

ARTICLES

Re-engineering Archives: Business Process Management (BPM) and the Quest for Archival Efficiency

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Abstract

The twenty-first century provides new challenges and opportunities for professionals working in archives and special collections. One of the most exciting advances of the last decade has been the development of archival content management (ACM) systems that enable archivists to effectively manage information about their collections. Unfortunately, these systems have the unintended consequence of perpetuating the problem of backlogs by augmenting archivists' current fixation on processing as the solution. This article examines how business process management (BPM) can be used to better understand the archival business process and highlights the importance of taking a holistic approach to solving problems such as the backlog. It also looks at how concepts from BPM have the potential to improve ACM systems—particularly through the integration of workflow management.

Many archivists have worried for a very long time about backlogs of unprocessed archives, manuscripts, and rare books and have invested large amounts of time, thought, and effort in recent years developing strategies for eliminating these backlogs and preventing them from

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redeveloping.¹ In November 2002, the Association of Research Libraries (ARL) released the white paper “Hidden Collections, Scholarly Barriers: Creating Access to Unprocessed Special Collections Materials in North America’s Research Libraries.”² It defines “hidden collections” as materials held by special collections repositories across the United States that are not publicly available for research use due to a lack of adequate access points. In many cases, these materials have not been accessioned and only a handful of employees know of their existence. In almost all cases, patrons have no way to discover these materials because they have not been entered into online cataloging systems.

This report highlights the irony that use of special collections materials and demands for access by diverse groups are increasing at a time when archivists are not providing access to all materials in their collections. The authors state that while “statistics show steady and dramatic growth in the use of special collections by diverse groups of users, the status of the backlogged ‘hidden collections’ has not changed. Such hidden resources mean that scholarly projects may well be missing some crucial information that could affect research results and the very nature of the project.”³

The “Hidden Collections” report challenges archivists to address the problem of backlogs so they can “provide the services that a larger and increasingly diverse user population expect,” especially access to all their holdings.⁴ The report posits six recommendations, which can be condensed into two major categories:

- 1) Archivists should consider various levels of cataloging and processing, depending on institutional priorities and use of materials. They should also follow national standards and guidelines for all cataloging, arrangement, and description when possible.
- 2) Archivists need to strike a better balance between the resources committed to acquiring materials and those committed to preparing them for use.⁵

¹ See, for instance, Mark A. Green and Dennis Meissner, “More Product, Less Process: Revamping Traditional Archival Processing,” *American Archivist* 68 (Fall/Winter 2005): 208–63; Christine Weideman, “Accessioning as Processing,” *American Archivist* 69 (Fall/Winter 2006): 274–83; and Donna E. McCrea, “Getting More for Less: Testing a New Processing Model at the University of Montana,” *American Archivist* 69 (Fall/Winter 2006): 284–90.

² Barbara M. Jones, comp., “Hidden Collections, Scholarly Barriers: Creating Access to Unprocessed Special Collections Materials in North America’s Research Libraries,” white paper for the Association of Research Libraries Task Force on Special Collections (2003), <http://www.arl.org/bm~doc/hiddencollwhitepaperjun6.pdf>, accessed 18 January 2011.

³ Jones, “Hidden Collections, Scholarly Barriers,” 15.

⁴ Jones, “Hidden Collections, Scholarly Barriers,” 6.

⁵ Jones, “Hidden Collections, Scholarly Barriers,” 11–12.

While these recommendations have led to widespread discussion of the problem of the backlogs, they do not provide archivists with a way to successfully eliminate the problem. The omission is a glaring weakness of the “Hidden Collections” report.

Mark Greene and Dennis Meissner’s 2005 article “More Product, Less Process: Revamping Traditional Archival Processing” focused the discussion in the archival community squarely on processing practices. They argue that the best way to eliminate the problem of the backlog is “to change the way we process so that we can, with our existing resources, roughly triple the speed with which we process.”⁶ The Greene/Meissner article sparked a passionate discussion about processing procedures and is enshrined in archival parlance as MPLP. This discussion carries on in journal articles, workshops, blog forums, and conference presentations.⁷

Recent articles by Carl Van Ness and Christopher J. Prom raise questions as to whether MPLP’s focus on processing as the main source of archival backlogs is well founded. Van Ness argues that underlying MPLP is “what might be referred to as the Grand Assumption, namely, that the backlog problem is almost exclusively a processing problem.”⁸ He further argues that this is not a safe assumption and that “starting a revolution in the processing room is not the ultimate answer. Many of us have already fought that fight, and the backlog is still winning.”⁹ Prom essentially agrees with Van Ness’s conclusion, writing that “[a]ny archivist attempting to eliminate his or her processing backlog by deciding to leave documents paper-clipped or stapled together in their original folders will be quickly disappointed.”¹⁰ Prom further argues that “[w]e must thoughtfully implement programs to speed processing and reduce backlogs, but we should not place excessive hope in any one solution, because many factors work together to determine the overall effectiveness of an archival program.”¹¹ Both

⁶ Greene and Meissner, “More Product, Less Process,” 254.

⁷ For example, see Weideman, “Accessioning as Processing”; McCrea, “Getting More for Less: Testing a New Processing Model at the University of Montana”; and Society of American Archivists, “Continuing Professional Education Program Catalog,” Implementing “More Product, Less Process,” http://www.archivists.org/prof-education/course_cataloglist.asp#MPLP, accessed 20 July 2010; “Guest Blogger: Dan Santamaria Shares Some Thoughts on the Recent MPLP Discussion,” *ArchivesNext* 21 August 2009, <http://www.archivesnext.com/?p=332>, accessed 20 July 2010; Jennifer Wright, “How Much Is Enough?,” *The Bigger Picture*, 17 August 2010, <http://blog.photography.si.edu/2010/08/17/how-much-is-enough/>, accessed 19 August 2010; and Elizabeth Nielsen, “How Do We Keep from Getting Further Behind?: A Case Study in the Application of Minimal-Level Description in the OSU Archives,” *ScholarsArchive at OSU*, <http://hdl.handle.net/1957/8635>, accessed 16 July 2010.

⁸ Carl Van Ness, “Much Ado about Paper Clips: ‘More Product, Less Process’ and the Modern Manuscript Repository,” *American Archivist* 73 (Spring/Summer 2010): 141.

⁹ Van Ness, “Much Ado about Paper Clips,” 145.

¹⁰ Christopher J. Prom, “Optimum Access? Processing in College and University Archives,” *American Archivist* 73 (Spring/Summer 2010): 158.

¹¹ Prom, “Optimum Access?,” 169.

Prom and Van Ness advocate that archivists look beyond processing in their efforts to solve the problem of the backlog. However, neither Prom nor Van Ness proposes concrete solutions that will allow archivists to overcome the challenge of large backlogs.

Even Mark Greene has acknowledged overstating the focus on processing as the solution to archival backlogs. In a recent article, he wrote, "After twenty-five years as an appraisal practitioner, theorist, writer, and educator, I know that appraisal plays a substantial role in creating backlogs that plague U.S. repositories."¹² In many ways, the conversation turns back to the point made in the "Hidden Collections" report about balancing resources more appropriately among different archival activities. To solve the backlog problem, archivists need to take a hard look at all of the components of the archival enterprise and think about how they interact.

This paper traces a recent project we undertook at Brigham Young University to tackle the backlog problem and to better manage our archival workflows. It examines how we reached the conclusion that business process management (BPM), when used in conjunction with archival content management (ACM) systems, provides a powerful tool to help archivists manage and prevent backlogs.

Our current work with BPM principles and software is part of an ongoing exploration of task-based management at the L. Tom Perry Special Collections (hereafter Perry Special Collections).¹³ Beginning in the mid-1990s, department administrators used various tools to help manage and track archival work. The earliest of these tools were paper checklists of archival tasks to be completed by curators and students. These checklists indicated who was responsible for each task and in what order the tasks should be completed. In 2004, we began to investigate the feasibility of automating these tracking forms and developed a prototype system using Microsoft Access. We envisioned the creation of this Access database as the first step in the development of a Web-based archival management system. Shortly after implementation of the Access database, we launched a project to design and build our version of an ACM capable of workflow management.

Begun in early 2005 and titled the Integrated Digital Special Collections (INDI) project, the intent was to streamline and improve the workflow processes in the Perry Special Collections. We also aimed to integrate national best practices into a workflow database system.¹⁴ With the INDI system, we sought

¹² Mark A. Greene, "MPLP: It's Not Just for Processing Anymore," *American Archivist* 73 (Spring/Summer 2010): 178.

¹³ More information on the Perry Special Collections is available at BYU Harold B. Lee Library, "L. Tom Perry Special Collections," <http://lib.byu.edu/sites/sc/>, accessed 22 October, 2010.

¹⁴ INDI project team, "Integrated Digital Special Collections (INDI) Project Definition Document" (Provo, Utah: L. Tom Perry Special Collections, 2005).

to make it easier to manage the assignment and tracking of processing tasks, institutionalize departmental review steps, and integrate a variety of functional areas, such as processing activities, collection management, and micrographics. We also aimed to integrate multiple, at times redundant, database applications in use in the department.

We built the INDI system initially on a project management framework and included multiple phases of development:

- Phase one included the base application, a project management engine, and an accessioning tool;
- Phase two called for a tool for archival description; and
- Subsequent phases were to focus on other aspects of the Perry Special Collections' distributed workflow. Among the areas to be included in these phases were reference, collection management, and digitization.¹⁵

Phase one of the application was released internally in July 2007 and the code for this phase was publicly released in August 2008 under an Apache 2.0 license.¹⁶

While the first phase of development was promising, concerns about sustainability emerged after the application programmer departed in late 2007. At the end of April 2008, work on the existing code base was halted and planning began for a replacement system.

As part of our planning efforts, we reviewed our requirements documentation and examined existing ACM systems to determine if they could meet our needs. We discovered that our requirements include two types of functionality: 1) task management and 2) archival content management. We initially used a project management paradigm in the development of INDI, but in testing the system, we discovered that a system based on project management did not work as we had anticipated. Projects are unique, with steps or tasks defined in the context of each. We wanted to standardize archival activities by using the same procedures every time. This was not project management. Rather it was task-based management, and we quickly discovered a field devoted to this type of activity—business process management.

