

CORAL: Implementing an Open Source Electronic Resource Management System

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Presenters

The presenters focused on the benefits and challenges of implementing an open-source electronic resource management (ERM) system called Centralized Online Resource Acquisitions and Licensing (CORAL) at their libraries. Originally developed by the University of Notre Dame's Hesburgh Libraries, CORAL offers libraries the option to reorganize electronic resource management workflows and collect information about their electronic resources into one central place without having to commit funding for new software from the ever-shrinking library budget. CORAL currently includes four modules: Organizations, Resources, Licensing, and Usage Statistics. In addition to the challenges that are faced in any ERM system implementation, such as collecting and preparing data and training staff, issues specific to using an open-source application in an academic library were presented.

KEYWORDS Centralized Online Resource Acquisitions and Licensing (CORAL), electronic resource management, electronic resource management (ERM) system, open source, workflow

INTRODUCTION

The presenters described three libraries' experience with an open-source electronic resource management (ERM) system called Centralized Online Resource Acquisitions and Licensing (CORAL). CORAL was developed at the Hesburgh Libraries of the University of Notre Dame, and consists of four linked but independent modules: Organizations, Resources, Licensing, and Usage Statistics. CORAL was released publicly in stages, with the Licensing module released first, in the summer of 2010. A recent informal survey¹ revealed a total of twenty-three live CORAL installations. Fourteen of these sites have fully implemented CORAL and are using it for daily management of e-resources, while nine have populated CORAL and have not yet started using it for daily e-resource management. An additional eleven libraries are planning to implement CORAL within the next six months. The CORAL website (<http://erm.library.nd.edu/>) includes technical documentation, download instructions, a forum, and listserv information.

The three speakers represented diverse academic libraries: two were public, one private; two Association of Research Libraries (ARL) member libraries; serving small, medium, large and multiple campuses. Each has implemented CORAL in different ways, and each presenter shared the strengths and weaknesses perceived in their respective methods.

SOUTHERN ILLINOIS UNIVERSITY CARBONDALE

Southern Illinois University Carbondale (SIUC) Morris Library's materials budget was about \$5.6 million in FY2011, with 70 percent (\$4 million) spent on electronic resources. Library staff with responsibilities for electronic resources includes the Electronic Resources Librarian (ERL), three collection development librarians, one acquisition staff member, and one accounting staff member. Like many other libraries, the Morris Library over

the years used various commercial products to manage different aspects of the e-resources lifecycle: Endeavor Voyager as its integrated library system (ILS), SFX as the link resolver, Ex Libris to provide MARC records, and UStats, Ex Libris' usage statistics service. EBSCO Subscription Services, the library's serials agency, provides information about online journals. Springshare LibGuides are used to host the database A-Z list and subject guides. Other standard tools used for e-resources management include documents in various formats (Excel, PDF, Word, MS Access reports) located on shared drives and individual computer drives, individual e-mail accounts, and paper copies of licenses stored in cabinets .

Although the e-resources were absorbing more and more of the overall materials budget each year, SIUC Morris Library did not make the leap to implement an ERM system for many years. Commercial products were high-priced and had several shortcomings; sufficient staff time was not available to populate an ERM system; and librarians were discouraged by the news of other libraries' failures at implementation. However, it became clear that e-resources management needed to improve in the following areas:

- A tool for checking the status of new orders (licensing, ordering, payment, activation, etc.) was needed to eliminate potential gaps in workflow;
- With three collection development librarians and one ERL, it was necessary to have a centralized database with vendor information.
- A centralized database for licenses, allowing easy search and retrieval of licenses, was also needed.

Since Morris Library had six different positions tasked with e-resources responsibilities, the ideal tool needed to have a Web interface and an easy, intuitive design. CORAL was chosen because it was an open-source ERM system with no upfront or annual fees; it had a Web

interface; its features promised to fit local needs; and its modular infrastructure allowed a phased-in implementation which could be accomplished with limited staff time. A staff member in the library's systems department installed the modules in October, 2011. Implementation started with the Licensing module because it offered an optimal way to organize the library's licenses. In addition, it required a relatively short time to accomplish. One acquisition staff member and the ERL worked on populating the Licensing module. All paper licenses were scanned and uploaded, and all other licenses already in digital format that were saved on shared or individual drives were uploaded into CORAL. The Licensing module allows searching the licenses by vendor name, vendor alias, or product name. After loading all licenses into CORAL, librarians now can easily locate licenses, check the latest version of each license, and view all amendments and past licenses for a given vendor or product. SIUC has not yet made use of all of CORAL's licensing functions; future plans include a project to analyze licenses and enhance the SFX menu to display license terms (which CORAL calls "expressions") to staff and patrons.

