

CASE 14

Partnering with IT to Identify a Commercial Tool for Capturing Archival E-mail of University Executives at the University of Michigan

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Archivists at the Bentley Historical Library who contributed to this project included Nancy Bartlett, Francis X. Blouin, Nancy Deromedi, Gregory Kinney, Michael Shallcross, William Wallach, and Brian Williams. Collaborators from Information and Technology Services and the University Library included Margaret Bennett, Jose Blanco, Ezra Brooks, Paul Courant, Cathy Curley, Aaron Elkiss, John Gohsman, Mary Gohsman, Kat Hagedorn, Michael Loviska, Jim Ottaviani, Laura Patterson, Christina Powell, Kim Rinn, Cory Snavelly, Daphne Wakefield, and John Weiss.

Background

In 2008 University of Michigan (U-M) archivists conducted a gap analysis of recently acquired paper records. The results clearly demonstrated that important records of the university were not being transferred to the archives. Instead, digital descendants of essential records formats—such as administrative and faculty correspondence, meeting minutes, and program planning documents—were accumulating chaotically on individual computer desktops, shared drives, and e-mail accounts. Although archivists understood that e-mail records comprised only a part of this problem, university leaders emphasized that e-mail was a particular concern and expressed a readiness to support the Bentley's serious engagement with the problem of acquiring and preserving modern correspondence series. Francis X. Blouin, the director of the Bentley Historical Library, conceived a project to target e-mail records of archival value created by the top officers, deans, directors, and department heads of the university, and aimed to identify and implement a system to allow the records to be managed and preserved by the University Archives and Records Program.

Work accomplished during the ensuing project has had an enormously positive and transformative effect on the Bentley. Unfortunately, e-mail remains a challenge, though the University of Michigan has made significant strides in the better management and preservation of e-mail and all kinds of born-digital materials.

Our initial goal in the project's first phase was to identify a commercial off-the-shelf software tool that would allow the selective capture, management, preservation and reuse of e-mail messages rather than to develop a tool in-house. To accomplish this, we created a set of functional and technical requirements, submitted a Request for Proposal (RFP) to a targeted list of vendors, and then evaluated the proposals. This case study describes the steps we took to accomplish this work and explains the reasons we eventually decided to withdraw the RFP without awarding a contract.

A second, equally interesting aspect of this study explores the substantial challenges of persevering with a research project during a period of rapid technological and organizational change. Not long after the project began, the university decided to restructure, rationalize, and consolidate its IT organizations. It was impossible to anticipate and plan for the disruption this event would cause. IT employees were shifted from role to role and office to office, supervisors took on wholly new program portfolios, and some employees saw their jobs eliminated. At the same time, another enormous change occurred: the model for the delivery of e-mail services shifted from diverse, decentralized university-hosted services to outsourced cloud-based ones provided by Google. This study (and a second, affiliated one) will describe how we continued to make progress in creating policies, tools and procedures for archiving digital records, though the outcomes were not always the ones we had originally targeted. Too often archivists imagine that the organizational and strategic difficulties they face in planning and executing projects are unique to their local ecosystems. But there is no stasis in the world of technology: change is constant and we learned that flexibility is a useful virtue.

Institutional Context

The first public university in the Northwest Territories, the University of Michigan, was established at Detroit in 1817. In 1837, the year Michigan became a state, the University moved to Ann Arbor. Today, the University comprises three campuses, 59,000 students and 35,000 staff members.¹ U-M also operates a health system that manages 45,000 inpatient hospital stays and 1.8 million outpatient visits a year. Total revenue for operating activities for U-M in 2010-11 was \$5.7 billion dollars, with research expenditures of \$1.2 billion. U-M is a public university, but the state constitution grants its Board of Regents autonomy from direct state management.² While U-M's records are subject to the state's Freedom of Information Act, they are not controlled by the state's official record retention and disposal schedules. Instead, U-M promulgates its own records management policies and standards.

