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Improving Electronic Resources Management (ERM): Critical Work Flow and Operations Solutions

Abstract/Description:
Organization of electronic resources work flow and operations are critical in the increasingly complex world of library management. The way in which this management process is structured differs according to the type of library and organizational structure within. A common goal, though, is strategically sustaining access and availability to electronic resources over time and the effective management of the library staff that maintains them. In this joint session, librarians from George Mason University (GMU) in Fairfax, Virginia and the University of Maryland University College (UMUC) in Adelphi, Maryland showed two effective approaches to electronic resources management (ERM) processes. At GMU, automation of the acquisition process for new electronic resources has greatly improved work flow coordination and communication between library departments. At UMUC, the application of business process management principles to ERM has enabled the electronic resources staff to optimize overall operations.

First Presentation:

Going Beyond Electronic Resource Management System (ERMS) Implementation: ERMS-Focused Work Flows and Communications

Betsy Appleton, Electronic Resources Librarian, George Mason University
Shannon Regan, Electronic Resources Support Specialist, George Mason University

Abstract:
This session provides a case study of using statuses and alerts in an ERMS to generate work flow processes and widen communication channels among collection development, acquisitions, and public services departments. Attendees can expect to learn how we were able to move away from tracking new e-resource purchases via checklists and paper forms, and how automatic alerts to public service staff regarding the status of new e-resources in the pipeline has improved communication, collaboration, and transparency among the departments.

Objectives:

- Briefly discuss new collection development and acquisitions work flow.
- Provide background to communication challenges among collection development, acquisitions, and public services departments.
- Present case study using an ERMS to not only record work flow, but also generate and communicate that work flow.
- Describe future opportunities to collaborate further among departments, particularly regarding training and assessment.

Audience participation:

- Poll for current ERM work flow generation/organization/communication.
- Discussion of alternative ways to generate and communicate electronic resource selection, acquisition, and maintenance.

Learning outcomes:

- Acquire a fresh idea regarding how to streamline their libraries' electronic resource selection and acquisition processes.
- Learn how to use an ERMS to better manage routine communication.

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Introduction

Electronic Resource Management (ERM) is ever-increasingly important as academic libraries continue to collect a wide variety of resources in electronic formats to support research and education. This paper describes a case study of using statuses and alerts in an ERMS to generate work flow processes and widen communication channels among collection development, acquisitions, systems, and public services departments. We were able to move away from tracking new electronic resource purchases via paper forms, to a streamlined electronic based work flow. Additionally, automatic alerts to public service staff regarding the status of new e-resources in the pipeline has improved communication, collaboration, and transparency among the departments.

This portion of the paper will briefly discuss the former collection development and acquisitions work flow for new electronic resources. A more detailed description of the new collection development and acquisitions work flow will follow, and then the paper will move on to provide background to communication challenges among collection development, acquisitions, and public services departments. In this case study, we discover not only how to best use an ERMS to record work flow, but also to generate and communicate that work flow.

Background: University, University Libraries

Founded in 1972, George Mason University is a distributed university with libraries at three locations in Northern Virginia (the University Libraries). The age of the university, distributed library model, and prevalence on non-traditional and non-residential students have contributed to reasons why electronic resources are vital to the University Libraries' mission.

The collection development, acquisitions, cataloging, and systems services for the University Libraries are centralized for the distributed libraries, and need to work in concert to ensure that all necessary tasks related to electronic resource selection, acquisition, description, and maintenance are completed smoothly.

Several groups within the library informed our need for improved work flow and communication:

Our Liaison Librarians are subject specialists that work in public services. All participate in reference, instruction, and collection development tasks to support their respective areas of study on campus. The Liaison Librarians are divided into three broad subject area teams to in part facilitate interdisciplinary collection development: Science and Technology; Arts and Humanities; and Social Sciences. Each of these teams has a team leader, with whom the Collection Development and Preservation Department (CDP) work particularly closely.