As work proceeded on the Licensing module, it became clear that the next step was to attach the licenses to resources especially when multiple products were governed by a single license. New resource records were created and then attached to existing licenses. So far, SIUC has added resource records for all journals, journal packages, e-book packages, and databases that had a signed license on record. A resource record was created for each journal package, referencing the publisher and package name, not for each individual title included in the package. In its Resources module, CORAL allows the library to include general product descriptions, acquisition data, access parameters, cataloging metadata, and information about contacts and accounts. Contacts and accounts details were either added to the individual record or inherited

from the associated vendor records in the Organizations module. Desired attachments such as e-mails and title lists can also be added to the resource record.

At the time the resource record was added, vendor information was also updated in the Organizations module. CORAL's Organizations module comes pre-populated with organization names and organization name aliases. The SIUC librarians decided to keep all of this preloaded information in the Organizations module in order to make implementation easier since, for most licenses, they could attach a new license to an existing standardized organization name. The organization record only needed to be updated with contact and account information. The three modules, Licensing, Resources, and Organizations, are all connected and information included in the various modules is linked together.

In March, 2012, the ERL gave a live demonstration of CORAL to the librarians and staff tasked with e-resources responsibilities, provided unique logins for each person, and explained CORAL's workflow management functionality to them. After this event, the collection development librarians started adding new resource records for new orders, and staff began to utilize CORAL's workflow management function to document the ordering, licensing, invoice approval, payment, and activation steps. The workflow management function makes it easy to identify where a new order stands, what steps have been completed, who is responsible for the next steps, and how long it took to complete each step. Since field values and workflow steps can be easily customized with the CORAL administration tool, SIUC librarians created distinct workflow routines for resources that were paid directly to vendors, resources ordered through EBSCO, consortia acquisitions, trials, and free resources. Each workflow step is assigned to a different user or user group. When a user needs to take action on a resource, CORAL e-mails him or her a notification message with a link to the resource record.

SIUC's overall assessment of CORAL so far is positive. First and foremost, there was no need to come up with a large investment to start implementation. Installation was easy; taking only about half a day of a staff system professional's time. CORAL did fill some gaps in areas that needed organization and centralization: licenses, vendor info, and workflow management. The library continues to rely on EBSCO's subscription related information, still enters its acquisition and cataloging data in Voyager, and maintains the separate knowledgebase required for the SFX link resolver. CORAL and these systems use some of the same data but are not currently enabled to share it; this results in some duplication of data entry. However, this problem is not unique to CORAL. Unless an ILS, ERM system, and link resolver are all provided by the same vendor, redundant data entry remains an unresolved issue for commercial ERM systems as well. Collecting and entering data into CORAL is challenging because of limited staff time and no automated data loader. A shortcoming of any open-source system or tool is that there is no dedicated customer support to turn to when there are problems. The listserv, development team at Notre Dame and local systems professionals, who have little time to devote to the ERM system, are the only sources of support. SIUC's future plans include projects to establish new workflow routines for renewals, analyze license terms, and present the license expressions to patrons and staff via the SFX menu. As renewals come up and new products are licensed and acquired, staff will continue to add data to the Licensing, Organizations, and Resources modules.

TEXAS A&M UNIVERSITY

Texas A&M University (TAMU) began investigating electronic resource management systems first with Ex Libris' Verde in 2007 and then with the Colorado Alliance of Research

Libraries' Gold Rush ERM system in 2009. Following these two less than successful attempts TAMU decided to become more deliberate in selecting their next ERM system. As a result, a small group was formed to come up with a wish list of ERM system features. Once this wish list was created, the group went looking for the right ERM system. Several members of the group attended a presentation by the University of Notre Dame demonstrating CORAL at the Electronic Resources & Libraries Conference in 2010. The presentation confirmed that CORAL met many of TAMU's requirements. After further discussions with the Information Technology department and after researching and testing other ERM system products, the group decided to move forward with CORAL.

The CORAL implementation group was made up of two librarians and one staff member from TAMU's main library (Sterling C. Evans Library) and two librarians from TAMU's Medical Sciences Library. TAMU implemented CORAL as recommended by Notre Dame – one module at a time, in a specific order. First, the Organizations module was implemented followed by the Licensing module, and then finishing up with the Resources module. TAMU has not implemented the Usage Statistics module.