The Bentley Historical Library was established in 1935 and has two functions: to serve as the official archives of the university and to document the history of the state of Michigan and the activities of its people, organizations, and voluntary associations. The University Archives and Records Program (UARP), a division of the Bentley, is responsible for collecting, preserving, and making available university records of enduring value. UARP has been engaged with the challenges of emerging technologies and digital formats since as early as 1979.³

The Bentley's governance structure ensures that high-level decision-makers within the university learn the concerns and achievements of the archives. Unlike many other university archives in the US, the director of the Bentley reports directly to the University's provost, rather than to its librarian. The Bentley's Executive Committee currently includes the President of the University, the Provost, the Vice President for Government Relations, the University Librarian, the Chief Information Officer, and the General Counsel, and it is chaired by a professor of history. As a practical matter, this arrangement also isolates the Bentley from the more robust technological support available within the University Library's organization. In order to undertake projects requiring substantial information technology design, implementation and maintenance, the Bentley must collaborate with another campus division having IT expertise.

Happily, the leader of one of U-M's IT organizations shared an interest in improving governance and retention of information and agreed to partner with the Bentley on trying to identify and implement an e-mail management system. In 2008, Laura Patterson led the Michigan Administrative Information Systems (MAIS); today she is the Chief Information Officer of U-M. MAIS had begun operations in 2000, and was a service organization that supported the use of institution-wide administrative information

¹ Office of the Vice President for Global Communications, "2012 Facts and Figures," http://vpcomm.umich.edu/forum/pdfs/2012%20Profile%20FINAL_REV_04-16-12.pdf, downloaded August 21, 2012.

² Public Sector Consultants, Inc. "Michigan's Higher Education System: A Guide for State Policymakers," Ferris State University, 2003. http://www.pcsum.org/Portals/0/docs/fsu_hguide2.pdf, downloaded May 30, 2013.

³ Nancy Deromedi, "Bentley Historical Library Timeline of Digital Initiatives," June 2008. <http://bentley.umich.edu/research/guides/connectivity/digitaltimeline.php>, downloaded May 30, 2013.

services related to functions such as financial and student administration, human resource management, and fundraising activities. MAIS also managed the enterprise-wide imaging solution, ImageNow. As an IT partner for the Bentley, MAIS's organizational expertise lay in procuring appropriate commercial software, adapting off-the-shelf solutions to U-M's specialized needs, and providing ongoing services such as access management, desktop support, security, hardware and software maintenance. MAIS staff members also possessed expertise in project and change management, including significant training expertise, which would be important to help us plan and execute the implementation of any solution that we identified. The project leaders knew, however, that our collaboration would need to include other campus experts.

E-mail expertise resided within a second central IT organization, Information Technology Central Services (ITCS), which provided many of the communications resources for the Ann Arbor campus, including distribution of the basic computing package available to students and staff, the campus telephone system, and the campus cable TV network. This unit maintained an IMAP e-mail server that provided accounts for students and staff. ITCS provided desktop support for many e-mail applications, including Mulberry, Apple Mail, Pine, Thunderbird and Entourage, and created two homegrown interfaces, dubbed "Maize" and "Blue" webmail. End users could choose which desktop application they wanted to use to access their e-mail and indeed could choose one e-mail application for their office computer, and a different one for their home computer or PDA. There was no policy to prevent employees from forwarding their e-mail to a third-party cloud service such as Gmail, and many employees did choose to do so. But this was not the extent of the fragmentation of the university's e-mail system.

Units within the U-M are generally afforded a high measure of autonomy, and several schools and colleges, including the College of Literature, Science and the Arts, the law school and the business school, preferred the functionality afforded by Microsoft Exchange. With the support of their unit-level IT organizations, they elected to deploy their own Exchange servers, which were in 2008 often independent of each other. This meant that their upgrade schedules were not coordinated, so they were running different versions of the server software.⁴ In addition, collaboration functions, such as calendaring, were siloed by school or college—law school professors could propose meetings with fellow law faculty members, but not with professors in other schools and colleges. The health system (which was outside of our project's scope) used a GroupWise (i.e., Novell) e-mail system, but had made plans to move to Microsoft Exchange. Branch campuses in Flint and Dearborn enjoyed a similar autonomy, and could elect to maintain their own e-mail servers.