Our Systems staff currently maintains several systems that directly affect our electronic resources, such as the proxy server for off-campus access and our link resolver. As well, they provide invaluable feedback regarding the technical limitations that may affect our access to and use of electronic resources, particularly when a potential resource is audio-visual.

Our Technical Services Group (TSG) is comprised of staff members in the Acquisitions, Cataloging, and Serials departments. The TSG is currently working to re-organize its departments, and one of the results of the re-organization is that there will be more staff time devoted to working with electronic resources.

The CDP is where we, the authors, work within the organization of the University Libraries. Our department has served as an electronic resource information hub among Liaison Librarians, TSG, and Systems staff. As the number of staff members that either participate directly or need to stay informed of electronic resource selection and acquisition continues to increase, CDP needs to move away from being an information hub and to realign itself as simply another stop in the communication flow. Quick and effective communication will be increasingly necessary as TSG re-organizes and the demand for electronic resources rises.

Former Work Flow

Our former work flow was influenced primarily by the print work flow that worked efficiently for print monographs and serials for decades: the print work flow was generated by the use of a Library Order Request Card, or LORC. LORCs were print forms with three carbon copies, about the size of a card catalog card. All of the data necessary for both or-

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dering and eventually cataloging a print item, as well as all data kept for auditing purposes, was entered on the LORC: title, edition, format, purchase order number, requester, and associated fees. Since the LORC form was not descriptive enough for electronic resources, we used both the LORC and a work flow form that was passed to staff members needing to complete a portion of the work flow: the work flow form would start in CDP where all data necessary for the LORC would be entered, and confirmation that necessary license negotiation took place before it was passed to TSG. In TSG, Acquisitions staff would use the LORC data to place an order, and pass the form to Cataloging. Upon receipt, Cataloging staff would ask the Electronic Resources Librarian to provide the resource's URL once the Electronic Resources Librarian was notified of/confirmed that the resource was available. After the resource was cataloged, the form would be passed on to the Systems office so that the resource would be appropriately added to the proxy server and/or the link resolver. Systems would then return the form to CDP, where staff would add the resource to the database portal as appropriate, notify the requester that the resource was available, and file the form with other documents pertaining to the resource (such as the license, quote, etc.).

Although this work flow served to ensure that all steps to add an electronic resource were properly taken, using a print-based work flow to coordinate processes for an electronic resource had some key disadvantages: first, the print form could only be with one staff member at a time. When the print form could be attached to a print item this was an effective way to communicate a work flow, but there is nothing upon which to physically attach a print form for an electronic resource. Staff members in the work flow did not always receive the print forms promptly after a step was completed, and different staff members treated these forms with varying degrees of priority within their own assigned tasks and time management styles: it was common for a staff member to wait until he or she had several of forms to complete at once before sending them to the next staff member.

Secondly, the work flow form was primarily useful only as a record of the completed work flow. Staff members in Cataloging and Systems in particular were included in the work flow process only after a resource was purchased, so these staff members did not have any opportunity to voice technical concerns about a resource before it was purchased. The form was particularly ill-suited to enable staff members to effectively communicate to public services staff: Liaison Librarians would not know the appropriate staff member to contact to get information about the status of a resource in this work flow, and would typically ask the Electronic Resources Librarian, who in turn would have to contact all staff members involved in this work flow until the form was located.

Finally, all data about the electronic resource recorded in print is stored in lateral file cabinets in the CDP office area. The information in these files is extremely useful data for staff members in TSG, Systems, and Public Services, since it includes licenses, LORCs, historical cost data, correspondence with vendors, and subscription administration data. Most staff members are unable to easily access these files because they are located behind two doors, one of which remains locked to anyone save the six library staff members who have a key to the office.

New Work Flow

Our new work flow is managed electronically within the Serials Solutions 360 Resource Manager system. We do not use any more paper forms or LORCs to track an electronic resource from when it is requested until it is subscribed. We use the resource status, the email alerts generated through a status change, and the notes and comments features within Serials Solutions to track the work flow of electronic resource collection and acquisitions.