Business Process Management

BPM is a field of management focused on aligning organizations with the needs and wants of their customer bases. It is “a customer-focused approach to

¹⁵ More information on the INDI project can be obtained at Brigham Young University, <http://lib.byu.edu/indi/>, accessed 22 October 2010.

¹⁶ The code may be accessed at Google, “Sierra-Indi,” <http://code.google.com/p/sierra-indi/>, accessed 22 October 2010.

the systematic management, measurement and improvement of all company processes through cross-functional teamwork and employee empowerment.”¹⁷ It supports “business processes using methods, techniques, and software to design, enact, control, and analyze operational processes involving humans, organizations, applications, documents and other sources of information.”¹⁸ BPM enables standardization of activities and processes, and increases organizational efficiency.

Its primary goal is “to improve business processes and so ensure that the critical activities affecting customer satisfaction are executed in the most efficient and effective manner.”¹⁹ In other words, improved efficiency in business processes should always be aimed at meeting customer needs. For archivists, this means that attempts to improve the archival business process should always result in better service to patrons. In practical terms, this means that whatever archivists do should result in greater and more efficient access to our collections—which is what customers truly care about. The appeal of BPM is its advocacy of a holistic approach to solving business problems. It “attempts to overcome the piecemeal improvements in isolated parts of a business process that often result in sub-optimal solutions. It addresses the interdependence of strategy, people, processes, and technology in achieving business objectives.”²⁰ It is precisely this holistic approach that archivists have been missing as we grapple with the phenomenon of large backlogs by focusing on only one component—archival processing—in the larger archival business process.

It is helpful to pause for a moment and define what is meant by the term *business process*. Definitions vary widely, but underlying the majority of them is “the concept of a series of interrelated activities, crossing functional boundaries, with specific inputs and outputs.”²¹ Put another way, in BPM parlance, a business process “consists of multiple *activities* (also known as ‘steps’ or ‘tasks’),”²² and these activities are definable by their inputs and outputs. In this sense, the archival business process comprises the various activities necessary to acquire,

¹⁷ Hajo A. Reijers, *Design and Control of Workflow Processes: Business Process Management for the Service Industry* (Berlin: Springer, 2003), 18.

¹⁸ M. Weske, W. M. P. van der Aalst, and H. M. W. Verbeek, “Advances in Business Process Management,” *Data and Knowledge Engineering* 50, no. 1 (2004): 2.

¹⁹ Richard Yu-Yuan Hung, “Business Process Management as Competitive Advantage: A Review and Empirical Study,” *Total Quality Management* 17, no. 1 (January 2006): 22.

²⁰ Charles Moller, Carsten J. Maack, and Rune D. Tan, “What Is Business Process Management: A Two Stage Literature Review of an Emerging Field,” in *Research and Practical Issues of Enterprise Information Systems II* vol.1, ed. L. Xu, A. Tjoa, and S. Chaudry (Boston: Springer, 2007), 23.

²¹ Colin Armistead and Simon Machin, “Business Process Management: Implications for Productivity in Multi-Stage Service Networks,” *International Journal of Service Industry Management* 9, no. 4 (1998): 324.

²² Tulu Tanrikorur, “Business Process Management 101: The Basics of BPM and How to Choose the Right Suite,” *Information Week* (7 May 2007), 3, <http://www.intelligententerprise.com/showArticle.jhtml?articleID=199204260>, accessed 16 July 2010.

process, preserve, and provide reference service for a collection. Solving the problem of the backlog means examining the entire archival business process rather than focusing on one discrete piece of it; a limited focus can lead to suboptimal solutions. Yet, this is precisely what the archival community has done over the last five years as it fixated on making archival processing more efficient. While improving processing practices is an important first step in solving the problem of backlogs, the current fixation with processing prevents archivists from taking a more holistic approach to the problem. We quickly learned in the Perry Special Collections that eliminating our backlog requires us to grapple with more than just processing practices.

We began applying BPM concepts to better understanding the archival business process in the Perry Special Collections in 2008. Our particular interest in BPM developed out of ongoing efforts to improve the efficiency of our work.²³ We were particularly interested in automating as much of the process as possible. We discovered that BPM offers a host of tools that enable us to take a holistic approach to re-engineering our application of the archival business process. These tools include process mapping, process modeling, statements of work, and use cases. A discussion of each of these tools and how they have been used in the Perry Special Collections follows.

BPM focuses at the process level. Four key elements help to define processes:

- 1) predictable and definable outputs;
- 2) a linear, logical sequence or flow;
- 3) a set of clearly definable tasks or activities; and
- 4) a predictable and desired outcome or result.²⁴

Processes can include “person-to-person work steps, system-to-system communications or combinations of both.”²⁵ Specialized processes that deliver services are referred to as workflows. Workflows typically involve “the automation of a business process, in whole or part, during which documents, information or tasks are passed from one participant to another for action, according to a set of procedural rules.”²⁶

The workflows that archivists are most interested in deliver services or informational products. Automating archival processes has already begun

²³ The major reasons for our investigation of BPM are discussed in J. Gordon Daines III and Cory L. Nimer, “Tapping Our Potential: Business Process Management and Archival Content Management Systems,” 2009 Society of American Archivists Research Forum Peer-Reviewed Research Papers, February 2010, <http://www2.archivists.org/sites/all/files/GordonDaines-SAA-ResearchPaper-2009.pdf>, accessed 19 August 2010.

²⁴ Mohamed Zairi, “Business Process Management: A Boundaryless Approach to Modern Competitiveness,” *Business Process Management Journal* 3, no. 1 (1997): 64.

²⁵ Tanrikorur, “Business Process Management 101,” 1.

²⁶ Weske et al., “Advances in Business Process Management,” 2.

through the creation of ACM systems that allow for gathering and storage of collection data—the information needed for processing collections. ACM system developers are already examining adding functionality to their systems that goes beyond processing.²⁷ Workflow management tools allow for the automation of decision points and routing decisions. ACM creators have a unique opportunity to help make the archival business process more efficient by integrating these types of workflow management tools into their systems. Integrated workflow management has the potential to allow ACM systems to deliver the right piece of work to the right resource at the right time. It enables archivists to define specific tasks in the system and associate those tasks with specific resources based on role or position. It also allows archives managers to analyze processes—tracking performance, identifying choke points, gathering statistics, and so on—with the aim of improving the overall effectiveness of the institution.

Optimizing the efficiency of workflows (typically through automation) is a daunting and time-consuming assignment that involves the close examination of the process(es) to be optimized, but it is an important task that archivists must undertake to meet the demands of patrons in the twenty-first century. Archives' patrons want as much access as possible to as many collections as possible and are no longer satisfied with archivists' complaints about limited resources. It is time for archivists to learn from business how to re-engineer what we do and to create a lean archival business process that is agile and flexible in responding to patron demands. This means that archivists have to better understand the interconnectedness of the tasks that comprise our business process and are obliged to make the entire archival business process as efficient as possible. This begins with appraisal and ends with providing materials to patrons (either in the reading room or digitally). Archivists must take a holistic approach to our re-engineering efforts.

This will not be an easy task for archivists. Large corporations typically hire management consultants who are expert in BPM to help them re-engineer their business processes.²⁸ All but the largest archival institutions are incapable of taking this route because of limited resources. However, this is no excuse for not moving forward in the quest for archival efficiency. BPM provides a number of tools that small archival institutions can implement, and what is learned through these exercises can be shared in a variety of ways—most importantly through conference presentations and journal articles. Larger archival institutions can

²⁷ See the functional requirements for the combined Archivists' Toolkit/Archon project at ArchivesSpace, <http://archivesspace.org/>, accessed 29 October 2010.

²⁸ Examples of consulting firms offering BPM services to large corporations include Skelta (<http://www.skelta.com/>), BPMInstitute.org (<http://www.bpminstitute.org/consultants-network.html>), and Pericent (<http://www.pericent.com/>), all accessed 19 October 2010.

also implement BPM practices on a larger scale and share what they learn with the profession. Institutions can also engage collaboratively to implement BPM concepts and ideas. The ACM community would be well advised to consider how to integrate workflow management into the applications that they are creating or improving. The rest of this paper will discuss several BPM tools and how they have been employed in a mid-sized archival repository (the Perry Special Collections). It will also discuss how combining ACM systems with BPM tools provides a very real solution to the backlog problem.

Process Mapping

Process mapping analyzes business processes to help “increase customer satisfaction by identifying actions to reduce process cycle time, decrease defects, reduce costs, establish customer-driven process performance measures, reduce

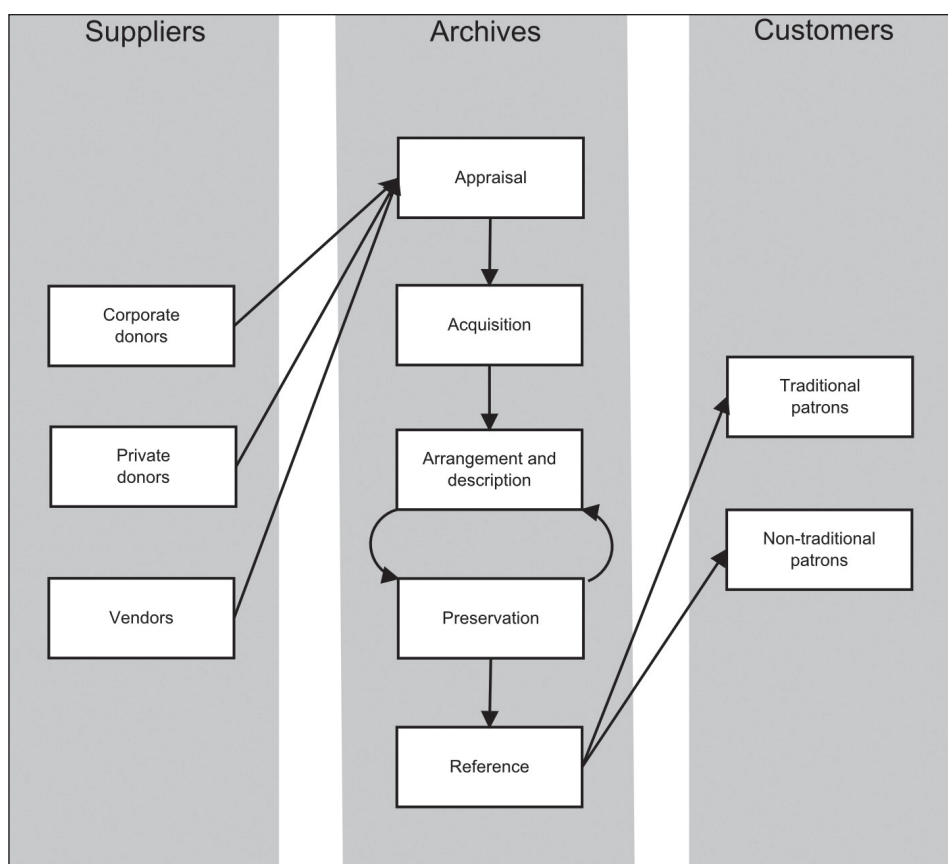


FIGURE 1. Archival business process relationship map.

