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George Stachokas, "Electronic Resource Management: Functional Integration in Technical Services" (2013). *Proceedings of the Charleston Library Conference*.  
<http://dx.doi.org/10.5703/1288284315290>

# Electronic Resource Management: Functional Integration in Technical Services

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## Abstract

Declining usage of print materials along with increasing usage of electronic resources makes it necessary for libraries to reallocate personnel from print management to electronic resource management. Electronic resource management should be the primary focus of technical services units in the early twenty-first century. Print should no longer be treated as the default format, and the work of library staff must be reorganized and reintegrated with librarians and other professionals to reflect the growing importance of electronic resources in contemporary information services.

Staff workflows in technical services can be organized to emphasize functional areas of electronic resource management including troubleshooting, collection analysis support, and content management that best fulfill the contemporary library's mission. More established workflows, such as batch processing and copy cataloging, can also be improved through better coordination with other personnel who manage electronic resources. Fitting the work of a new technical services system into the library's wider mission requires good communication and coordination with other units, as well. Workflows for technical services functions must be carefully integrated horizontally or vertically into the workflows of other units in a systematic way that fosters cooperation and accountability while avoiding confusion regarding roles and responsibilities.

## Reorganization of Technical Services

Statistics for the Association of Research Libraries (ARL) indicate a long-term decline in print usage in many of North America's leading academic libraries. The median circulation of print materials has declined from 509,673 in 1991 to 414,482 in 2009, while the median number of students has actually increased from 18,290 in 1991 to 23,303 in 2009 (Kyrillidou & Morris, 2011). While all usage cannot be attributed to students, one can see the scope of the problem if one simply divides circulation by the number of students resulting in a value of 27.9 in 1991 and 17.9 in 2009. ARL libraries spent \$1.3 billion on library materials in 2008–2009 with 56.33% of expenditure used to acquire electronic resources (Kyrillidou & Morris, 2011).

Change at some leading institutions is even more pronounced. The University of Washington Library provides publicly available statistics on its web site. Print circulation fell from 711,833 in 2007–2008 to 511,877 in 2011–2012. During the same period, the number of full-text downloads increased from 5,445,094 to 6,047,758.

Meanwhile, the population of potential library users actually increased, notably among faculty from 3,728 in 2007–2008 to 3,841 in 2011–2012

and graduate students from 9,555 in 2007–2008 to 11,276 in 2011–2012 (University of Washington, n.d.).

The problem facing contemporary libraries can be summarized as follows: (1) Print usage is in continuous decline in most academic libraries; (2) Electronic usage continues to increase in most libraries; (3) The majority of the materials budget in most academic libraries is now spent on electronic resources and continues to increase; and (4) Library technical services is still mostly organized to manage print resources.

Furthermore, electronic resources are emerging at a time when other changes are occurring in libraries such as the adoption of cloud-based systems that streamline workflows and reduce the need for simple types of work and a more general trend from employing clerical/support staff to more professional staff in libraries. Finally, changes in technology such as discovery services, vendor supplied MARC records, and other SASS tools make the degree of local customization of service more important than simple measures of collection size in determining the need for locally staffed technical services positions.

Historically, most libraries have only provided minimal staffing to manage electronic resources,

often one electronic resources librarian and one or two support staff. These extremely small electronic resources units would usually have responsibility for all processes in the life cycle of electronic resources from the negotiation of contracts to troubleshooting access problems. Personnel who work in more traditional technical services or library IT would coordinate their work with the solitary electronic resources librarian.

Managing electronic resources well actually requires a wide range of skill sets, not just licensing or negotiating contracts. While the precise breakdown in roles and responsibilities varies among libraries, electronic resources units might be responsible for gathering usage statistics, conducting overlap analysis, activating electronic resources in knowledge bases, managing link resolvers, troubleshooting access problems reported by users, and sometimes even work with metadata such as batch processing MARC records. Knowledge of the diverse electronic resources platforms and unique products offered by vendors is required to manage electronic resources. All in all, managing electronic resources properly requires a wide range of legal, technical, and administrative skills. Most personnel cannot be expected to master all of those diverse areas completely or keep up with the routine demands of everyday work while also finding time to learn about new technology and changing best practices.