Before implementation began on each module, the project manager created a few test records to try to determine what data needed to be entered and the best way to do it. He also customized the module's fields as necessary. After coming up with a game plan for the module, he met with the implementation team to go through the module field by field. As the team began implementation of each module, they met roughly every two weeks to discuss any issues with the system and how to deal with problematic resources. They also communicated by e-mail as necessary.

With each module, beginning with the Organizations module, there were decisions to make. First and foremost, what data should be entered in the module? For the Organizations module, TAMU chose to enter all publishers, vendors, and consortia, and any other organizations as necessary. Records for each of the campuses in the Texas A&M University System—including their contacts, IP ranges, and full-time equivalents (FTE)—were also created to help TAMU in its role as facilitator for TAMU System shared subscriptions.

The second big decision with the Organizations module concerned the naming structure for records. TAMU did not begin the implementation with any rules and immediately ran into problems. Some organizations were entered with their full names, some with partial names, and some as acronyms. This resulted in cases of duplicate and inconsistent records. So, the decision was made early on that records needed to be entered by the organization's full name, even for organizations such as IEEE, which are more commonly known by their acronym. The acronym was then added to the record as an alias so that someone searching for either the full name or acronym would be able to find it. TAMU began implementing the Organizations module in April 2011 and finished implementation in June 2011 with over 1000 records completed.

Once the Organizations module was complete, TAMU moved on to the Licensing module. As with the Organizations module, the first big decision to be made was what data to enter. Before starting on the Licensing module, a staff member went through the file cabinets in the Electronic Resources area comparing print licenses to those that had been digitized in recent years. Those documents not available electronically were scanned so all licenses, both current and historical, could be loaded into CORAL.

As with the Organizations module, the second big decision was the naming structure. Based on the way CORAL handles licenses, TAMU chose to enter license records by the

publisher name and not by the product. In cases where different products for a publisher each have their own separate licenses, the implementation group created a separate record for each product but still named the record using the publisher's name so that all of the publisher's products and licenses could be grouped together.

The Licensing module allows specific license terms, or "expressions," to be gathered from licenses. Consequently, TAMU's third decision involved which expressions to pull from the licenses with the aim of simplifying licenses so that they would be accessible to all library personnel. Seven key expressions were chosen for extraction by the implementation group. The seven expressions selected were Authorized Users; Interlibrary loan; Course Packs; E-reserves; Termination/Cancellation; Perpetual Access; and Fair Use. As licenses were uploaded, the implementation group extracted these expressions and recorded them in CORAL.

Implementation of the Licensing module began in July 2011 and was completed roughly a month later. When rolled out, the module had over 300 records. Each of these records includes one or more license documents; TAMU now has over 700 license documents in CORAL.

The next module TAMU started implementing was the Resources module. For this module the group included individual journal subscriptions, individual e-book purchases, databases, datasets, and trials. TAMU is not adding individual titles from package subscriptions into CORAL. Instead, they have created records for the packages and are attaching the package title lists to these records. With the exception of trials, records are created only for those resources for which TAMU pays for a subscription or one-time purchase. CORAL only stores the initial cost of a resource; it is not set up to store a resource's payment history. Because of this limitation, time was not spent on adding resource cost data to CORAL and TAMU will continue

to rely on their ILS for cost data. Implementation of the Resources module began in August 2011 and as of June 2012 is roughly 95 percent complete with over 3,300 records.

TAMU had originally intended to use CORAL's Usage Statistics module but it has some major limitations. The module only accepts JR1 and JR1a COUNTER-compliant reports and does not include any functionality that would allow the system to gather these statistics autonomously. TAMU is interested in gathering usage not only for their journals but also for their e-books and databases so in the end they chose not to implement the Usage Statistics module. They have instead subscribed to a product specifically designed for gathering usage statistics.

As TAMU implemented CORAL there were a number of features they discovered about the system that they really liked as well as some areas for improvement. Prior to CORAL, information about resources was stored on various people's computers, in e-mail, in various places on the network, and in file cabinets. CORAL has allowed TAMU to gather not just links to these documents but the documents themselves and to keep them in one place that everyone can access. However, due to some of CORAL's limitations described above, they still have to use separate products for usage statistics and cost data.