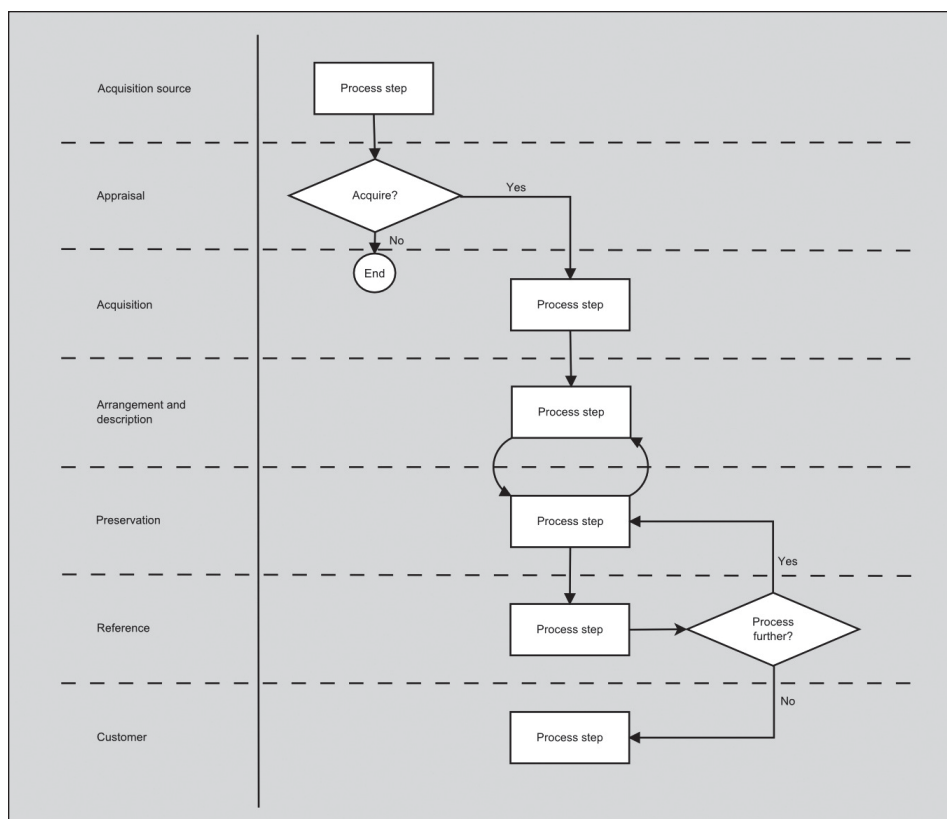


FIGURE 2. Archival business process cross-functional map.

non-value-added steps, and increase productivity.”²⁹ Process maps allow a better understanding of how a business process functions and identify the major players in the process. They provide snapshots in time of how work is done in an organization. There are two major types of process maps:

- 1) relationship maps that “show the customer-supplier relationships or linkages that exist between parts of an organization,”³⁰ and
- 2) cross-functional process maps that “show how an organization’s major work processes cut across several functions.”³¹

Relationship maps are most often used to illustrate how major activities of a business process interact with each other. Figure 1 shows the major activities in the archival business process and their relationships.

Cross-functional maps show the sequences of steps that make a process work as well as the inputs and outputs associated with each step. They indicate where

²⁹ Robert Damelio, *The Basics of Process Mapping* (Boca Raton, Fla.: CRC Press, 1996), 1.

³⁰ Damelio, *The Basics of Process Mapping*, vii.

³¹ Damelio, *The Basics of Process Mapping*, ix.

additional steps should be described to fully understand a business process. (See Figure 2.)

Process mapping is a crucial first step in re-engineering a business process. It “helps you plan your route, highlights obstacles and opportunities along the way, provides a way to gauge progress, and helps you communicate and illustrate your intentions to others.”³² It can be done at three levels of granularity: macro, functional-activity, and task-procedure. Macro flowcharts typically depict two to seven steps that are the critical elements of a process. (See Figure 1, for example.) They facilitate an understanding of the big picture and help to define the boundaries of a business process. Functional-activity flowcharts offer mid-level detail. They include the job titles of the people working in the process as well as the activities they perform. Task-procedure flowcharts are the most detailed. They include all of the details a new hire must know to perform his or her job.³³ Archival institutions will need to develop each one of these process maps to understand the archival business process and the sources of their backlog problems. It is not enough to map only a portion of the process and claim to have found the solution to the backlog problem.

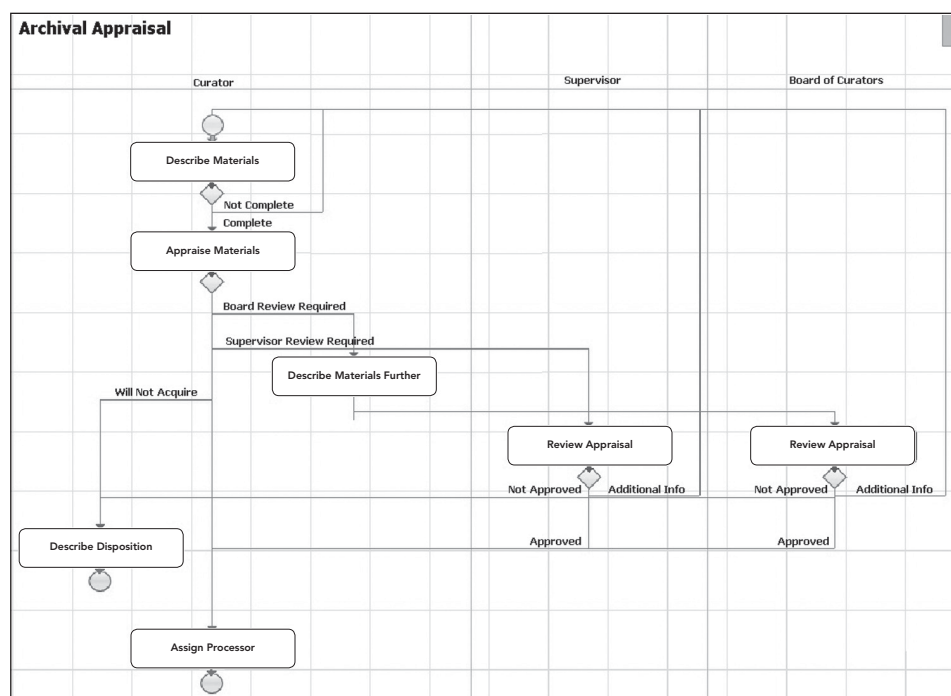


FIGURE 3. Appraisal process map.

³² Damelio, *The Basics of Process Mapping*, vii.

³³ Dan Madison, *Process Mapping, Process Improvement, and Process Management: A Practical Guide to Enhancing Work and Information Flow* (Chico, Calif.: Paton Professional, 2005), 21–25.

Process mapping can be done at the scale of an entire business process as illustrated in Figures 1 and 2, or it can be done on the scale of a particular activity. Figure 3 shows both the relationships and functions of the Perry Special Collections redesign of the appraisal activity.

The major benefits of process mapping are realized at the next levels, the functional-activity and task-procedure levels, where the various activities and what tasks comprise them are defined. Descriptions of activities are typically broken down “into seven distinct types of information. They appear on an activity detail sheet that represents everything a person must know about to successfully complete an activity.”³⁴ Three types of information should always be supplied for each activity:

- 1) General information that identifies which activity is being performed and by whom.
- 2) A brief overview of what has to be done to successfully complete the activity.
- 3) A task list that identifies the individual actions that must be performed to complete an activity.

An additional four types of information are strongly recommended when describing activities:

- 4) A list of materials (forms, policies, procedures, and manuals) that either directly support or reinforce work being performed for an activity within a given process.
- 5) The expected outcomes that occur at the end of an activity within a given process.
- 6) A list of technology resources required to complete a specific activity within a given process.
- 7) A list of the specific actions, constraints, or conditions mandated by management that must be executed successfully at all times.

With a clear understanding of the activities in the business process and how they interact with other activities, the next step is modeling that business process.

Process Modeling

Process modeling is exactly what it sounds like. It involves “modeling a business process, using standard graphical and XML representations, as a flow of activities”³⁵ and carefully analyzing the component pieces of a process and how they work. Finished process models describe the conditions that “define how and when an activity is performed.”³⁶ Process modeling is done for both the

³⁴ Madison, *Process Mapping, Process Improvement, and Process Management*, 35.

³⁵ Michael Harvey, *Essential Business Process Modeling* (Sebastapol, Calif.: O'Reilly Media, Inc., 2005), ix.

³⁶ Tanrikorur, “Business Process Management 101,” 3.