Instead of having a very small workforce devoted to electronic resources that sometimes coordinates the work of other more traditional units, especially in technical services, why not turn the problem on its head and reorganize technical services to focus primarily on electronic resources? Print is no longer the default format in libraries, despite large collections, since users increasingly prefer electronic resources. Most personnel involved in managing collections should focus on electronic resources, not print. This does not mean that all technical services personnel can make the transition or even that technical services will be the same overall size as it was before electronic resources, but more personnel should be trained to handle electronic resources at a high level of ability while the print management

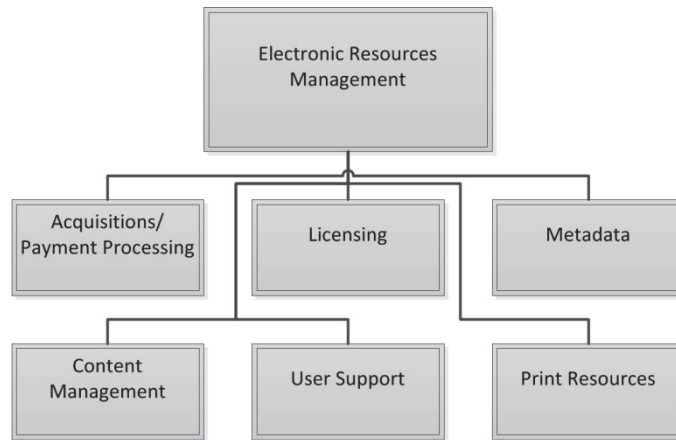
workforce is allowed to shrink through attrition, reassignment, and retraining.

Electronic resource management is the future of technical services, and libraries need to move toward consolidating most units that directly manage electronic resources into a single department, division, or unit that can work together as a team to solve complex problems and constantly pursue improvements in service to meet ever changing demands. Depending on the size of the library, Library IT or Systems would remain separate from electronic resource management, but some workflows will be integrated to encompass both units. Other electronic resource management work will support the efforts of specialists in emerging technology and usability.

Lower skilled positions held by permanent staff in technical services would be replaced by professional librarians, advanced paraprofessionals, and student workers. A high level of automation, the need to implement and test technology, along with constant upgrades to platforms and changes in work routines will require an intellectually curious, highly skilled, and flexible workforce. Finding creative solutions to problems, working well with users and other library personnel, as well as technical skills will far outweigh more traditional values such as adhering closely to fixed routines, being quiet, waiting for instructions before making changes, and repetitive work. Most tasks that are simple and easily repeated can be performed more effectively by technology, student workers, or outsourcing. Electronic resource management personnel need to think, take action, and communicate intensively with other library units in order to provide the overall level of service necessary in the twenty-first century.

### **Functional Areas of Electronic Resource Management**

Electronic resource management can be broken down in many different ways, but a useful and efficient method would be to separate responsibilities in most medium and large academic libraries into five key areas: (1) Licensing, (2) Acquisitions/Payment Processing, (3)



**Figure 1. Electronic Resource Management Organizational Structure**

Content Management, (4) User Support, and (5) Metadata. Licensing would assume responsibility for negotiating contracts, maintaining business relationships with library vendors, and helping to gather information about new products and services that might benefit the library. Acquisitions/Payment Processing would handle invoices, financial data entry into library systems management tools, fund management, and collection analysis support. Content management would be responsible for activating electronic resources in knowledge bases, managing link resolvers, proxy server maintenance, the routine gathering of usage statistics, and the customization of electronic resource platforms and search portals. User Support would troubleshoot access problems, provide direct customer service to users, and conduct functionality testing of electronic resource platforms and devices commonly used to access electronic resources. Metadata would develop standards for electronic resources metadata, perhaps in consultation with other metadata units in large libraries; conduct routine batch processing; and make bulk corrections to bibliographic records in MARC and other formats as needed.

Some personnel would continue to need to work with print resources in technical services, at least for the next 5 to 10 years, but an increase in the number of shelf ready materials, ongoing efforts to develop shared print repositories, and a growing trend toward the deaccession of print make it very likely that work based solely on print resources is only going to continue to decline. To

manage this transition, it may be worthwhile to create a separate print resources unit. As attrition reduces the number of staff in this unit, permanent staff should not be hired to replace vacant positions. If it is necessary to fill any print processing positions, only temporary positions or student workers should be employed whenever possible. Monograph receiving, serials, government documents, all of these types of more traditional positions should be grouped together into one larger unit with the exception of original cataloging of print materials that should remain separate and be handled by professional metadata specialists.