The status of a resource will quickly denote where a resource is in the ERM process, from the initial request for more information about a resource from a liaison librarian, to the resource being a subscribed resource in our collection. Notes and comments in our ERMS are a feature used to record brief descriptions that can be attached to the resource record in the ERMS. Notes and comments are created locally. Comments can be added to notes, and notes can be attached to either one single resource or multiple resources. Some notes are used for at-a-glance information, and some notes are used for more de-

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tailed information unique to a resource. We use the notes and comments feature to attach necessary collection development and acquisition data to a resource. This includes quote, licensing, and evaluation information attached in separate notes. In addition, we attach notes to resources that reflect when steps in our work flow have been complete (e.g., it has been added to discovery tools, the proxy etc.).

Email alerts to staff members can be triggered in our ERMS by a change in the status of a resource. We have created two separate sets of email alerts that are generated when a resource status is changed. Internal alerts go to CDP and TSG staff with an instruction as to what they must do upon receiving the alert. Liaison alerts go to our liaison librarians with a brief explanation of what is being done with a resource at that status, and the appropriate contact information for any questions. For example, if a resource status was to change from On Order to Ready to Process, two different email alerts would be sent out to the two different groups of recipients simultaneously.

Our work flow moves forward through the systematic changing of resources statuses in Serials Solutions:

[New Work Flow Chart]

When a request comes in for a new electronic resource, either from a liaison or subject team, we start to track the resource in the ERMS and give it a status of Requested. CDP staff receive internal Requested alerts to gather quote information, and set-up a trial, if necessary, for the resource. If we move forward with a trial, the resource status is changed to Trial and a liaison alert is sent out with this information. If we do not trial the resource, it is set to Under Review after a CDP staff member has provided the liaison librarian with a price quote and other applicable information. The resource stays at Under Review until a decision is made by the requestor to move forward with selecting the resource. If we do a trial and/or decide not to pursue a resource we set the status to Rejected. A note is added to the resource with evaluation information to reflect why the resource was not selected. This is particularly important, for if the resource is revisited for purchase in the future, the dialogue regarding why it was not selected is not trapped in someone's email inbox, but available to all in the ERMS.

The next step in the work flow is Budget Approval. The status change to Budget Approval triggers an alert to the head of CDP who must approve a resource for purchase. When approved, the head of CDP sets the status to License Negotiation. The License Negotiation status sends an alert to our licensing team to begin negotiations for this resource.

These first statuses are primarily important to CDP since they prompt actions for staff members to take to prepare a resource for potential purchase. They are also helpful to the liaisons because they know immediately when a resource has moved forward in the process. The liaison alerts are especially useful if a resource has been at a status for a while; it gives

