.
Collection description:	A document describing the collections included in the UCL Digital Collection should be available on the site.
User guides:	A document describing how to use the features the UCL Digital Collection should be available on the site.

Contributor guide:	A document providing guidance for how to contribute to the UCL Digital Collection should be available on the site.
Technical documentation:	A high level description of the components driving the UCL Digital Collection should be available on the site.
Publication and Access Control	
Publish and Unpublish	Allow for publish and unpublish of a digital object; unpublished digital objects would only be available for viewing to curators and staff (catalogers, etc.) using the system to create and manage objects before making them publicly available.
Publishing speed	Publishing of digital objects with a quick turnaround time for availability to end users (e.g., semi-immediate or <24 hours), to be responsive for faculty requests for objects, users with scan-on-demand requests, etc.
Fine-grained access control	Control the degree of user access to a published digital object, based on the access level designated in the metadata record for the object.
Modification of access control	Allow for change to access controls (and resulting publication status) for digital objects in real time, in response to a copyright complaint or when an embargo ends.
Display levels defined by access levels	Limit what is shown to end users at different access levels; for example, show only the metadata record for a given digital object -- but not the content file(s).
Attribution based access	Ability for end users to discover a specified repository's digital objects -- e.g., a browse or limit by (UCB, UCSF, UCLA, etc.) repository – for ease of pointing users to local items.
Metadata display	Published digital objects to display full metadata records, so users have complete descriptive, rights, etc. information for an informed use of the resource.
Collection information display	Published digital objects to indicate what collection(s) they are associated with.
Institution information display	Published digital objects clearly branded with the institution name, so it's clear to end users who/where to contact for more information, which institution manages the content, etc.; URL branding is less important.

Thematic display	(2) Ability to associate campus digital objects with thematic or topically-clustered curated collections in the UC Libraries Digital Collection access layer.
Embargoes	(2) A mechanism that monitors embargoed digital objects; when embargo ends, the curator is notified for further action (e.g. publish, extend embargo)
ILL (and similar support)	(3) Access control on an item for a short time for things such as ILL.
Streaming Media support	
Audio	How is it supported? What is the experience like? If not, are there indications of plans to support? can you limit to this general format? Is there appropriate metadata about the specific formats?
Video	How is it supported? If so, what is the experience like? If not, are there indications of plans to support?can you limit to this general format? Is there appropriate metadata about the specific formats?
Additional Comments	
Number of clicks to an object	

Appendix B: Summary of Findings for Each Service

WorldCat Local

Design principles

WorldCat Local adequately meets the heuristics in this area. The terminology used is consistent and in keeping with users' language. The collapsible sections keep the interface uncluttered while still giving the user the option to see richer metadata. Missing features include the ability to reliably save or retain certain search aspects such as scope or databases that are being searched.

Search

WCL inconsistently fulfilled the heuristics in this area. The detailed record page lacks a clear 'more like this' feature. In the advanced search page, the list of databases obscures the search fields and several useful indices are not offered (depending on set of databases that are selected to search). The basic search functionality adequately meets the heuristic, except that search terms are never highlighted. However, WCL performed favorably in offering multilingual search and display capabilities.

Search Results

Overall, WCL's search result pages adequately match the heuristics. The navigation and sorting of the results are favorable for display. However, users are not offered the ability to customize the number of results per page and there is no clear and easy way to display campus digital objects with thematic or topically-clustered curated collections.

Object View

WCL does not offer an object view within its own interface, as it is meant solely as a discovery tool. However, the metadata display on the full record does show all ingested metadata.

Object Tools

WCL does not offer tools for an object itself, only tools for the metadata record associated with the object. For these, robust tools for working with single records were provided, including good citation and printing options, as well as social media sharing options. However, some features are only accessible after creating an OCLC account, specifically saving items and sharing multiple items at once. RSS feeds are only available for user-created 'lists'; they are not available for saved queries.

Attribution

WCL does not meet many of the heuristics for attribution. From the record display, the contributing institution may be missing or displayed in non-related fields, such as 'author' or 'publisher'. The field where such attribution is displayed is inconsistent, differing from record to record. However, the branding of the site as a whole, as part of the UC libraries, is very good.