### **Integration in Technical Services**

Routine work should be completed entirely within the Electronic Resource Management (ERM) Unit whenever possible to maintain a high level of efficient and competent service. Having the same work distributed across different units with separate reporting chains leads to unnecessary waste, confusion, and can degrade overall service as experienced by users. One example might be one in which a traditional serials unit has different procedures from an electronic resources unit in entering financial information into an ILS or Library Management System. A database list maintained by multiple units might use different standards for coverage dates or other key descriptors of content.

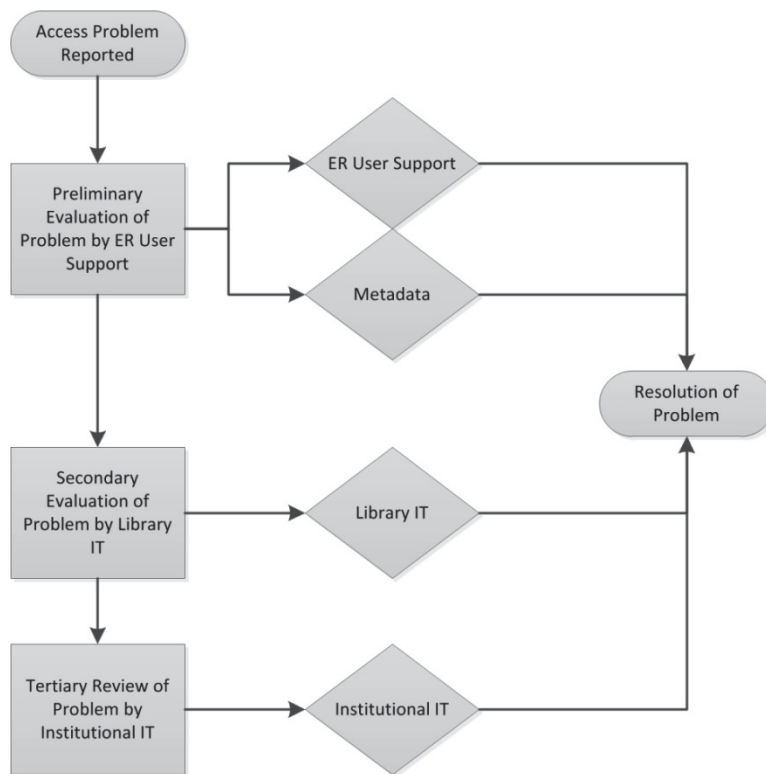
Nonetheless, a strong ERM Unit is not intended to carry on its work independently of the rest of the library. Some work must necessarily be integrated

with that of other library units. Workflows in troubleshooting access problems, collection analysis support, and functionality testing would need to be closely integrated into the workflows of other units on a routine and continuous basis. Other work may need to be closely coordinated with other units or stakeholders such as the negotiation of license agreements, metadata, or the customization of electronic resources platforms.

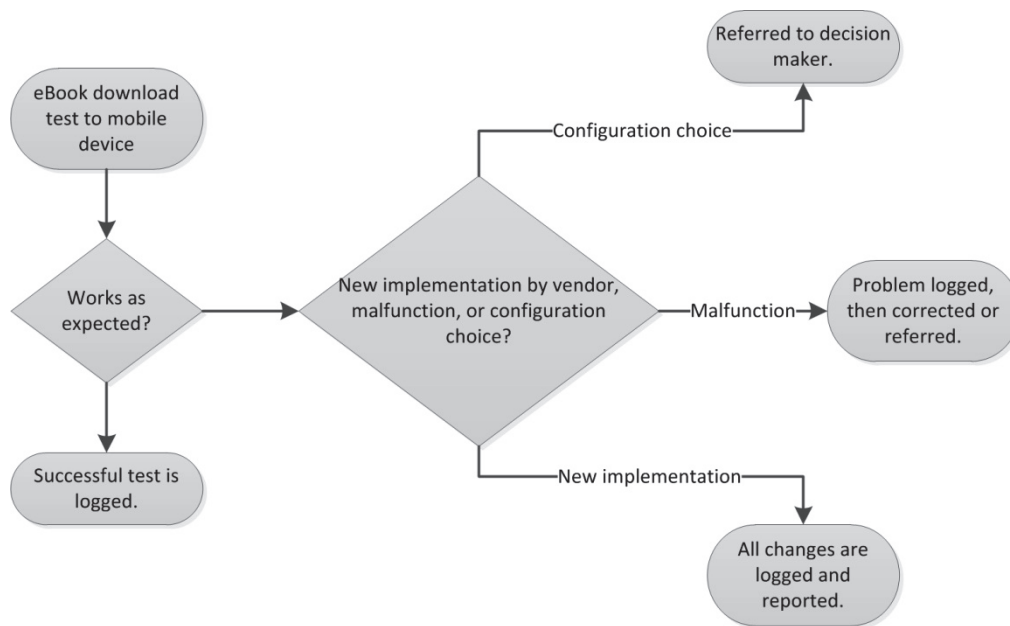
As one example of integrated workflows across units, troubleshooting access problems is best thought of as a multilayered system in which electronic resource management personnel can only solve a limited number of the total problems reported by users. The first step in the library's response to a reported problem would be a preliminary evaluation of the problem by the Electronic Resource (ER) Support Unit. ER Support would then attempt to solve the problem or pass it along to other units such as ER Metadata or Library IT. Users sometimes do not know how to identify or categorize problems which they report, but the source of some problems is also unknown prior to investigation, so it only makes sense to