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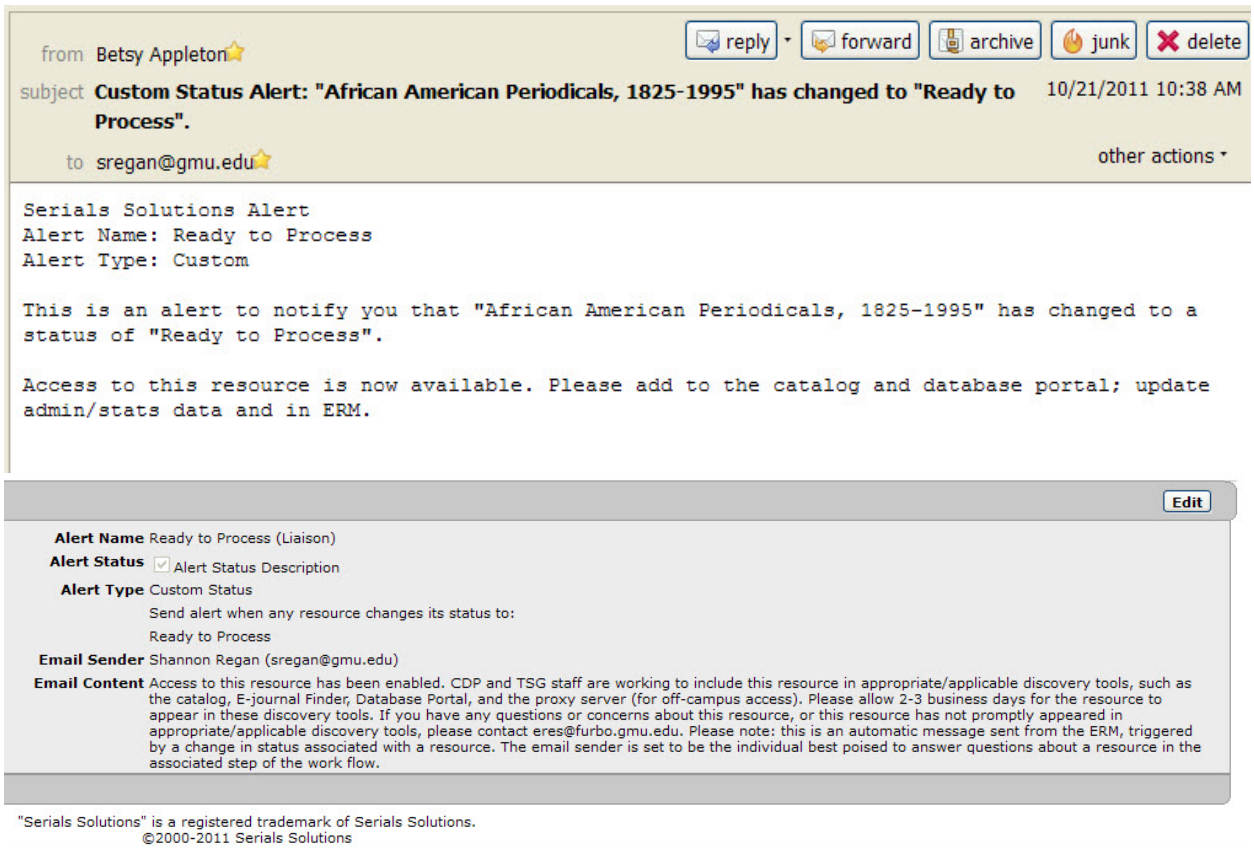
requestors a time-frame for when this process should typically be completed and who to contact with questions if it has not moved forward.

The next step is to either move the resource to the status Ready to Purchase or License Negotiation Unsuccessful: If we are unable to come to an agreement regarding a license, we give the resource a status of License Negotiation Unsuccessful. We also attach a note to the resource with information indicating why license negotiation was unsuccessful.[i] Once the license has been successfully negotiated, the status is changed to Ready to Purchase. This alert goes down to staff in TSG and lets them know that this resource is ready to place an order.

When the staff members in TSG place the order, they set the status of the resource to On Order. The On Order alerts go to CDP staff to check for access. When access has been turned on, the status is changed to Ready to Process. The Ready to Process status alerts three groups: Systems to add it to our proxy server, Cataloging to add it to the catalog, and either CDP to add it to our homegrown database portal, or Serials to add it to our A-Z e-journal list. When all of these steps have been completed notes are attached to the resource reflecting that these actions have been completed. The last person to add the resource to the appropriate discovery tool, and sees that all the other appropriate notes have been attached, changes the resource status to New Item, and then immediately to Subscribed. The New Item status triggers an alert to our liaison support specialist, who alerts public services staff that this resource is now available to the University.

These alerts are of particular interest to public services staff and the requester. The alerts are time stamped, so there is no question regarding when a resource has moved forward (or not) in process. They do not have to call or e-mail someone to check on its status. Rather, they receive the alert, with no extra work on their end.



