

Developing a Library Content Services Portal

» Meeting a technology initiative in a new strategic plan spurred the development of improved LMLO workflows.



BY SEAN CROWE AND JAMES VAN MIL

Soon after the 2014 arrival of Dean and University Librarian, Xuemao Wang, the University of Cincinnati (UC) Libraries drafted a strategic plan. The process was guided by a steering committee consisting of several library faculty and staff members, as well as Anton Harfmann, Associate Dean for Academic Technology and Facilities at the UC College of Design, Architecture, Art, and Planning. The effort was led by Dean Wang, with consultation from Gary Strong, University Librarian Emeritus from UCLA.

The plan roughly consists of four pillars: Digital Technologies and Innovation, People, Space, and Data to Information to Knowledge.

In harmony with this emerging plan, we worked together to develop a technology initiative to automate common, resource-intensive workflows into a web portal for internal operations. The portal is targeted primarily to library acquisitions and collection development support.

Overseen by the Content Services Division (formerly Library Technical Services), the portal is named Tricera-shopper in honor of a sculpture titled *Triceracopter: The Hope for the Obsolescence of War*, by late Cincinnati artist and UC faculty member, Patricia Re-

nick. Triceracopter is on permanent display at the UC's Langsam Library.

The Tricera-shopper portal currently comprises two active web services: lost, missing, long-overdue reports (LMLO); and a spreadsheet-to-MARC invoice conversion tool. Ongoing development should include a serials renewal review tool, an e-book cover-browse API, and collection statistics module.

The development of the software components for interfacing with our Innovative, Sierra ILS; and the lost, missing, long-overdue report index took place over two months. The technology initiative to build this LMLO index and selector portal aligned directly with the collection development objective in the new strategic plan:

"Redefine collection development and management to create opportunities for innovative, transformational and responsive approaches to collection building."

(*UC Libraries: Transforming, Data > Information > Knowledge, Objective 4*).

WORKFLOW LOGJAM

The University of Cincinnati Libraries had a long-established manual workflow for the review and replacement of lost, missing, and long-overdue materials. As part of the workflow, Library Technical Services staff

created reports of lost materials, which were manually compiled and organized by subject into spreadsheets for distribution to subject-selectors for review.

The process to build and compile the reports required many hours of staff time and, because of the time-intensive nature of the workflow, reports were scheduled annually. Over time, because of the manual nature of the reports, unreviewed LMLO materials built up in the system and resulted in large backlogs for review and potential replacement. Large spreadsheets could prove intimidating to selector librarians and sometimes ranked low in priority alongside other collection development duties.

Subject specialist librarians, who oversee funds organized by discipline, conduct collection development at UC Libraries. These Selector librarians make initial purchase as well as replacement decisions. Staff members in Acquisitions/Technical services have conducted the LMLO workflow to support those replacement decisions. Formerly, staff used the List Creation tool built-into Innovative Inc.'s Millennium, and later Sierra ILS to generate lists of lost and missing materials.

After exporting the data into spreadsheets, they would divide and distribute reports to selectors by discipline. Selectors review the spreadsheets and make purchase

requests, through regular acquisitions channels, for materials they wish to replace. As part of the former workflow, ISBNs were extracted from the report spreadsheets and batch searched in the GOBI interface for Yankee Book Publishers, a primary domestic book vendor for UC Libraries.

The figures from the recent (and final) LMLO manual report, run in the spring of 2014, showed a process with a notably low return for significant staff commitment and illustrate why this workflow was ripe for automation. The 19 subject selector librarians spent at least 40 hours of staff time to generate reports, reviewed 2,100 items, and recommended 80 replacement purchases.

WORKFLOW REDESIGN

When considering solutions for this workflow, we preferred options to automate as much of the report compilation as possible while also building a user-friendly interface to allow for passive review of titles, with built-in search and faceting features.

Another significant ongoing strategic initiative of the UC Libraries is to build a next generation institutional repository. Based on Project Hydra, our repository, *Scholar@UC* is currently in the early-adopter pilot phase. The user interface for the *Scholar@UC repository* is built with Ruby on Rails, a web framework of the Ruby scripting language.

The development of the Tricera-shopper selector portal was an opportunity to extend our use of Ruby on Rails outside of the repository project and build software development skills within the Content Services department through a project focused on workflows within the library.