Table 1. Hypothetical General Process Chart

Activities	Current Process			Redesigned Process			Difference		
	No.	Time	%	No.	Time	%	No.	Time	%
Appraisal	2	120	10	2	120	10	0	0	0
Acquisition	3	180	15	3	180	15	0	0	0
Arrangement and Description	8	1440	50	6	1220	45	-2	-220	-5
Storage/Holdings Maintenance	7	360	20	7	360	20	0	0	0
Reference	5	80	5	4	70	5	1	0	0

actual process and the proposed process improvement. Processes are modeled using at least one of the following charts: general process charts, process flow diagrams, process activity charts, or flowcharts.

General process charts summarize “the current process, the redesigned process, and the expected improvements from the proposed changes.”³⁷ They provide a good overview of the entire process and how component tasks interact. They describe the number of activities by category, the amount of time each activity takes, and what percentage this represents of the time it takes to complete the entire business process. The general process chart in Table 1 presents a scenario in which an archival repository could achieve efficiencies in one of the tasks associated with the archival business process. By listing the number of steps associated with each particular task of the archival business process as well as the time necessary to complete those steps, the chart highlights where efficiencies could potentially be achieved. In this particular chart, it appears that the arrangement and description task could be made more efficient by minimizing the number of steps associated with it. The information summarized in the general process chart “indicates with a single glance major problems with the existing process, and how the proposed (redesigned) process will remedy some (or all) of these problems.”³⁸ The major goal of the general process chart is to indicate where change is possible and desirable. (See Table 1.)

Process flow diagrams allow staff to “draw movements of items from one activity or area to another on a picture of the facility.”³⁹ They are useful for identifying redundancies and unnecessary movement between tasks. The process flow diagram in Figure 4 reveals that either the case file or the collection moves among multiple individuals and locations. The gray squares in the diagrams indicate locations in a fictitious archives building. The arrows indicate

³⁷ Manuel Laguna and Johan Marklund, *Business Process Modeling, Simulation, and Design* (Upper Saddle River, N.J.: Pearson Prentice Hall, 2005), 105.

³⁸ Laguna and Marklund, *Business Process Modeling, Simulation, and Design*, 105.

³⁹ Laguna and Marklund, *Business Process Modeling, Simulation, and Design*, 106.

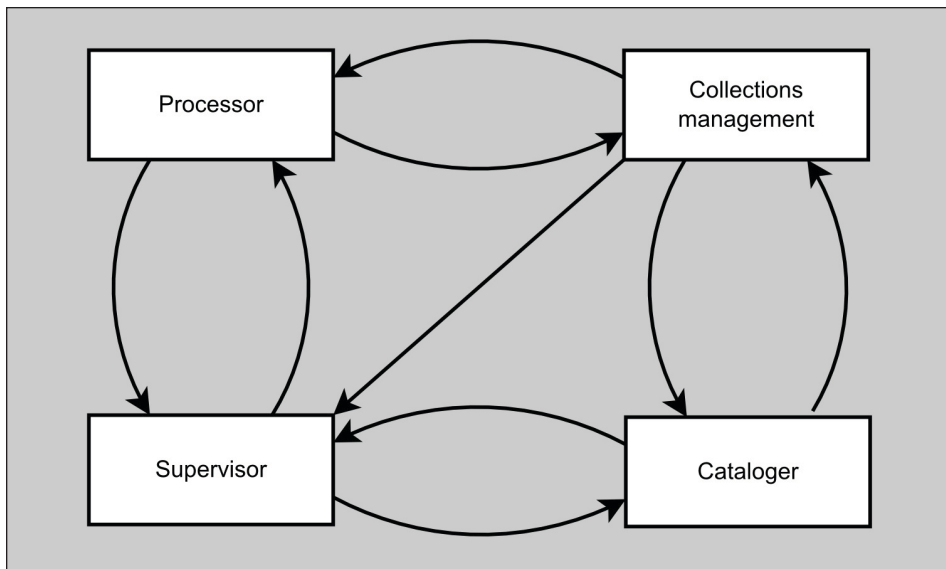


FIGURE 4. Arrangement and description flow diagram. Process flow diagram indicating the multiple points of movement for one collection.

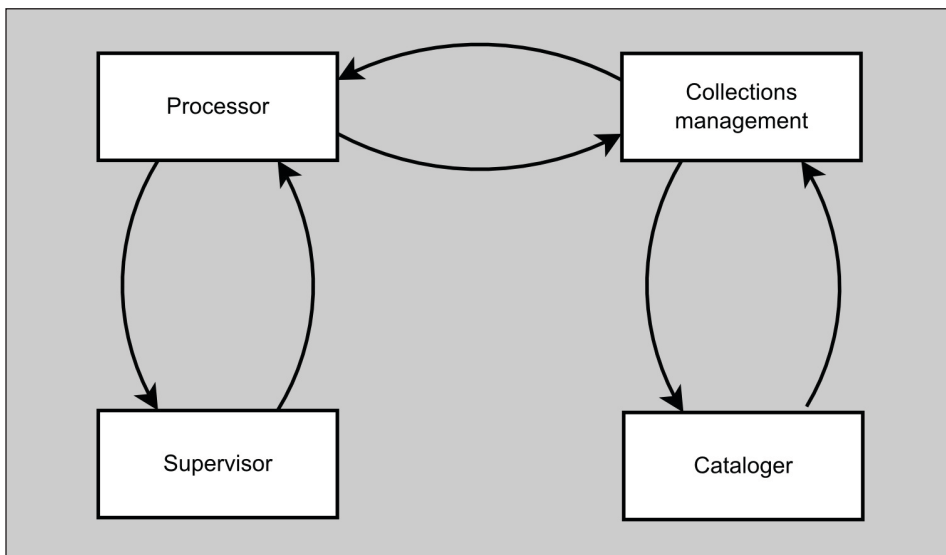


FIGURE 5. Arrangement and description flow diagram (revised).

movement of either the collection or case file between individuals and locations. Process flow diagrams are useful because they provide a view of the spatial relationships that affect processes. Understanding how materials move physically from one activity to another reveals whether or not an archives is properly maximizing the physical space in which it has implemented the archival business process. These diagrams also indicate graphically where physically redundant

steps occur and where they could be eliminated or improved. A revised diagram (see Figure 5) shows where some of the redundancies can be eliminated to make the previously illustrated business activity (see Figure 4) more efficient.

Process activity charts complement the general process chart by “providing details to gain an understanding of the sequence of activities in the process.”⁴⁰ They are useful in identifying which tasks provide value to the process and which tasks function as controls. Table 2 describes a potential sequence of steps that could occur when appraising and acquiring a collection in the Perry Special Collections. This activity chart reveals that the archivist spends a sizable percentage of time on steps that do not add value to the activity. These areas could be redesigned to be more efficient.

Flowcharts are the BPM tool with which most people are familiar. They are used to “graphically depict activities, typically in a sidelong arrangement such that they follow the movement of a job from left to right through the process.”⁴¹

Table 2. Process Activity Chart for Appraisal and Acquisition

Process Activity Chart		Page: 1 of 1	
Process: Appraisal and Acquisition		Date: 10/23/2009	
Developed by: L. Tom Perry Special Collections		Current Process ☐ Proposed Process ☐	

No.	Description	Time	Value Code (V/N/C)
1	Contact donor	10 minutes	V
2	Wait for response	2 days	N
3	Set up appointment	10 minutes	N
4	Drive to donor's location	15 minutes	N
5	Examine collection	2 hours	V
6	Decide to acquire	5 minutes	V
7	Complete Deed of Gift	20 minutes	C
8	Load collection into car	15 minutes	N
9	Drive back to office	15 minutes	N
10	Unload collection and take to storage area	15 minutes	N

For each activity, fill in the required information. The value code indicates whether the activity adds value (V), does not add value (N), or controls (C).

⁴⁰ Laguna and Marklund, *Business Process Modeling, Simulation, and Design*, 109.

⁴¹ Laguna and Marklund, *Business Process Modeling, Simulation, and Design*, 110.

Flowcharts are useful in identifying decision points and parallel activities in a process. Figure 6 is a sample flowchart from the Perry Special Collections' redesign of its archival business process. This particular flowchart maps the then-current appraisal process and demonstrates how complex even a simple task can be. It highlights the multiple decision points and tasks involved when appraising a collection in the Perry Special Collections.

Process modeling is a crucial step in deepening an understanding of the archival business process. Archivists need to create general process charts,