[Here are examples of the status alert email text bodies. The first is an email of an internal Ready to Process alert, and the other is a liaison Ready to Process alert in the ERMS interface.]

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Alerts are generated for every status change in the ERMS, so it is good to have an email system that allows tags, filtering, and sorting: liaison librarians will receive approximately 15 alerts per resource.

Communication Improvements

Public Services

Feedback from the liaison librarians regarding the new electronic work flow and status alert system indicates that the process is more transparent. Liaison librarians do not have to guess who they need to contact with questions as appropriate contact information is provided in the status alert change email. In addition, the work flow is entirely transparent to these staff members: they can see precisely how the work flow is managed from start to finish and are better equipped to communicate to their students and faculty when new electronic resources will be available.

Liaison librarians have also helped us correct errors in the system quickly. Recently, a liaison librarian who requested a particular resource noticed that the resource was available in the database portal, although she received no New Item alert. When she asked about the oddity in the work flow she noticed for this resource, CDP and TSG staff were able to quickly correct a small error that would have caused great confusion: the staff member who meant to update the status to Ready to Process actually updated the status to Subscribed in error, and proceeded to add the resource to the database portal. Other staff members who would have received a Ready to Process alert were not notified to add it to the catalog or the proxy server. This error was corrected quickly because the liaison librarian noticed a break in the process.

Technical Services

Designing the new work flow was a key training and educational opportunity for staff members in CDP and TSG. One of the results of designing the new work flow in collaboration was the discovery of the need for more passive and active communication.

The passive communication that notes, comments, and status alerts facilitates has made the new electronic resource work flow more transparent for not only public services staff, but also for technical services staff. Anyone with a question about a resource can add, locate, or scan pertinent notes and comments at any time--not just when a print work flow form arrives on his or her desk. Additionally, the staff members are notified to complete their specific steps in the work flow more quickly than was possible with a print form. We have been able to include Systems and TSG staff in the evaluation process more seamlessly than we were able with a print-based work flow: the new work flow facilitates Systems and TSG staff to provide valuable feedback regarding technical specifications of a resource before they need to complete their tasks in the work flow.

The other major improvement provided by the new work flow was a more standardized mechanism for resources to proceed to the license negotiation step, and includes a system of checks and balances to ensure that the first steps in the work flow happen before later steps. The former work flow did not have this system of checks and balances: for example, the print form was initiated and filled out through the license negotiation step by only one staff member in CDP. There was the potential for an error in process to result in an executed license with which the University Libraries was ill-prepared to comply: in a word, having a signed license without funds to purchase would be problematic. The new system requires that all necessary information be available for the Head of CDP to approve the purchase, signified by changing the status from Budget Approval to License Negotiation.

The communication barrier related to paper forms sitting on one staff member's desk has been removed by the new work flow. Each staff member required to take an action is notified via email the moment the preceding task is completed, and certain tasks can now be completed simultaneously, particularly in the Ready to Process step. This may have effected major improvements in CDP's and TSG's processing times. For example, one resource purchased via the old work flow in late January 2010 had access available by February 5, 2010. It took until March 4, 2010 to have all the steps completed that are now completed during the Ready to Process step. In contrast, a resource purchased in early July 2011 via the new work flow was set at the status, Ready to Process on July 12, 2011, and was

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moved to New Item on July 14, 2011. The same process that took nearly one month with the paper form for one resource took only two days for another, similar resource.

A weekly meeting of staff members involved in completing tasks in the new work flow improves active communication. This has provided a forum for discussion of electronic resource-related topics that require both CDP and TSG input. One perennial agenda item for this meeting is to go through an ERMS-generated report of all in-process items by status. Any resource that has been "stuck" in a status is clearly identified on this report. Additionally, this provides staff members that do not have a task until later in the work flow an opportunity to see what resources will eventually cross their desks/inboxes.