Access Control

As WCL is meant only for discovery purposes and does not house objects themselves, no access controls are available for objects, nor are there controls for metadata records. WCL does not

offer an 'embargo' for record display, and has limited control for display based on access levels for a given category of user or based on attribution. For instance, an access link may be merely moved to a different section of the record, but was still ultimately available to the user even if he or she would not be able to get to the associated item. The ability to limit to a particular library was tied to each campus library's individual instance (e.g. one cannot limit to UCLA on the UCR instance). Searching within a specific collection is not supported.

System Status/Error handling

WorldCat Local adequately meets heuristics in this area. The team identified several aspects that could be improved, including documentation (user guides), re-implementation of the spelling corrections, and error messaging. WCL performed well in providing links to acquire reference assistance (through email and chat) and in notifying users of components that require a WCL account or institutional authorization.

System Documentation

The documentation linked from the WCL pages does not provide the information described in the heuristics.

Publishing

WCL offers two paths for inputting metadata: Batch load processing and the Digital Collections Gateway (DCG). Both processes require an import to the WCL database from a local system/repository. The DCG process more favorably fulfills the heuristics, while the Batchload process does not adequately fulfill the heuristic.

The Batchload requires MARC21 records for import. The timeline for import varies based on the number of libraries (registered OCLC symbols attached to records) in the load as well as the ability of the import files to meet proper MARC21 standards. The process can take from 24 hours to 90 days for the first load, subsequent loads likely taking from 24-48 hours. Records are input into the cooperative WorldCat cataloging database, where any institution with a full cataloging subscription could modify the record.

The DCG process requires an OAI-PMH compliant repository that can output metadata in Dublin Core. The collection holder should also have intimate knowledge of the metadata in their repository and its structure, semantics, and context. The preparation timeline is not dependant on OCLC. The DCG provides a WorldCat display preview, which the DCG uploader can use, altering the OAI-PMH output until the upload meets the user's expectations. Once the output format has been determined, upload times depend on number of items in the upload: 1,000 records/updates taking a few minutes and 100,000 records/updates 24 hours. Users can login to the DCG and deactivate a collection and/or delete records from WorldCat; however, the DCG update process may overwrite these changes the next time the DCG synchronizes with the local repository.

Discoverability

WCL lacks many aspects of discoverability. None of the WCL instances are indexed in search engines - OCLC favors the www.worldcat.org instance for indexing in search engines. The mobile version, while serviceable, does not autodirect depending on device type, rather the mobile version has to be accessed from a specialized URL.

UCSD Digital Library Collections

Design principles

Overall, the design of the Digital Library Collection is clean, minimal, flexible, and straightforward though there are still areas in need of improvement. In terms of terminology, familiar language (topic, collection, search) and potentially unfamiliar language (metadata, finding aid, open access) are both used, but labeling tends to be consistent, such as the use of "Go" at both Basic and Advanced search. Icons for various actions such as printing and downloading are available and users can determine their purposes easily by mousing over the icons. Most objects, actions, options, and instructions are visible in order to reduce what a user must remember. For instance, terms searched are listed at the top of the page. Pathways to view images are easy to navigate but can range from two to four clicks in order to obtain the download. Users also have some flexibility in searching with Basic and Advanced options as well as the ability to search within results and to use facets; however Boolean support is not consistent between Basic and Advanced search options. In addition, users cannot choose to return to search in a specific collection at a later date. Finally, returning to Basic or Advanced searches may not be obvious, especially from object level views or topic browse pages.

Search

The search capabilities in the UCSD DLC range from being met to being unavailable. Most pages present the user with a single text box, though this box is not available on all pages e.g. the image details page. Usually search options are clearly visible, such as the Advanced Search option, but other search capabilities may be unclear. For example, the "Search Within Results" box has an option to start a New Search but this is rather hidden in a drop down menu. Default searches are across all collections and users have the option of limiting to specific collections. Fields such as title, subject, description, contributor, date, format, and rights are being searched as well as other fields, though sometimes it is difficult to tell why an item is retrieved and this difficulty is exacerbated by the lack of search terms being highlighted in results. The Advanced Search includes most metadata fields and a user can choose to search in specific fields such as topic, collection, or format, though the granularity of searching for *certain* terms in a specific field and other terms in a different field is not available. There is a minimal attempt to show similar or related items from the object view page with thumbnails listed at the right, yet this offer of related items appears to be limited to items within the collection rather than pulling from other related items that may be in other collections within the UCSD DLC. LT3B found it difficult to determine the complete multilingual search capabilities of this tool, because no explicit information was available about the system's support for searches in other languages. Upon request, UCSD DLC staff were able to demonstrate the system's full support for Unicode.