CORAL uses parent/child hierarchical relationships throughout the system and it works well, especially in regard to licenses where it is easy to determine which is the current/base contract and which other license documents are related to it. However, the hierarchy could be taken further. As an example, in cases where there is a large organization with multiple contacts, the contacts are simply arranged alphabetically by first name, so there is no easy way to tell who the main contact is besides adding a note. An improvement to the functionality could include a

hierarchy for contacts so the most important contact(s) could be designated in some way that would distinguish them from the others.

Another outstanding highlight of CORAL is its flexibility. Many of the fields are customizable, especially fields with a dropdown box. However, CORAL was developed by Notre Dame to fit their needs so it does not always include fields other institutions might deem important. Functionality that would provide the ability to create custom fields as necessary would be a welcome addition to CORAL.

In the end, TAMU is pleased with CORAL so far. Though TAMU's wish list was fairly long they set out to gain three primary benefits from an ERM system. First, they wanted a central location to store documents. With a couple of exceptions described above, CORAL does this very well. Second, they wanted a way to simplify license information. By allowing expressions to be extracted from licenses, this can be done with CORAL. Third, they wanted to improve workflow. With implementation finally being completed, TAMU can now turn its attention towards this aspect of the system. Regardless of its usefulness in this area, CORAL has gone a long way towards addressing TAMU's first two needs.

Now that TAMU is completing their implementation, they are looking at other ways to put CORAL to use. There is an add-on for CORAL, the Terms Tool, which allows CORAL to be connected to a link resolver so that certain designated expressions can be displayed through the link resolver menu. TAMU plans to use this to display relevant license terms to their ILL and Reserves Departments. TAMU is also in the process of moving the library's mobile site to a different content management platform. On the new platform, CORAL will act as the back-end for the list of mobile resources. It is also anticipated that CORAL will be used in some form on the back-end of the library's A-Z list of databases in the near future. TAMU's Scholarly

Communications Department occasionally receives documents from publishers granting permission to add faculty-authored material to TAMU's institutional repository. The Scholarly Communications Department was trained to use CORAL and have begun uploading these documents into the system. Finally, before the end of the year TAMU plans to replace the Gold Rush ERM system currently used for TAMU System subscriptions with CORAL. CORAL does not include consortia functionality as some of the proprietary products do, so this will require a separate installation.

WAKE FOREST UNIVERSITY

Wake Forest University is a private university located in Winston-Salem, North Carolina. The Z. Smith Reynolds Library is the university's main campus library, serving approximately 5,000 students. Wake Forest University in general and the Reynolds library in particular, has been friendly toward open-source applications. For example, the university uses the open-source course management system Sakai, and the library recently implemented VuFind, an open-source library catalog discovery layer developed at Villanova University, for its main catalog interface.

Electronic resources are managed at the Reynolds Library by a team of four librarians and one paraprofessional staff member. Although there had been a couple of failed attempts at implementing an electronic resource management system in the past, there was no ERM system in place at Wake Forest in the years leading up to the CORAL installation. E-resources were managed instead using the usual assortment of tools: ILS, spreadsheets, e-mail archives, etc. The library also had (and continues to have) a public-facing A-Z database list driven by a locally-hosted, static XML file. The XML file is based largely on Dublin Core field tags and was originally populated with data from an earlier implementation of Endeavor's ENCompass. Each

database record in this XML file includes a database title and optional alternative titles, the publisher, database format (e.g., journal articles, reference/encyclopedia, statistics, streaming video, etc.), the URL, a product description, coverage dates, and hierarchical subject headings.

The Electronic Resources Librarian saw the previously-mentioned presentation on CORAL at the 2010 Electronic Resources & Libraries Conference in Austin, Texas. Impressed with CORAL's clear and simple interface, the modular design that would allow a gradual implementation, and the ease with which the interface could be configured for local needs, the ERL began to learn more about CORAL and to convince others at the Reynolds Library of the potential usefulness of the product.

In August 2011, the ERL and the Web Services Librarian worked together to install CORAL and map data from the existing XML file into CORAL's MySQL database. The <Publisher> field in the XML file was mapped into CORAL's Organization Name field, <Title> mapped to Resource Name, and so forth. The mapping was, of course, not perfect—for example, some Literature Online products in the XML file had the Publisher listed as “LION” rather than “Chadwyck Healey”—but overall the data transfer was successful. All publishers from the XML file were loaded into the Organizations module, and all databases from the XML file were loaded into the Resources module, with titles, descriptions, and URLs in place, and linked to the corresponding organizations. As of June 2012, the Wake Forest implementation of CORAL includes 248 resources and 137 organizations.