integrate troubleshooting electronic resource access problems into one larger technology support system maintained by the library.

Another example of an integrated workflow would be functionality testing which would be undertaken on a routine basis of all electronic resource platforms and devices such as e-readers, smartphones, tablets, and computers that are commonly used to access electronic resources. Testing would be done to confirm that resources are working properly, identify new features or potential enhancements, and explore options for improving access for users with disabilities or other members of the community with different needs. The user support unit would handle most routine testing, but work could also be delegated to other staff as needed for large projects. The overall scope and intensity of testing while different from usability testing would still need to be coordinated with usability experts and Library IT as part of a larger system of library-wide testing of technology and user interfaces. The results of testing would also be shared systematically with subject specialists, personnel who work with collection development, and library administrators based on their various needs.



**Figure 2. Troubleshooting Electronic Resources Access Problems**



**Figure 3. Functionality Testing Example: Downloading an E-Book to a Mobile Device**

Library personnel will need to have access to or gather information about user preferences such as their preferred Internet browsers or mobile devices in order to make sure that testing is well targeted to meet user needs. Testing a Kobo e-reader could waste precious time if very few users have one.

Regarding workflows that would be integrated on an ad hoc basis, the negotiation of contracts and metadata are likely self-explanatory. A small electronic resources metadata unit might need to coordinate work with a larger metadata or cataloging department if one exists while librarians who negotiate licenses must often consult with administrators, selectors, or other stakeholders as part of the back and forth negotiation process. The customization of electronic resource platforms requires more explanation. Essentially, most customization work will be as simple as branding web sites with appropriate library text and logos or selecting among different options or choices provided by vendors such as the default search screen or interoperability with citation software. Occasionally, more advanced work such as creating style sheets using CSS for a user interface or the integration of one database with another might be required. Depending on their skill levels,

content management specialists would perform this work on their own or consult with Library IT.

### **Suggestions for Improving Communication and Decision Making**

Communication channels and shared workflows should be formalized and mapped out across units whenever possible. Make expectations clear and explicit regarding who does what and when the next step falls to another unit. Information that is often shared with other units beyond technical services should be made routine with a formal schedule for delivery. An example might be COUNTER-compliant usage statistics. Any statistics that must be gathered manually should be done on an annual, quarterly, or monthly schedule that is made widely known with data available to all interested parties as appropriate given the library's system of governance. Every effort should be made to make electronic resource management less chaotic and more predictable even as personnel work to implement changes and improvements in service.

### **Conclusion**

Adapting library technical services to contemporary needs will not be easy or simple. Many staff members are already in place and some may struggle to learn new skills. Resources

are limited, and technical services units will have to compete with other library units for new professional lines. Overall, a smaller and more highly skilled permanent team is preferable to a larger, but less adaptable workforce. Retirements and other voluntary separations among support or clerical service staff can be used to fund professional or more advanced paraprofessional positions. If it is not possible to develop the designated electronic resource management units

all at once, it might make sense to separate licensing from other functions first and start teaching support staff in technical services how to manage electronic resources. The implementation of some new types of service or workflows, such as functionality testing, can wait until more routine operations are properly developed. Successful change requires good communication, realistic goals, patience, and a willingness to adapt to circumstances.

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