Future Directions

As we move forward with this new, ERMS-based work flow, we continue to make improvements. For example, license status alerts have become more granular for liaison librarians so that they know where a license is in process after it is successfully negotiated: whether it is with the licensor, or one of our authorized signatories. We also are working to develop work flows for resources that do not fit the new-purchase category: cancellation, deaccession, provider/vendor changes, conversions and platform migration tasks could all be generated by an ERMS-based work flow.

We are also working to better customize ERMS access for our liaison librarians. Some liaison librarians prefer fewer email alerts per resource, especially if the prefer to use web-based University email client with relatively fewer filtering capabilities than an email client like Gmail, Thunderbird, or Outlook. Other liaison librarians would like more access to the ERMS than the alerts sent to their in-boxes so that they could have ready access to notes and comments. More training is necessary for liaison librarians before these requests will be accommodated; it will also be helpful to have more customizable permissions capabilities within 360 Manager to accommodate such requests. For example: it would be helpful if types of notes and comments, such as those for quotes, could be "read-only"; and other types of notes, such as evaluation notes, could be "edit". Currently the system does not currently support different permissions in this manner.

Further research is needed to measure the success of the new work flow in terms of improving process times. Anecdotes such as the process that took one month in the old work flow now take two days in the new work flow are effective to illustrate a point, but systematic study is required to confirm that process times have improved. Fortunately, staff members recorded dates when resources were accessible to the University, and when the resources were cataloged and/or added to other discovery tools directly on the print forms used in the former work flow. We will be able to compare the length of time elapsed on each former work flow form to the time elapsed between email alerts sent when a resource is set Ready to Process and set to New Item.

Second Presentation:

Optimizing Your ERM: Application of Business Process Management to Operations

Lenore England, Digital Resources Librarian, University of Maryland University College
Li Fu, Digital Services Librarian, University of Maryland University College
Stephen Miller, Associate Provost, University of Maryland University College

Abstract:
Electronic resources management (ERM) is a patchwork business of strategically organizing the interconnectivity of resources, tools, systems, and staff. If not well managed, ERM can become increasingly fragmented and inefficient. Organization is critical. To build a new organizational structure, the ERM team at the University of Maryland Uni-

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versity College (UMUC) studied business process management (BPM) applications, including business process reengineering, Six Sigma, and Total Quality Management programs. We then adapted BPM for our ERM work, after carefully reviewing and changing current processes, within our budgetary constraints. We utilized our current systems, tools, and other resources with no cost in order to maintain quality and improved consistency with our work. Overall, we worked with the small building blocks of our existing infrastructure, using resources, tools, and staff, to create a means for optimizing ERM. BPM tools helped us build these small blocks and create an organized patchwork that enabled us to achieve our goals of any given project as well as a more efficient and effective ERM. Planning for the future, our ultimate goal is to attempt to coordinate diverse ERM functions throughout UMUC, setting up directional changes both in the library and UMUC as a whole.

The University of Maryland University College (UMUC) is a comprehensive virtual university focusing on the unique educational and professional development needs of adult learners and serving more than 90,000 students worldwide. The library at UMUC manages extensive electronic resources for students, faculty, and staff for a broad range of programs. The library focused on the organization of electronic resources management (ERM) and its operations since this process is multifaceted, with a seemingly endless range of electronic resources, systems, tools, functions, and staff. The entire management process can become extremely unwieldy if not managed efficiently. The UMUC staff decided that it was important to weave together the patchwork business of ERM, within our budget constraints, in order to gain control of the disparate nature of this business and ultimately manage operations more effectively. A solution was developed: Apply business process management theory and principles to ERM. The library staff began to study the principle of these business process theories in order to decide on which approach to take.

There are a wide variety of business terms, such as process redesign, continuous improvement, business process re-engineering, that all relate to the concepts of improving quality and efficiency by analyzing and refining business processes (Zellner, 2011). Essentially, a business process may be described as how coordinated work involving more than one person gets done within an organization. Systems thinking is critical to understanding business processes, as processes are often inter-related.