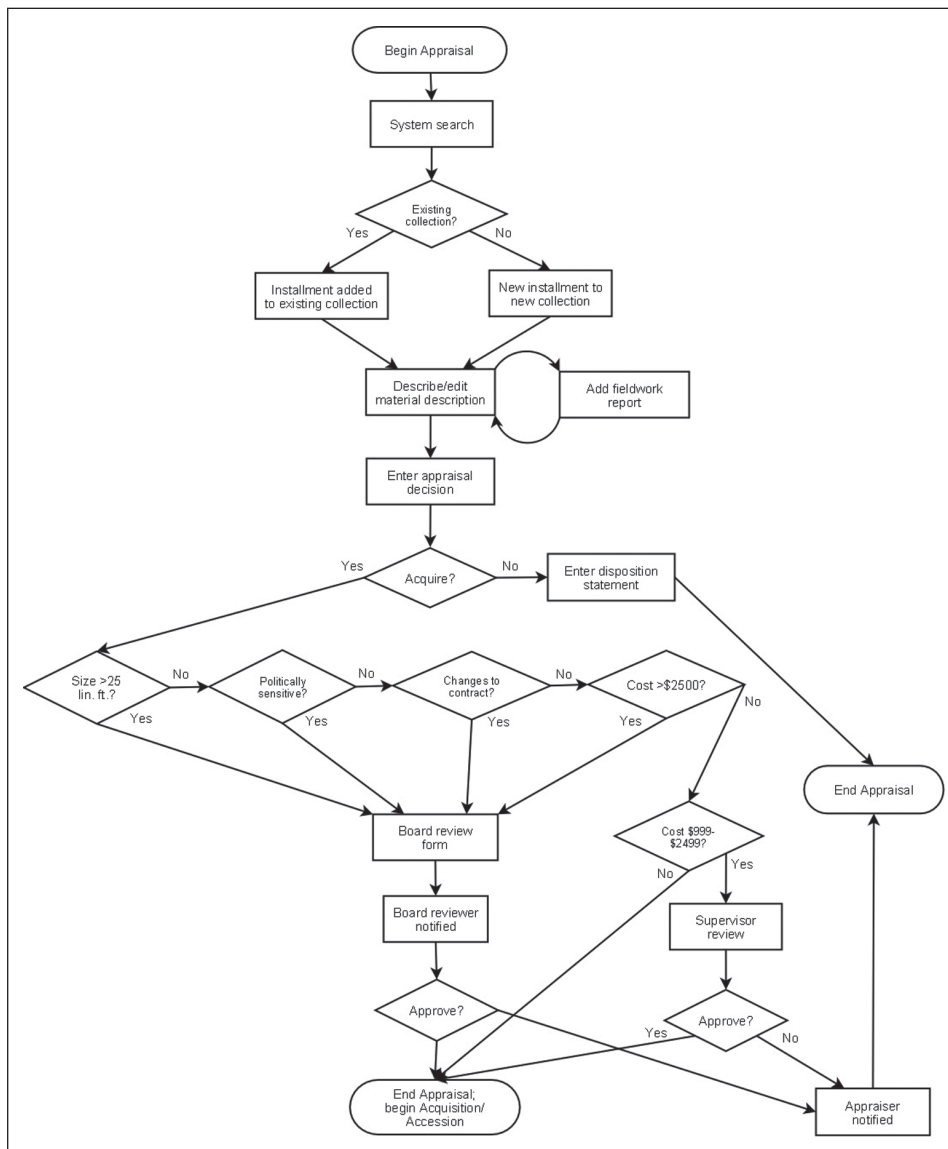


FIGURE 6. Appraisal flowchart (Perry Special Collections) as of September 2008.

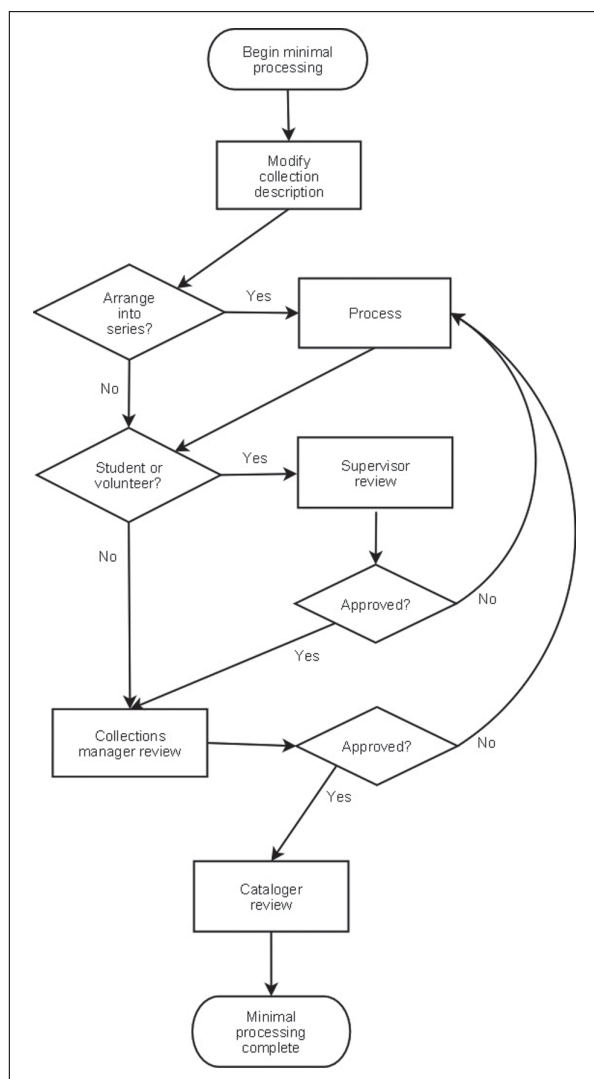


FIGURE 7. Process model for Perry Special Collections minimal processing tasks.

process flow diagrams, process activity charts, and flowcharts of the various components of the archival business process to pinpoint the true bottlenecks that lead to the creation of backlogs. These process models then need to be compared across institutions to reveal whether there are any common themes to the backlog problem or whether each institution faces a unique problem caused by its peculiar implementation of the archival business process. The devil is in the details, and it is in the details of all of the components of the archival business process that archivists will truly find ways to make our work more efficient and better serve our customers.

It is helpful at this point to take a closer look at one of the flow diagrams we developed in the Perry Special Collections' re-engineering of its archival business process. Figure 7 visually depicts how minimal processing is implemented in the Perry Special Collections. Three basic steps described in the flow diagram apply to almost all archival institutions: identifying original order or creating series order, describing that order, and appropriate reviews for compliance with institutional standards. This model is embedded in the trainings offered to students and curators in the Perry Special Collections and guides their application of minimal processing to all manuscript collections.

The first step in the workflow is to initiate minimal processing. The next step is to determine whether the original order of the collection includes discernable series. If there are identifiable series, the processor describes them. If there are no discernible series, the processor arranges the collection into series and then describes those series. The description is forwarded to a supervisor who approves or rejects the description. If the description is rejected, it is returned to the processor who redoes the description and returns it to the supervisor. If the description is approved, it is forwarded to collection management and reviewed again. If the description is rejected by collection management, it is returned to the processor to rework. The description is then returned to collection management. If collection management approves the description, it is forwarded to the manuscripts cataloger for a final review. If the cataloger rejects the description, it is returned to the processor for more work. The description is then returned to the manuscripts cataloger. If the cataloger approves the description, then minimal processing is completed.

When used in conjunction with process mapping, process modeling provides a powerful window into how an organization can streamline its work and achieve optimal efficiency. It allows archivists to envision changes to activities and their interrelationships without actually changing anything, and it allows archivists to explore various possibilities for process improvement before actual implementation.

Once archivists have mapped and modeled a business process, they are ready to move into the implementation phase. Statements of work (SOW) and use cases help define what needs to be accomplished and establish the parameters of the work to be done.

Statements of Work

A SOW is "a specific statement regarding the requirements needed in a service contract. The statement of work should include all aspects of job requirements, performance and assessment."⁴² SOWs are generally used to help

⁴² SearchITChannel.com, "What Is Statement of Work (SOW)?," http://searchitchannel.techtarget.com/sDefinition/0,,sid96_gci1244500,00.html, accessed 19 August 2010.

automate processes. They describe the current process and then represent the proposed process in graphical and textual format. They can use elements from both process modeling and process mapping. They facilitate an understanding of the changes being made to an activity and how those changes will influence other activities in the process. They are essential to successfully completing any re-engineering project because a well-constructed SOW is “the keystone for clear communication and effective interaction between naturally distinct parties. It should provide a level of guidance that maximizes the chance that the final product will serve the purposes of the partner or sponsor.”⁴³ The SOW typically includes a description of the scope of the work to be accomplished, the location of the work, the expected period of performance, a deliverables schedule, a list of the applicable standards to follow in the redesign process, criteria for successful completion of the project, any special requirements, and any additional information useful to completing the project.⁴⁴

In the Perry Special Collections, we used a SOW template developed by ProcessMaker to aid us in automating the archival business process (see Appendix I for a sample SOW). The ProcessMaker template requires an executive summary describing the project and the reasons that it has been undertaken, objectives and project scope, methodology that will be used, an analysis of the current situation, an evaluation of the need and potential for success of the project, and the proposed solution (which includes expected deliverables, an elaboration of the various steps for each activity, and workflow requirements). The template allowed us to utilize both process modeling and process mapping as we thought about how the archival business process should function in our institution. We used cross-functional process maps, flowcharts, and process flow diagrams to understand how work is distributed in the department and to model our proposed application of the archival business process. We are currently implementing the redesigned workflows using the ProcessMaker software.⁴⁵ Our use of SOWs enables us to have better working relationships with the library’s internal information technology staff and helps both sides understand what we hope to accomplish when the ProcessMaker implementation is complete. Having a SOW in place definitely helps us ensure that expectations are properly established with the client (Perry Special Collections) and that the project team (library information technology) hasn’t committed to performing work they are incapable of doing. The fact that we have “expectations properly

⁴³ David B. Matchar, Meenal Patwardhan, Antonio Sarria-Santamera, and Emma V. Westermann-Clark, “Developing a Methodology for Establishing a Statement of Work for a Policy-Relevant Technical Analysis,” *Technical Review* 11 (January 2006), Agency for Healthcare Research and Quality, <http://www.ahrq.gov/downloads/pub/evidence/pdf/statework/statework.pdf>, accessed 19 August 2010.

⁴⁴ *Wikipedia*, s.v. “Statement of work,” http://en.wikipedia.org/wiki/Statement_of_work, accessed 19 August 2010.

⁴⁵ More information about ProcessMaker is available at <http://www.processmaker.com/>, accessed 19 August 2010.

established greatly increases the likelihood that the project team will deliver at least, and possibly more than, what was originally expected.”⁴⁶ It is very useful for all of the redesign team members to operate from the same framework. The concepts behind SOWs should be familiar to archivists. Processing plans are essentially internal SOWs that archivists use to ensure that collections are not overprocessed and that limited resources are appropriately utilized. It makes sense to take the SOW model and apply it to other components of the archival business process.