Search Results

The UCSD DLC meets some of the criteria related to how search results should be displayed, sorted, and viewed. Though the brief results display does not show all metadata or include all facets outlined in the criteria, LT3B believes that the criteria may be too detailed. Brief metadata is available on the search results page along with facets for Topic, Collection/Library, and Format. The default sort is relevance. Sorting by date or title is also available, but not by collection or author. Users will view 20 items per search results page and do not have the option to choose a different number to display. They can move through pages of results using "Next" or

"Previous" links but do not have the option to select "First" or "Last." At the search results page, users can refine with the "By Collection/Library" facet or at an object view can view objects from the same collection. While some collections may be curated by topic, the emphasis seems to be on grouping collections based on the contributing library/archive rather than the topic content.

Object View

Images are usually represented by thumbnails unless there are restrictions (e.g. sensitive content). On the object view page, the larger thumbnail may not be available if the image is too large. When images are clicked, they normally open in a viewer and users can zoom in on them or open in a new window for full size. Other options such as rotating, flipping, and fitting the image are not available; these are features which LT3B does not consider essential even though they were listed in the original criteria from LT1A and LT3A. Because no audio or video files were available in the system, it was not clear if this functionality is available. Users do have access to full metadata in order to obtain descriptive and rights information.

Object Tools

The UCSD Digital Library Collection offers a limited set of basic object tools. Users can download content (e.g. a picture in jpeg format) and can open a printable display option. Though the system allows users to bookmark and share objects with social media targets, there is no RSS feed, no citation export or citation builder, no session based book-bag/folder, or option to email results. Contact information for the contributing institution is available but is somewhat hidden in the full metadata.

Attribution

The system allows for branding, though not to the level outlined in the evaluation criteria. Objects are attributed to UC San Diego Library and UCSD branding is visible on all pages except on items such as PDF downloads. Ongoing visibility of branding may also vary based on a user's setting for how PDFs are displayed. For instance, PDFs opened in a separate window without branding while objects for printing also opened in a separate window but retained branding. Users can determine from what collection objects are obtained, though this may not initially be transparent. For example, this information is available to users on the right hand side column of the object view page or in the detailed metadata for the object. In the detailed metadata the contributing institution is found under Collection. However, clicking on that URL in the Collection field will take the users to objects within that Collection in the DLC. Users are better served to find out more about the contributing institution and its contact information by clicking on the link available in the Constraints section. The system may be able to support more robust branding and access to institutional collection information than what was uncovered in this evaluation. A list of all contributing institutions and their collections is located under the DLC About page though this may not be obvious to most users who want an overview of the available content.

Access Control

LT3B believes that the system limits access to some published digital objects to UCSD IP ranges. However, it is unknown what level of granularity can be achieved in setting up access permissions for published digital options and how quickly or easily access controls can be

implemented. Users can limit to specific collections (Advanced) or browse them (https://libraries.ucsd.edu/digital/#browseByCollection). However, at the browse page it is much easier to determine the affiliation of each collection than it is at the Advanced Search page.

System Status/Error Handling

The UCSD DLC ranges in how well it provides users with appropriate functionality and messaging to support their searches and reduce errors. Users may be notified of difficulties and may or may not be given information to troubleshoot or avoid an issue such as image rendering. For odd search results, reading documentation was required in order to discover how the search was being parsed. No alternative search suggestions were given. If users enter incorrectly spelled terms, they are not given alternatives. Information about processing is more likely to be obtained through the browser (e.g. that a PDF download is taking place) rather than in the system. However, the system usually worked quickly enough that processing information was not necessary. Documentation for improving searches is easy to locate, FAQs are clearly written and a feedback link is available. An additional Help menu is available though not it is not restricted to the UCSD DLC.

System Documentation

The UCSD Digital Library Collections system does not link to any documentation informing users how they might contribute to the collection. The closest information is an FAQ which outlines how content has been selected for the collection. The FAQ also includes some basic information about the technical architecture of the system.