The origins of business process management began with business theorist Fredrick Winslow Taylor in 1911, and Henry Ford built on these concepts when he implemented the continuous assembly line. These approaches grew into a number of related process improvement management theories in the 1970s and 1980s. Six Sigma, a set of quality improvement methodologies designed to achieve close to error-free performance, was effectively used by companies such as Motorola and General Electric (Gershon, 2010). The term "six sigma" refers to a statistical concept that describes the level of quality of a given process, with the goal to have no more than 3.4 defects or errors in one million items or activities (General Electric Company, 2011). Because these process improvement methods can be extremely complex and time consuming to implement, normally being implemented by major corporations, we have focused on learning from these methods, distilling and applying the basic principles based on what works for us. The most important method that we adopted comes from Six Sigma and is called the DMAIC cycle, for Define, Measure, Analyze, Improve, Control (Gershon, 2010).

The DMAIC methodology is used to improve performance and customer satisfaction by streamlining the process and reducing inefficiencies (American Society for Quality, 2011a). American Society for Quality (2011b) outlined five phases of the DMAIC methodology: define, measure, analyze, improve, and control. The first phase is for defining the process and projecting goals. The focus of the "measure" phase is to determine the key aspects of current processes and review all data. The "analyze" phase identifies the origin of critical issues and discovers opportunities for improvement by data analysis. The goal of the "improve" phase is to identify specific problem areas and make appropriate modifications to the process. Finally, in the "control" phase, a plan is established to achieve the improvement in the process. Then the above process is repeated as a cycle over time to ensure continuous improvement.

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Using the DMAIC process in general terms, the ERM staff did not intend to become experts in this theory, but quickly learned that as we worked our way through, we could gradually improve our processes in small increments to achieve big results. ERM staff at the library reviewed the DMAIC process and developed a plan of how to prepare to implement for ERM. We first did a complete inventory and survey of all aspects of ERM, including electronic resources, functions, tools, and staff. The idea was to understand completely *what* we were doing and *how* we were doing it in order to understand our ERM key operations, then analyze this performance, review inefficiencies, and implement and maintain better ways to get our work done. Then we began the process of brainstorming new ideas, using the DMAIC framework to work our way through the process. We chose Six Sigma DMAIC primarily since these are theories that have been proven over time and could readily be applied to new and improved ERM operations.

The ERM team then began to work through the DMAIC framework. After the detailed inventory, the ERM staff reviewed 3 functional areas in detail: acquisitions, access, and evaluation as part of the Define procedure. Each functional area was reviewed in detail to assess the work performed. As part of the Measure process, the ERM staff reviewed the work flow for each of these areas in detail to assess the key aspects of the processes and review all data. Once this was determined, then the staff reviewed what tools and personnel were needed for each area. Microsoft Visio was used to do the project planning for the next DMAIC stages. The staff began the Analyze process to determine sources of the issues in each functional area to brainstorm a wish list of ideas. Projects were developed that could be used to improve processes in each functional area. As part of the Improve stage, the ideas were then prioritized and developed into small, manageable projects on a timeline, which will eventually show big improvements. Eventually, the ERM staff will implement the Control process to review completed projects, obtain feedback from staff, and correct and implement project again, as needed.

Consistent quality service requires that librarians review library systems and streamline operations to meet the patron expectations. Some functional areas in libraries, such as reference, cataloging, acquisitions, circulation, and interlibrary loan, can be defined, measured, analyzed, improved and controlled with the Six Sigma process. As part of the future development of BPM application to ERM, the library plans to attempt to expand ERM operations more broadly to serve all departments of UMUC in electronic resources acquisition on management.

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[i] Unsuccessful license negotiations are rare, but it is usually due to language in the contract that we cannot agree to due to state contracting guidelines. We attach notes so we will know why the contract was problematic in the past when we attempt to renegotiate.

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