EMBRACING CHANGE

With an upgrade from Innovative Inc.'s Millennium to Sierra ILS in April 2013, UC Libraries staff gained access to a read-only PostgreSQL database backend to the ILS, SierraDNA. Access to this database allowed

EXHIBIT 1

```
SELECT "item_view".* FROM "item_view" INNER JOIN "item_record" ON "item_view"."id" = "item_record"."record_id" INNER JOIN "bib_record_item_record_link" ON "item_record"."record_id" = "bib_record_item_record_link"."item_record_id" INNER JOIN "bib_record" ON "bib_record_item_record_link"."bib_record_id" = "bib_record"."record_id" WHERE "bib_record"."id" = $1 ORDER BY "item_view"."id" ASC LIMIT 1 [{"id", 420907795010}]
```

EXHIBIT 2

Item number	Title	Status	Location	Call number	Barcode	Last checkout
18077658a	The elementary school sciences program, Level F, Teacher's gu...	p	uarh	LB1585 .B47 1976	404-312826100	
18077655a	The elementary school sciences program, Level E, Teacher's gu...	p	uarh	LB1585 .B46 1976	404-312826548	
18077653a	The elementary school sciences program, Level D, Teacher's gu...	p	uarh	LB1585 .B45 1976	404-312826092	
18077578a	Science	p	uarh	Q162 .M29	404-312826555	
18077332a	Tekmëria	p	ucln	cl-gDE1 .T45	404-312871270	
18077315a	Algebra 2 and trigonometry	p	uarh	QA152.2 .D64 H68	404-312826142	
18077315a	Elementary algebra	p	uarh	QA152.2 .E43 1972	404-312826761	

staff in the Content Services department knowledgeable in SQL querying to begin to reimagine workflows that depend on the gathering and analysis of library collections data. However, relying solely on raw SQL queries for reports perpetuates the problem of funneling access to increasingly important collections data through a small number of technically trained staff.

Ruby on Rails has helped to solve this problem with a stack of technologies that enable rapid development of web applications. Ruby on Rails is an open source web application development framework, written in the Ruby programming language, which emphasizes the *convention over configuration* software development paradigm. This paradigm allows a programmer to conform to well-developed software patterns to

rapidly write new functionality.

An important part of the Ruby on Rails framework is the ActiveRecord gem, which eases the work of building a database-driven application by providing a simple interface for querying databases in the same language as the application, as an alternative to embedding SQL queries within an application.

Prior to beginning work on building Tricera-shopper, we developed a Ruby on Rails-based gem called ActiveSierra, a gem that uses ActiveRecord to interface with the PostgreSQL database behind the Sierra ILS. ActiveSierra models the tables and relationships in the relatively complicated Sierra ILS database, allowing anyone with PostgreSQL authorization in Sierra to quickly and easily access data within the context of a Ruby

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on Rails application, and to interact with records from Sierra as native Ruby objects.

For example, a query to get a barcode from the first title in the database is transformed from this verbose SQL query in **Exhibit 1** into this comparatively simple ActiveRecord statement:

```
"BibView.find_by_record_num('1000002').item_views.first.barcode"
```

Development of ActiveSierra is ongoing as a separate project and provides a useful gateway to library collections data for use in other projects.

PROGRESS

The lost, missing, long-overdue index, shown in **Exhibit 2**, builds on the access to the Sierra ILS provided by the ActiveSierra gem to provide a web-based search interface where library selectors can login to browse and search lost, missing, and long-overdue items from the library catalog. The interface is populated by a batch task which searches the Sierra database, creates entries in a database managed by the web application, and indexes the objects in an instance of the Solr search engine, also managed by the web application (via the Ruby gem *Sunspot*).

The search interface currently features search by various metadata fields, as well as faceting by library locations and call numbers, to help selectors scope to items within their subject responsibilities. Additional

functionality includes email notifications for refreshed report availability and links to search for items by ISBN at external services (such as the YBP GOBI service).

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The ActiveSierra Gem and Tricera-shopper app were developed on laptops, using GitHub for version control and archiving. After a few informal reviews of the interface by Content Services team leaders, the app was finalized for a beta release. Server space was secured on the UC Libraries Digital Projects and Repositories server for the pilot phase of Tricera-shopper.

The operational details of the LMLO index were derived from departmental documentation of the manual-report process. Details such as query parameters for building the index of lost materials, process timeline information, and fields to include in the item views were all gleaned from the manual process.

A small group of selector librarians will pilot the LMLO interface in the spring of 2015. The pilot period is tentatively set for three months, with scheduled monthly reports and review. Materials are reviewed in the LMLO index and replacement is requested through established acquisitions workflows (YBP GOBI interface).

STRATEGY YIELDS RESULTS

The ActiveSierra gem, Tricera-shopper selector portal, and LMLO report index represent serious efforts to translate the spirit of the new UC Libraries strategic plan into transformative technology initiatives. Pillars of the strategic plan, such as People and Data > Information > Knowledge, give UC Libraries faculty and staff a framework to guide projects and enrich tech skillsets. ■

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RESOURCES:

<http://www.libraries.uc.edu/about/strategic-plan.html>

<https://github.com/jamesvanmil/tricerashopper>

https://github.com/uclibs/active_sierra

<https://github.com/sunspot/sunspot>

<http://www.libraries.uc.edu/about/tricera-copter-and-self-portrait.html>

<http://rubyonrails.org/>