Use Cases

Another tool that helps us better understand how our proposed redesign of the archival business process will work is use cases. Use cases “describe the outwardly visible requirements of a system. They are used in the requirements analysis phase of a project and contribute to test plans and user guides. They are used to create and validate a proposed design and to ensure it meets all requirements.”⁴⁷ Use cases are very helpful in establishing the boundaries of the system selected for implementation. They “allow description of sequences of events that, taken together, lead to a system doing something useful.”⁴⁸

Use cases also help identify the “actors” involved in various activities and what they want from those activities. For the purposes of use cases, *actor* is defined as “anything that interfaces with your system—for example, people, other software, hardware devices, data stores, or networks. Each actor defines a particular role.”⁴⁹ Use cases typically include two components—a diagram featuring the actor(s) and how they interact with the system and a flow of events statement. The flow of events statement is “a series of declarative statements listing the steps of a use case from the actor’s point of view.”⁵⁰ Taken together, the use case diagram and the flow of events statement provide a detailed description of how an automated process is supposed to work. In the Perry Special Collections, we employed use cases to help us better understand what we could achieve by automating as much of the archival business process as possible.

A use case diagram for appraisal (see Figure 8) reveals that three actors are potentially involved in appraisal: the appraiser, the appraiser’s supervisor, and the board reviewer. It also indicates several steps related to the appraisal task: describe an installment, make an appraisal decision, and review an acquisition.

⁴⁶ Michael G. Martin, *Delivering Project Excellence with the Statement of Work*, 2nd ed. (Vienna, Va.: Management Concepts, 2010), 12.

⁴⁷ Geri Schneider and Jason P. Winters, *Applying Use Cases: A Practical Guide*, 2nd ed. (Boston: Addison-Wesley, 2001), 1.

⁴⁸ Kurt Bittner and Ian Spence, *Use Case Modeling* (Boston: Pearson Education, Inc., 2003), xvi.

⁴⁹ Schneider and Winters, *Applying Use Cases*, 12.

⁵⁰ Schneider and Winters, *Applying Use Cases*, 29.

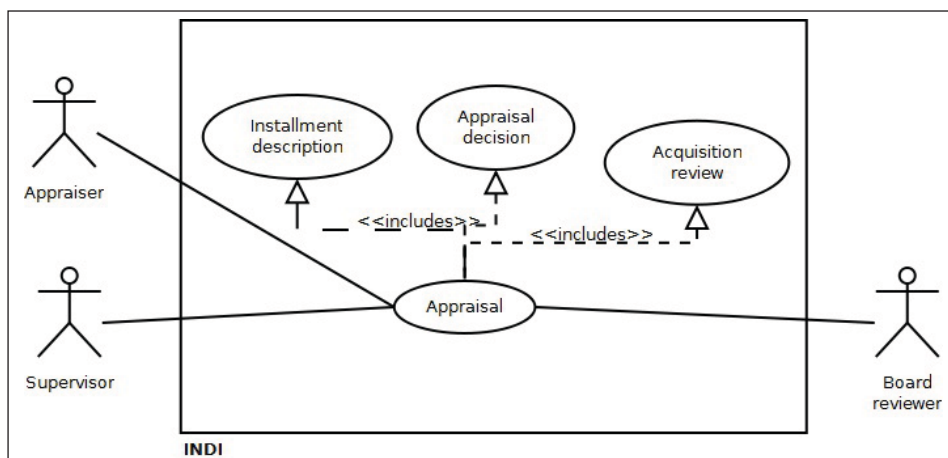


FIGURE 8. Appraisal use case diagram.

The accompanying flow of events statement details the multitude of possible choices that an actor could make in initiating an appraisal workflow and how the system should respond to each of these choices. Taken together, the use case diagram and flow of events statement provide a high level of detail that exposes points of potential improvement in the appraisal activity. They also offer our programmer the information needed to successfully automate the appraisal workflow. As a bonus benefit to us, creating the use case forced us to understand upfront what to expect from the automated workflow and allowed us to initiate a discussion with our colleagues about what steps should be included in the appraisal activity of the archival business process.

Workflow Management Systems

Having successfully modeled the archival business process and created a number of workflows including appraisal and minimal processing, we began to consider how to automate these workflows. As modeled in Figure 7, minimal processing is a business process that delivers a service to researchers and, as such, comprises a workflow.⁵¹ Workflows are a specialized type of business process that can be easily automated. Workflow management (WfM) systems exist to “support the definition, execution, registration and control of business processes.”⁵² WfM systems guide users through the defined process and provide controls to ensure that each task is performed according to the process model. Common system features include task routing, automated notifications, rules-based decision making, time-limit enforcement, prioritization, task tracking,

⁵¹ Reijers, *Design and Control of Workflow Processes*, 4.

⁵² Reijers, *Design and Control of Workflow Processes*, 18.

and reporting. WfM systems require process participants to complete steps in their sequence and allow administrators to measure the effectiveness and efficiency of the process. Once a process has been automated using a WfM system, throughputs can be analyzed to improve the process further.

The first step in implementing a WfM system is to identify the business processes to be automated. These processes are modeled at the three levels already described: macro, functional-activity, and task-procedure.⁵³ As mentioned, macro modeling captures the big picture and outlines the scope of the system to be automated. Functional-activity modeling is “a mid-level of detail...[and] includes the job titles of the people working in the process as well as the activities that they perform.”⁵⁴ Task-procedure modeling is “the most detailed” and includes the level of detail appropriate to explain a particular task to someone during training.⁵⁵ When done correctly, WfM systems enable increased efficiencies by “delivering the right piece of work to the right resource at the right time.”⁵⁶

With a basic understanding of BPM and how it can be used to carefully analyze a business process, we can productively turn our attention to how BPM can be used to improve archival content management (ACM) systems—particularly through the use of a WfM system. We can also discuss how BPM in combination with ACM has the potential to enable the eradication of backlogs.

Archival Content Management

The other functional area identified in the INDI requirements is the management of archival information resulting from processing activities. In the Perry Special Collections, processing activity comprises nine tasks performed by several different individuals, including processors, catalogers, stacks management staff, and curators. These tasks include gathering acquisition and donation information, accessioning the materials, processing the materials, completing a cataloging worksheet, producing a finding aid, creating a catalog record in the online system, obtaining approval of the finding aid by the board of curators when appropriate, labeling boxes, completing any associated conservation work, and placing the collection in the stacks and notating its location.⁵⁷ Each of these tasks needs to be managed within an ACM system for it to be useful to the staff in the Perry Special Collections.

⁵³ Madison, *Process Mapping, Process Improvement, and Process Management*, 21.

⁵⁴ Madison, *Process Mapping, Process Improvement, and Process Management*, 23.

⁵⁵ Madison, *Process Mapping, Process Improvement, and Process Management*, 23.

⁵⁶ Madison, *Process Mapping, Process Improvement, and Process Management*, 18.

⁵⁷ For a more detailed discussion of processing activities, see Kathleen Roe, *Arranging and Describing Archives and Manuscripts* (Chicago: Society of American Archivists, 2005).

Archival processing generates information that describes the creator(s) of the collection, the collection itself, and what the institution has done with it. This data has historically been created and gathered using a variety of different tools and then stored in a variety of formats. However, in ACM systems, all information related to processing activities is gathered, managed, and stored in a single location.

Having reaffirmed our basic requirements using the BPM tools described above, we developed a new requirements document to help us determine which ACM tool could best meet our needs. The requirements document includes detailed definitions of desired functionalities and the prioritization of the features.⁵⁸ We placed these requirements in a matrix for comparing the different existing ACM systems. The matrix also included pricing, sustainability, and support.

We hoped to find an existing ACM system that included WfM functionality. However, in reviewing available systems, we found that when ACM developers speak of supporting workflow, they often mean providing features in support of a given workflow and not WfM features such as task routing or automated rules-based decision making. Conversely, we found that while WfM systems are able to manage workflow, they lack the functionality to adequately gather and manage archival data, particularly descriptive data.

This left us with a quandary—how to best manage archival collections in the Perry Special Collections. We clearly needed both task-based management functionality and the ability to manage complex archival descriptive data to maximize the efficiency of our operation, and no system combines both sets of functionalities. We eventually reached the decision that the only practical solution was to implement a two-system solution, with separate applications for workflow management and archival content management. For WfM, we selected ProcessMaker, an open source, Web-based business process management application. Once implemented, ProcessMaker will make assignments, manage tasks, send notifications, and implement review procedures. For managing information about the materials undergoing archival processing, we selected the Archivists' Toolkit, an open source, desktop-based ACM system.⁵⁹ While recognizing that this two-system solution is less than ideal, it does have the advantage of allowing us to continue to examine workflow management and its benefits for archival activities.

⁵⁸ J. Gordon Daines III and Cory L. Nimer, "ABP Project Requirements" (Provo, Utah: L. Tom Perry Special Collections, 2009).

⁵⁹ Information about the Archivists' Toolkit is available at <http://www.archivisttoolkit.org/>, accessed 21 October 2010.

Toward the Future

Over the course of the last decade, the management of the archival workflows in the Perry Special Collections, and other archival institutions, has gradually evolved. We have moved from using paper forms and detailed processing guides to the automation of the management of archival content through tools such as the Archivists' Toolkit, ICA-AtoM, and Archon.⁶⁰ This evolution has been spurred along by the development of national standards related to description, such as Encoded Archival Description (EAD) and *Describing Archives: A Content Standard (DACS)*, and the steady growth of our collections. It has become imperative to efficiently and expeditiously process collections so that our patrons can use them.

In the Perry Special Collections, we recognize the importance of utilizing BPM tools such as process modeling and workflow management to improve our application of the archival business process. Through process modeling, we are better able to visualize the tasks involved in the archival business process and to explore ways in which we might streamline or improve the process. This has ultimately resulted in improved access to our materials for our patrons. Streamlining our workflow decreases the number of individuals "touching" archival collections and reduces the amount of time that it takes to make a new collection available for research. With the implementation of ProcessMaker, we hope to gather statistical information about process task completion, which we will use to further refine our implementation of the archival business process.

Our review of existing ACM and BPM systems points to the simple fact that these important tools for automating archival processes need to be better integrated. This could be accomplished by either 1) directly integrating workflow management tools as part of the base of ACM systems, or 2) utilizing Web services to enable workflow management systems such as ProcessMaker (or a workflow management tool developed by the archival community) to be coupled to an ACM system.