Publishing

To publish information, the content files must first be ingested into the system. This process is quick once items are verified and placed in a staging area. After ingest there is an object build phase where the source metadata is mapped to the system's standard metadata format in a batch. This second process can take 3-4 weeks total. Content can be removed after publishing on the day of request though reindexing is required in order to ensure that the content is no longer discoverable in a search. Reindexing may take a few hours.

Discoverability

There is no evidence that the objects are indexed and made discoverable via search engines such as Google. Though the system can be accessed on mobile devices, it is not mobile optimized and therefore is difficult to navigate in that environment.

Calisphere

Design principles

Overall Calisphere performs very well in this category. The system language seems very clear and logical for users. Use of language for functions was very consistent throughout the site with one minor observation--the text search results for some keywords show snippets of content with the keyword highlighted, but the results for some other keywords don't. Overall, objects, actions and options were visible and easy to recognize. Calisphere's site design focuses on showing relevant information and is fairly clean. The number of clicks to an object ranged from good to mediocre to bad. Only one click is required from a search, two clicks using the "browse a-z" feature, and three clicks via the themed collections.

Search

Calisphere meets the criteria for a simple search box, allowing both simple and multiple keyword term searches. The remaining four criteria were either not met at all or not met well. No advanced search is available, nor is the ability to limit searches to specific collections. Multilingual search is not consistently supported. Search term highlighting doesn't exist for initial results screen of image thumbnails but is evident for text and websites.

Search Results

Criteria for displaying, sorting and refining or expanding search results are generally not well met. However other features are quite good, including the ability to view themed or topic-centered sets and the availability to display preset options of 25, 50, 100 and 200 results. Overall result sets from both searching and browsing are easy to navigate, though themed collections are sometimes not as clearly navigable.

For keyword searches, results default to an initial brief display with a thumbnail and title for images. Additional metadata is only available with an additional click to the item level. After such a keyword search, facets limiting to only two options are available: "texts" or "websites." Search results for 'texts' option contain a title and highlighted terms, but it's not obvious in all cases where some of this text comes from, as it appears that not all metadata is displayed with the item level results. Website result sets contain a title and description, but no complete metadata. The criteria for default sorting are not given and no additional sorting options appear to be available.

Object View

Calisphere performs well in this category, as images are represented by thumbnails that when clicked will open to a full view of the image within an image viewer. The system has the capability to allow zooming in and out and rotating an image within the image viewer. Most objects are displayed with the metadata, including rights, though this is inconsistently available across the site, as it only appears when supplied by contributors. Audio and video objects are not yet supported, however Calisphere staff reported to LT3B that they are in the midst of a pilot project for A/V materials.

Object Tools

Overall, Calisphere did not perform well in this category. The following features are not available: RSS feeds; links to citations; links to download; a book bag and a means for purchasing items (which is handled directly by contributors on their own sites). On the positive side, the system does clearly provide links to printable content and includes links to institution information.

Attribution

The Calisphere logo and University of California attribution consistently appear on all pages. Each object's associated primary metadata displays that object's attribution. Displaying objects within a campus level view is not available at this time. All branding and attribution is lost when either images or PDF's are magnified. An alphabetized list of contributing institutions exists from the 'about' page, and during the writing of this final report, Calisphere released a "Contributor Showcase," which includes thumbnails of associated content, a link to the institution and contact information. The Contributing Institution list links to either all images

from all collections from the Institution, or the Institution's site. Brief overviews for some collections (Themed Collections, California Cultures, etc.) are included, but no central document exists that outlines all available collections. For some objects, the only way to get a collection overview is to find an object and click on the hyperlink within the metadata linking out to the OAC collection information.

Access Control

Calisphere does not have any access controls in place (all of the content is publicly available), but the framework on which it is built (XTF), includes support for access restrictions so this could be implemented.

System Status/Error Handling

Collection documentation and the ease of redoing a search are well supported in Calisphere, but other elements in this category of the heuristic, such as error prevention, spelling correction and user help did not score very well. It is easy to re-enter a search from a results page, and when a user is on a specific item, there is a clear "back" button, as well as the ability to search from a display screen. The slideshow feature is easy to close and appears as a smaller box above the search results, making it obvious that it is in a new window. An exception to this level of indication occurs with images and text. After zooming in on an image, the user does not have any navigation options and must use the browser back button to leave. From the item level page for text, the user can get out by starting a new search, but not by going back to the search results. Error prevention does not appear to be available. If a user enters search terms and doesn't find results, an error message is clearly indicated, but it doesn't give any suggestion for a better search. There is no indicator of search processing, however system response is fast and therefore not critical.