The Reynolds Library has taken a somewhat organic approach to populating CORAL. Rather than trying to get everything set up before using the product, the method has been to set up the large and/or heavily-used products (for example, EBSCOhost and ProQuest databases), then let the rest of the CORAL database grow over time. A few examples follow.

Resources module – There are currently only five e-journal packages entered in the Reynolds Library’s CORAL database. Four of these packages were included in the initial data load, because the source XML file included only the journal packages that the Reference Department had wanted displayed in the public A-Z list. Another journal package was added later when it underwent a platform change. Other e-journal packages will be added later, either as time permits or as the need arises for documentation or other tracking.

Organizations module – For organizations, the initial data load from the XML file included only the organization name. Most organization records therefore do not include any contact information. Soon after installation, the ERL entered contact names, e-mail addresses, and phone numbers for larger or frequently-contacted vendors. Now, whenever the librarians have to look up a contact that is not yet in CORAL, we take a moment to add it so it will be there the next time.

Licensing – To date there has been no systematic effort at Wake Forest to add previous license agreements to CORAL. The library already has dedicated space on a secure, shared network drive for storing scanned license agreements. The value for us in CORAL’s licensing module is in recording the license expressions, which is fairly labor-intensive and has not yet been a high enough priority to justify the work. New licenses are being entered as they are completed.

This organic approach, along with CORAL’s modular structure, has allowed the library to benefit almost immediately from the ERM system. The next immediate priority for CORAL at Wake Forest is to set up the Workflow tool in the Resources module. The workflow tool currently in use is (what else?) an Excel spreadsheet, monitored by the ERL. It is anticipated that setting up Workflows in the ERM system will not only create more efficiency in processing

new online products, but will allow more librarians to track that processing. Other possible directions for CORAL at Wake Forest include

Database desiderata – The Reynolds Library is looking for an effective way to track database requests and decisions made. It is considering the possibility of using CORAL for this, but currently it does not look promising. At present, there is not a way to grant a library selector the ability to add a new database without also giving them the ability to edit existing database records. Staff would also need a way to retrieve a report that includes the requesting librarian, requesting academic department or faculty member, the decision made (if any), and why. CORAL does not have any built-in fields for this type of information.

Usage Statistics module – Like TAMU, the Reynolds Library subscribes to a commercial usage statistics harvesting service for a fairly small number of online platforms. The Library has not made significant use of CORAL's Usage Statistics module, but are considering its potential usefulness for maintaining statistics for other platforms not included in our commercial product subscription. At this writing CORAL supports only JR1 and JR1a COUNTER reports, not database or e-book usage reports. JR1 reports must also be saved as a tab-separated .txt file before uploading to CORAL, but few vendors seem to make reports available in that format, so compiling them for CORAL becomes somewhat burdensome.

Public A-Z list – Another goal at Wake Forest is to use CORAL to drive the public-facing A-Z database list, replacing the XML file that was the source of our initial CORAL data. The main obstacle to achieving this goal is that CORAL does not yet include subject headings. The hierarchical subject listings are used heavily by our reference librarians, and in fact will be the main component in an upcoming redesign of the A-Z list. The Library is weighing the possible options of waiting for CORAL to include subject functionality or else trying to design a public

page that will use a blend of the CORAL database for most of the resource information, with a link to the XML file for subject information.

Overall the librarians at Wake Forest University are pleased with CORAL. The main role of CORAL at the Reynolds Library is as a communication tool, a sort of e-resources intranet, allowing librarians to share vendor contact information, information about database functions, background on decisions made, etc. The ability to populate the ERM system with an existing data file was a tremendous benefit, as it allowed the installation to move forward with a small number of staff and only a few hours of work. As CORAL continues to grow, and especially if it moves toward powering the public-facing database list, it has the potential to become a very prominent product in the Z. Smith Reynolds Library.

CONCLUSION

In summary, the CORAL electronic resource management system has been a useful tool for all three libraries represented in this presentation. It has been relatively easy to configure and flexible enough that each library has been able to adapt it to fit local needs. There are some areas where CORAL could be improved, but it is not a static product. It is being actively developed by a group of development partners. Each presenter sees potential for CORAL to grow and become even more beneficial in the future.

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