Combining ACM and WfM systems would offer the archival community the potential to make its collections more widely accessible to patrons in a timelier manner. An integrated system needs to provide data entry functionality, as well as the tracking, notification, and enforcement features that make workflow management software so useful. It also needs to be highly configurable so that institutions could adapt it to their specific implementations of the archival business process.

Regardless of the choice made, the database and its interface must be tightly integrated. Workflow management principles must serve as the basis for the application design to ensure that the system is capable of walking staff through

⁶⁰ It was recently announced that the Archivists' Toolkit and Archon will combine development activities. Information on the Archivists' Toolkit is available at <http://www.archiviststoolkit.org/>, on Archon at <http://www.archon.org/>, and on ICA-AtoM at <http://www.ica-atom.org/>, all accessed 21 August 2009.

the various tasks associated with the archival business process and providing them with appropriate data entry forms when they are needed. The right piece of work has to be delivered to the right person at the right time—something that WfM is particularly good at. Archivists need to identify the basic steps for processing that occur in every institution so that a generic workflow model can be created and integrated into existing ACM systems. As programmers utilize this basic workflow model to create WfM tools within ACM systems, they need to ensure that the workflow is customizable and configurable to individual institutional needs.

Conclusion

Each of the BPM tools described proved useful as we began to re-engineer the archival business process in the Perry Special Collections. Process mapping and process modeling are particularly powerful tools. They forced us to take a holistic approach to the archival business process and focus on how each component activity affects the next activity. They also helped us identify multiple redundancies in our workflows and highlight steps in those workflows that are no longer necessary. We streamlined our workflows and minimized the number of people involved with each archival collection. This enables us to be more responsive to our customers' need to access *all* of our holdings. We are also able to use these tools to identify ways to automate several activities from the archival business process, and we are currently engaged in an implementation project that we hope to finish soon.

It is important to note that the broad outlines of the archival business process will be shared across the profession. However, the implementation of those major activities as described in functional-activity and task-procedure mappings will vary across institutions. This seems to pose a problem for optimizing the entire archival business process in a systematic, and automated, way. Fortunately, this problem has a simple solution. It is critical that integrated workflow management be built into existing and new ACM systems so that they are capable of supporting multiple implementations of the archival business process. One of the major principles behind BPM is flexibility, and it must be built into ACM tools. Archivists must be able to adapt ACM tools to meet the specific implementations of the archival business process their institutions use.

In this paper, I have identified the shared outlines of the archival business process as comprising appraisal, acquisition, arrangement and description, storage/holdings, maintenance/preservation, and reference. All archivists engage in these high-level activities. I have also identified how the Perry Special Collections began redesigning those high-level activities by carefully examining their component pieces using BPM tools. I hope that my examination of how the Perry Special Collections used BPM in re-engineering the archival business process will allow other archivists to recognize the usefulness of BPM

and other extradisciplinary tools as we attempt to eliminate the problem of backlogs and at the same time become more responsive to customers' perceived and real needs.

Archivists are beginning to realize that if we truly want to get control of backlogs and provide archival materials in a responsible way to our customers, we must take a holistic approach to re-engineering the archival business process. We need to look at how appraisal affects acquisition, how acquisition affects arrangement and description, how arrangement and description affect collection management, and how collection management affects reference services. BPM provides tools to model each of these tasks and successfully manage the archival business process. It also provides a mindset that forces archivists to focus on meeting customer needs. Any process improvement must be geared to increase customer satisfaction, and archivists cannot successfully do this without looking at the entire archival business process.

In the afterword to his book *The Tipping Point*, Malcolm Gladwell recounts a conversation he had with an epidemiologist who spent the better part of his professional life battling the AIDS epidemic. The epidemiologist pointed out that "the AIDS epidemic is fundamentally a social phenomenon. It spreads because of the beliefs and social structures and poverty and prejudices and personalities of a community, and sometimes getting caught up in the precise biological characteristics of a virus merely serves as a distraction."⁶¹ His point is that we need to focus on the root causes of a problem and that those root causes are generally multifaceted. In the case of AIDS, these root causes are beliefs, social structures, prejudices, and personalities. In many ways, the archival struggle against the backlog has similarly multifaceted root causes.

Archivists' recent professional obsession with improving the efficiency of processing as a means to solve the problem of large backlogs is a chimera. We are focusing attention on one portion of the backlog problem rather than on its root causes. To get at those, we need to step back and look at the entire archival business process and work to optimize it. This is the only way to truly solve the problem of large backlogs. Archivists must examine the activities of the archival business process at several different levels of granularity and at several different institutional types. Once common themes are identified across institutions and activities, then solutions can be proposed that truly merit the extensive time necessary to create training tools to help eliminate backlogs and, more importantly, prevent them from reoccurring. Tools from BPM, such as process mapping, process modeling, SOWs, and use cases, facilitate a truly holistic approach to the problem, and if archivists dedicate as much time and thought to maximizing the efficiency and effectiveness of all of the components of the archival business process as they have recently given to processing, they will reach a tipping point and eliminate the backlogs.

⁶¹ Malcolm Gladwell, *The Tipping Point: How Little Things Can Make a Big Difference* (New York: Little, Brown and Company, 2002), 261.

Appendix I: Sample Archival Appraisal Scope of Work (reformatted for publication)

Project Name	Archival Appraisal
Company / Department	L.Tom Perry Special Collections
Version	0.1
Author	Cory L. Nimer
Status	Draft
Begin Date	June 17, 2009
End Date	

Approvals

Approval 1	
Name	Gordon Daines
Date	June 18, 2009
Position	Assistant Department Chair for Manuscripts
Signature	
Comments	
Approval 2	
Name	Russ Taylor
Date	June 18, 2009
Position	Department Chair, L.Tom Perry Special Collections
Signature	
Comments	

Executive Summary

The L. Tom Perry Special Collections has identified the need for improved process management for archival appraisals done within the department. This process includes the identification of relevant archival materials, donor relations, and approvals for acquisition. The outlook for this project includes improved management of the appraisal approval process, reducing the time between the submission of an approval request and approval, reducing the time between appraisal and assignment for processing, and verifying that adequate review is provided throughout the process. These improvements will streamline the approval process and reduce the development of processing backlogs.

Objectives and Project Scope

The project objectives are as follows:

- Automate all process-related forms through ProcessMaker
- Provide adequate reviews for complex appraisal decisions
- Reduce time between approval request submission and approval

Methodology

This project will rely on the PLAN-DO-CHECK-ACT (PDCA) cycle in order to improve process management. Currently we are in the Plan stage. During the Do stage, the Archival Appraisal Process will be implemented. During the Check stage, we will monitor process progress and evaluate how well we are meeting our time reduction and efficiency improvement objectives.

Based on this evaluation, during the “Act” stage, we will make necessary adjustments to the Process design in order to maximize our BPM results.

Analysis of Current Situation

Current Process Status

Process Name:	Archival Appraisal
Process Owner:	Gordon Daines
Process Flow: Appraisals are done at the end of a period of fieldwork and/or review by individual curators within the department. Limited documentation is maintained for appraisal decisions, though the Board of Curators has instituted a review policy for acquisitions. The policy requires that all accessions of greater than 25 linear ft. or with a value of over \$2,500 be brought to the board for review. Materials that bear some political sensitivity, as well as those that would require a change in the standard contract, also require a review by the board. The policy also requires that acquisition requests for materials valued at between \$1,000 and \$2,500 be approved by the curator's supervisor. Once appraisals are made, there is often a lag in time between when the materials are acquired and when processing work is assigned.	

Process Maturity Assessment

Is the process institutionalized?	Yes
Is the process documented?	No
Observations: There is a need for improved documentation of activities, and for streamlining of the review process. Fieldwork documentation is currently maintained in case files in disparate forms, while appraisal decisions often go unrecorded. The review process works well, though there is room for improvement for task routing.	

Evaluation

Given the current status of archival appraisal processes in the department, there appears to be room for improvement through a BPM process. The main problems with the current process are a lack of centralized, standard documentation, and the lack of continuity between appraisal and processing activities. Additionally, there is room for improvement in the review process.

This project provides the opportunity to develop standardized forms for fieldwork and appraisal activities. It also allows for more uniform application of departmental policies, and the immediate assignment of processing staff.

Proposed Solution

In mapping archival appraisal activities, seven tasks were identified. These included tasks for the initiating curator, their supervisor, and the Board of Curators. The curator will begin the process by completing a Dynaform for newly identified archival materials.

Once they have described the collection and have made an appraisal decision, a number of possible tasks follow.

If the curator makes a positive appraisal and acquisition decision, and the decision does not require additional reviews, then a processor is assigned. However, if a supervisor or board review is required approvals will need to be made before the assignment can be made. Conditions that would trigger additional reviews by the supervisor include: value of between \$1,000 and \$2,499. Conditions that would trigger additional reviews by the Board of Curators include: value of \$2,500 or greater, changes to the standard contract, politically sensitive materials, and collections over 25 linear ft. in size. If during these reviews additional information is needed, the supervisor or Board of Curators may allow the curator to provide additional description or revise their appraisal.

If the curator, supervisor, or Board of Curators should make a negative appraisal or decline to acquire the materials, then the curator enters a disposition statement and the process ends.

Proposed Workflow

Description of Tasks and Steps

(Steps, users, derivation rules, alerts, time restrictions, Triggers, Web Services, etc.)

USERS: Curators, Supervisors, Board of Curators

DYNAFORMS: Material Description Form, Appraisal Form, Disposition Form, Expanded Material Description Form, Supervisor Review Form, Board of Curators Review Form, Processor Assignment Form

See Figure 3.