Help, documentation and links for user feedback are not always clear. Tips and some information are on each screen and always in the same location, but finding an answer to a specific question, such as "Can I download an image from this site?" doesn't seem possible, beyond sending a message under the "Contact Us" link. There is nothing labeled "help," only an "about" link which does have search tips and other information. A consistent link to a feedback form is available on most pages via a "contact us" link, except when magnifying an object. The documentation does a good job describing how to use the collections as primary sources, and additional information about each collection is also provided.

System Documentation

At the time of evaluation, Calisphere did not provide documentation describing how to contribute, however that information has since been made available on the newly provided "Browse by institution" page. There is no technical documentation describing the components driving the system.

Publishing

Calisphere has a robust ingest process that begins with consultation for first-time contributors to ensure mapping from their METS encoded metadata to the display. If the METS profile is already supported, or if the content is from an existing contributor, content can be ingested in as quickly as 24 hours, as newly submitted content is indexed nightly and appears the next day. With new contributors, content is first ingested to a development space for QA, then objects are

resubmitted to production. Content that uses a METS profile new to Calisphere typically requires several weeks to a few months for the entire process. If a problem exists, objects can be removed within a day.

Discoverability

Discoverability is an area of strength for Calisphere, as items are easily discoverable in Google. Terms searched in Google resulted in links to Calisphere located on the first page of hits. Content retrieved is functional on mobile devices, but the display is not optimal. In some cases text and icons overlap other text and navigation. Maps are also not easy to navigate. However, viewing images for a larger view works very well and it's easy to control zooming in and out of the image.

UC Office of the President's Online Digital Image Repository (UCOP ODIR)

Design Principles

While the UCOP ODIR interface design is appealing and simple, it was considered problematic in other areas in this category and overall, the system was rated as mediocre for this category. The major drawback is inconsistent labeling of various features and facilities. For example, the object groupings are given three names at different locations: Folders, Album, and Gallery. The advanced search is called Power Search, but the same option is offered as Refine Search on the search results page. Some terms were identified as system or library-oriented, which includes "lightbox" and "assets." LT3B has concerns that such language issues could seriously affect the system's usability. Instruction for use of the system is available, but not very visible. Users have to log into the website, and look for the product's user guide. There appears to be no obvious support for expert or experienced users. Even with an account, users are not allowed to set up or retain preferred actions.

Search

Search capabilities turned out to be one of the weakest categories for the UCOP ODIR. The system has advanced search features, including the Power Search window and a pull-down menu to choose unique fields for search from. However, they were rated as only mediocre, partly because of their confusing layout and inconsistent labeling, but mainly because of their insufficient utility. A test search with selected fields from the pull-down menu did not return results as end users would have expected. It can be assumed that this is due to the sparse metadata provided at present. Scope of search was not rated highly, either. While default searches appear to be performed across all collections, no option is provided to limit the initial search to a specific collection. The closest available option is narrowing the search results by a handful of elements, such as date and image size. Additionally, the UCOP ODIR lacks some facilities that are essential for the system usability. A search box is not present on all pages, search terms are not highlighted in the object view, and no suggestions are provided for similar or related items. LT3B has confirmed that the product will implement Unicode by the UTF-8 encoding, which will allow foreign script metadata application and searching.

Search Results

UCOP ODIR met only two out of the six criteria in this category. Strong points were given to the system's ability to change the number of items displayed on a page, and the easy navigation between the result pages. On the other hand, weak areas were identified in the system's sorting

options, support for facets and thematic/topical collections, and information on the item level. UCOP ODIR provides a range of sorting options, but does not include relevancy ranking, which is one of the evaluation criteria. Instead, support for hierarchical taxonomies will be added to the underlying WebDamDB product in the future. If this is implemented in the UCOP ODIR, it could serve the purpose of facets but only partially, because the taxonomy does not allow grouping results by different characteristics like facets. Thematic/topical collections are not available, either. While the Album (folders) browsing feature somewhat resembles the thematic collections, it does not provide the required organizing ability. Thumbnail and file name are the only item level information that is displayed in the search results. Some users might find this too limited.

Object View

Overall, the UCOP ODIR provides relatively mediocre support for viewing objects. Thumbnails in the search results open to an object level page which includes a larger size image with a UC watermark. Functionality with these images is quite limited--there is no full view, or support for rotation and zooming. To access most images in full size, users have to download them by signing into an account (these permissions can be set on a folder by folder basis). Some capabilities had to be evaluated based on the WebDamDB documentation, as they are not currently implemented in the UC version of the system. For instance, the WebDamDB product has support for streaming media (audio and video), even though those formats are not part of the current UC repository. WebDamDB also offers options to enable and display each metadata fields on the object view page. There are no limits on which and how many fields to display. Metadata records in the UC instance are limited and appear to be inconsistent. It could not be determined whether or how the WebDamDB's metadata options are currently applied in the UCOP ODIR.

Object Tools

The level of object tools in the UCOP ODIR's is mediocre. Objects are downloadable in a quite simple way, by clicking on the icon next to the image, and for almost all content in the system, a user must login to have this option available. The Lightbox feature provides options that are typical of the session-based item bag, including saving and emailing objects and accompanying metadata records. The feature also allows system implementers to add a citation field in order to provide a single fully formed citation to end users. Such a citation could be dynamically generated to fit multiple, specific citation styles. Contributing institution's contact information is not provided. There is no direct link or icon to display citation information or print object views. Users can use the Lightbox's printing feature to print the contact sheet, but not the image itself. According to WebDamDB's documentation, RSS feeds and links to social media are supported in some way, however LT3B could not locate information to identify the system's full capabilities in this area and neither of these features is currently available in the UCOP ODIR.

System Status/Error Handling

The UCOP ODIR has only mediocre capabilities in terms of error prevention and handling. The system received a positive evaluation in its ability to supply a clear "no results" message, and the relative ease of starting a new search in spite of the confusing layout of the search features. The fact that the system provides no system status indicator was not taken as too problematic, because of the fast processing at the time of evaluation. It could however cause difficulties if the

processing becomes slow and starts to frustrate users. Navigation commands such as back, undo and redo are not supported. No spelling correction or search error solutions are provided, either. Help documentation is available, but it was not evaluated to be useful. The link to the help page takes users to the general WebDamDB product site, which must be already confusing to users. In addition, users need to create and sign into an account in order to access the contents of this document. The user guide is somewhat buried within administrator-oriented information, and is not very easy to find.

System Documentation

The UCOP ODIR did not meet any of the criteria in this category. No guide for contributors or technical documentation was located on the system site. Admin guides are available for account holders in the WebDamDB product site, but they do not offer the detailed information required by the evaluation criteria.

Attribution

The UCOP ODIR met one requirement in this category: the display of the UC Libraries brand, which is present in all pages except for the slideshow window. The system was rated as weak in its ability to present other types of attribution, for instance no obvious campus branding is provided. Instead, UC campus names appear in the Album folders and breadcrumb (where-you-are) indicator. It is not clear, though, whether these folder names indicate contributors or merely the places where the images were associated. According to documentation, the WebDamDB product only allows the primary brand to be set up on each page. Secondary or other attribution has to be arranged using other features such as folders and the indicator, as seen in the UC ODIR. Collection and contributing institution's information is not included in the majority of the metadata records. Branding display with PDF documents could not be evaluated, as the format is not part of the UC ODIR system.

Access Control

The UCOP ODIR offers strong access control capabilities. The Album (folders) feature helps users to access objects in a specific campus repository. User groups and access levels can be established and modified for viewing and downloading on a folder by folder basis. Expiration dates can also be applied on access privileges, which should be useful for managing ILL items. No monitoring system is available for embargoes. It is unclear whether the system has the ability to display only the metadata records. LT3B could not confirm that this option is available.

Publishing

Of the eleven heuristic categories, publishing was the strongest one for the UCOP ODIR. The system's publishing capabilities allow for uploading images and metadata one by one, as well as batch loading them together or separately. Contents appear in the site immediately when uploaded. Uploaded content can be deleted later, just as easily.

Discoverability

Content in the UCOP ODIR does not seem to be well-indexed in Google, as test searches via Google using keywords did retrieve UC ODIR resources, but terms from other fields, such as the description field, did not retrieve any. By contrast, the system worked well on iPhone, iPad, and Droid platforms. No problems were found in browsing and navigating the site.