OUTPUT DOCS: None

INPUT DOCS: Photographs or other documentation (optional)

ALERTS: Notifications after most steps

TIME RESTRICTIONS: Material Description Form (365 days), Appraisal Form (1 day), Disposition Form (1 day), Expanded Material Description Form (1 day), Supervisor Review Form (1 day), Board of Curators Review Form (30 day), Processor Assignment Form (1 day)

TRIGGERS: None

Requirements

Overall Workflow Requirements:

Item	Functional Requirements	Tasks
materialForm	Material Description Form (see Appendix A)	Describe Materials
appraisalForm	Appraisal Form (see Appendix B)	Appraise Materials
disposeForm	Disposition Form (see Appendix C)	Describe Disposition
expandMatForm	Expanded Material Description Form (see Appendix D)	Describe Materials Further
supReviewForm	Supervisor Review Form (see Appendix E)	Review Appraisal (Supervisor)
boardReviewForm	Board of Curators Review Form (see Appendix F)	Review Appraisal (Board of Curators)
assignProcessForm	Processor Assignment Form (see Appendix G)	Assign Processor

Reporting Requirements

Item	Functional Requirements	Comments
Ongoing Appraisals	Report of current appraisals, time open	
Declined Appraisals	Report of materials not selected for acquisition, disposition	

Expected Results

By the end of the project, we expect to achieve the following results:

- Automate all process-related forms through ProcessMaker
- Create automatic, periodic Ongoing Appraisals report
- Provide correct routing for positive appraisals with extenuating issues
- Assign processing staff for all new acquisitions
- Increase user accountability

The PDCA cycle will continue beyond the time scope of this project.

Conclusions

After reviewing the current state of the archival appraisal processes in the department, we are convinced that there is room for improvement and that there will be some benefit to applying BPM methodologies to the process. Standardizing the process will improve overall documentation of this phase of the archival lifecycle, and will streamline the review process. It will also provide greater continuity in processing, as completion of the process will require the assignment of a processor for the materials.

Appendix A: Material Description Form

This form includes information about the materials being appraised, including fieldwork entries. Form is to be completed by the curator.

Fields:

Name	Type	Required	Comments
title	text	Yes	
dateBegin	integer	Yes	Form should validate to four character date.
dateEnd	integer	Yes	Form should validate to four character date.
donorName	text	Yes	
donorAddress1	text	Yes	
donorAddress2	text	No	
donorCity	text	Yes	
donorState	text	Yes	
donorPostalCode	text	Yes	
donorCountry	text	Yes	
donorPhone1	text	No	Either a phone number or an e-mail address is required.
donorPhone2	text	No	
donorEmail	text	No	E-mail address should validate in form.
referrerName	text	No	

creatorName	text	Yes	
creatorBio	text	Yes	Field limited to 2000 characters.
materialDesc	text	Yes	
materialExtent	integer	Yes	In linear feet.
materialProvenance	text	Yes	
materialInventory	text	No	
materialInventoryDoc	attachment	No	
collectingArea	option	Yes	Options include: 19th Century Western & Mormon Americana; 20th Century Western & Mormon Americana; 21st Century Western & Mormon Americana; Arts & Communications Archives; FARMS; Film Music Archives; Folklore Archives; ISPART; Juvenile Literature Archives; Literary Manuscripts; Mormon Media Collection; Motion Picture Archive; Photo Archives; University Archives
materialCondition	text	No	
fieldworkReports	grid	No	

fieldworkReports Grid

Name	Type	Required	Comments
contactDate	date	Yes	System-generated.
contactType	option	Yes	Options include: letter, email, phone, visit
reportingPerson	text	Yes	
nextContactDate	date	No	
contactDesc	text	Yes	

Appendix B: Appraisal Form

This form includes an appraisal of the materials, including a reference to the appropriate collection development policy. Form is to be completed by the curator.

Fields:

Name	Type	Required	Comments
title	text	Yes	Non-editable.
dateBegin	integer	Yes	Non-editable.
dateEnd	integer	Yes	Non-editable.
creatorName	text	Yes	Non-editable.
creatorBio	text	Yes	Non-editable.
materialDesc	text	Yes	Non-editable.
materialExtent	integer	Yes	Non-editable.
collectingArea	option	Yes	Non-editable.
materialValue	integer	Yes	Default value: 0
contractChanges	Boolean	Yes	Default value: No
politicallySensitive	Boolean	Yes	Default value: No
appraisalDesc	text	Yes	
appraisalDecision	Boolean	Yes	Default value: No

Appendix C: Disposition Form

This form includes information about immediate disposition of materials not selected for acquisition. Form is to be completed by the curator.

Fields:

Name	Type	Required	Comments
title	text	Yes	Non-editable.
dateBegin	integer	Yes	Non-editable.
dateEnd	integer	Yes	Non-editable.
donorName	text	Yes	Non-editable.
creatorName	text	Yes	Non-editable.
materialDesc	text	Yes	Non-editable.
materialExtent	text	Yes	Non-editable.
appraisalDesc	text	Yes	Non-editable.
disposalAction	option	Yes	Options include: return to donor/vendor, destroy, transfer
disposalDesc	text	No	
disposalDate	date	Yes	

Appendix D: Expanded Material Description Form

This form includes additional information about the materials being appraised, as well as associated costs and issues necessary for review by the Board of Curators. Form is to be completed by the curator.

Fields:

Name	Type	Required	Comments
title	text	Yes	Non-editable.
dateBegin	integer	Yes	Non-editable.
dateEnd	integer	Yes	Non-editable.
donorName	text	Yes	Non-editable.
creatorName	text	Yes	Non-editable.
materialDesc	text	Yes	Non-editable.
materialExtent	integer	Yes	Non-editable.
extentFiles	integer	No	Measurement in linear feet.
extentOversize	integer	No	Measurement in linear feet.
extentPhotograph	integer	No	Measurement in linear feet.
extentAudioVisual	integer	No	Measurement in linear feet.
extentElectronic	integer	No	Measurement in linear feet.
collectingArea	option	Yes	Non-editable.
appraisalDesc	text	Yes	Non-editable.
policyCompliance	Boolean	Yes	Default value: Yes
complianceDesc	text	No	

contractChanges	Boolean	Yes	Non-editable.
contractChangesDesc	text	No	
politicallySensitive	Boolean	Yes	Non-editable.
relatedMaterials	Boolean	Yes	Default value: No
relatedMaterialsDesc	text	No	
partOtherCollection	Boolean	Yes	Default value: No
partOtherCollectionDesc	text	No	
materialValue	integer	Yes	Non-editable.
costAppraisal	integer	No	Default value: 0
costShipping	integer	No	Default value: 0
costProcessing	integer	Yes	Default value: 0
costStorage	integer	Yes	Value system-generated based on materialExtent multiplied by \$750.
costReformat	integer	No	
costConservation	integer	No	
underwritingAvail	Boolean	Yes	Default value: No
donorApproached	Boolean	Yes	Default value: No

Appendix E: Supervisor Review Form

This form includes the supervisor's decision on the proposed acquisition, with comment boxes for additional information. Form is to be completed by the curator's supervisor.

Fields:

Name	Type	Required	Comments
title	text	Yes	Non-editable.
dateBegin	integer	Yes	Non-editable.
dateEnd	integer	Yes	Non-editable.
donorName	text	Yes	Non-editable.
creatorName	text	Yes	Non-editable.
materialDesc	text	Yes	Non-editable.
materialExtent	integer	Yes	Non-editable.
collectingArea	option	Yes	Non-editable.
appraisalDesc	text	Yes	Non-editable.
materialValue	integer	Yes	Non-editable.
supAppraisalDecision	option	Yes	Options include: Yes, No, Additional Information
supAppraisalDate	date	Yes	System-generated.
supAppraisalDesc	text	Yes	
supervisorName	text	Yes	System-generated.

Appendix F: Board of Curators Review Form

This form includes the board's decision on the proposed acquisition, with comment boxes for additional information. Form is to be completed by the chair of the Board of Curators.

Fields:

Name	Type	Required	Comments
title	text	Yes	Non-editable.
dateBegin	integer	Yes	Non-editable.
dateEnd	integer	Yes	Non-editable.
donorName	text	Yes	Non-editable.
creatorName	text	Yes	Non-editable.
materialDesc	text	Yes	Non-editable.
materialExtent	integer	Yes	Non-editable.
extentFiles	integer	No	Non-editable.
extentOversize	integer	No	Non-editable.
extentPhotograph	integer	No	Non-editable.
extentAudioVisual	integer	No	Non-editable.
extentElectronic	integer	No	Non-editable.
collectingArea	option	Yes	Non-editable.
appraisalDesc	text	Yes	Non-editable.
policyCompliance	Boolean	Yes	Non-editable.
complianceDesc	text	No	Non-editable.
contractChanges	Boolean	Yes	Non-editable.
contractChangesDesc	text	No	Non-editable.
politicallySensitive	Boolean	Yes	Non-editable.
relatedMaterials	Boolean	Yes	Non-editable.
relatedMaterialsDesc	text	No	Non-editable.
partOtherCollection	Boolean	Yes	Non-editable.
partOtherCollectionDesc	text	No	Non-editable.
materialValue	integer	Yes	Non-editable.
costAppraisal	integer	No	Non-editable.
costShipping	integer	No	Non-editable.
costProcessing	integer	Yes	Non-editable.
costStorage	integer	Yes	Non-editable.
costReformat	integer	No	Non-editable.
costConservation	integer	No	Non-editable.
underwritingAvail	Boolean	Yes	Non-editable.
donorApproached	Boolean	Yes	Non-editable.
bocAppraisalDecision	option	Yes	Options include: Yes, No, Additional Information

bocAppraisalDate	date	Yes	System-generated.
bocAppraisalDesc	text	Yes	
bocChair	text	Yes	System-generated.

Appendix G: Processor Assignment Form

This form includes the assignment of the processor that will complete archival processing. Form is to be completed by the curator.

Fields:

Name	Type	Required	Comments
title	text	Yes	Non-editable.
dateBegin	integer	Yes	Non-editable.
dateEnd	integer	Yes	Non-editable.
donorName	text	Yes	Non-editable.
creatorName	text	Yes	Non-editable.
materialDesc	text	Yes	Non-editable.
materialExtent	integer	Yes	Non-editable.
processorAssigned	text	Yes	
processorEmail	text	Yes	Email address should be validated in form. Notification will be sent to this address after task completion.