Everyone recognized that this situation was not optimal, but in 2008, it was not clear what strategic direction the university would take to manage e-mail. Archivists were aware that important executive correspondence was not being preserved and transferred

⁴ None of the Exchange servers had the journaling functionality activated, a pre-requirement, we subsequently learned, for the successful deployment of any software that could act on e-mail messages based on the foldering decisions of the end-user. Activating the journaling function places significant extra burden on the Exchange server.

to the Bentley; IT staff wanted to move university records off of the e-mail servers so that large volumes of transitory data could be purged; and campus leadership needed to fulfill their obligations to preserve the essential evidence of their activities. Our sense of urgency pushed us to tackle the e-mail problem rather than to wait any longer.

Process: Establishing the Team and the Methodology

With the blessing of the Provost, Blouin and Patterson agreed to collaborate, on a solution that would allow executives to identify e-mail messages of long-term value and transfer them to a secure record-keeping system accessible by Bentley archivists. The Bentley's archivists would contribute expertise in the identification of the records to be archived and archival standards for metadata and preservation, and MAIS would help with the identification, procurement, implementation and maintenance of the software and hardware required. In addition, Blouin agreed to seek funding from the Andrew Mellon Foundation. He and Patterson convened a project implementation team, comprised of Bentley archivists and MAIS's Mike Loviska and Kim Rinn, the Director and Assistant Director of its Shared Services division. The MAIS leaders expressed a strong preference for off-the-shelf software, because they perceived that it was cheaper and easier to implement and maintain than open-source or homegrown solutions. Therefore, the team decided to create a Request for Proposal (RFP) to seek vendor solutions.

In order to facilitate the collaboration between the Bentley and MAIS, and because MAIS agreed to contribute financial support, pending possible sponsorship from the Mellon foundation, a position was created within MAIS to be the functional lead for the project. This author was hired to fill the position in September 2008, with the title "Business Process Analyst." A business analyst is typically tasked with helping to develop functional and technical requirements for business solutions by studying existing information flows and processes within an organization. She works as a liaison between the "client" (in our case, the Bentley), the "stakeholders" (university executives and professors, attorneys, auditors, FOIA office, etc.) and the "solutions team" (MAIS).

The team's initial goals were twofold: to write a grant proposal and to gather the functional requirements. We structured the work using MAIS's project management methodology, which included the use of specific templates for project management documents.⁵ Two templates in particular, were helpful in shaping and planning the project work:

- The Project Approach (included information on project scope, roles and responsibilities, communications, risks and project deliverables) (Appendix 1, page 13).
- The Project Schedule (Appendix 2, page 20).

⁵ Information and Technology Services: Research, Teaching and Administration, "Project Management Methodology," <http://www.mais.umich.edu/methodology/project-management/#admin>, downloaded May 30, 2013.

These templates and project management techniques helped ensure that collaborators from different communities shared the same assumptions and helped to communicate the scope and goals of the project to stakeholders outside of our implementation team. During the kickoff phase, we christened the project “Memail” (the initial “M” for Michigan) which we hoped communicated our desire for flexible approach to archiving e-mail, appropriate for university executives.

Our Phase I project plan included concrete goals for creating and issuing an RFP, creating a grant proposal, evaluating vendor proposals and choosing a solution. We did not create a detailed solution implementation plan, because such a plan would be dependent on the selected solution. Our deliverables were entirely based on the goal of generating the Request for Proposal (RFP) and analyzing the resultant vendor proposals.

Gathering Requirements, Creating the RFP, and Evaluating the Proposals

In order to create the RFP and accomplish the project’s goals, the team conducted the following activities:

1. Defining the Project Scope

The team’s first task was to define the project scope. We made the following decisions:

- We would focus on prospective e-mail, rather than legacy accumulations.
- Our users would be university leaders and executives (including academic department chairs), rather than rank-and-file university employees. This is in accordance with traditional archival collecting priorities, which generally take a top-down approach to documenting an organization. In addition, we had learned from our own analysis of incoming records transferred to the University Archives that important gaps had developed in the correspondence series for university leaders.
- For practical reasons we elected to exclude the university’s health system, athletic program and general counsel’s office, but to include both the academic and non-academic functions of the university.
- We would include selected non-executive faculty members if they were willing to give us rights to their correspondence. This was necessary, because the university owns its own records, but university policy allows professors to control the copyright of their non-official writings.

These selections left us with a target population of 1500 record creators. Although local and central IT units had no data about which desktop e-mail applications were employed by specific individuals in their units, we estimated that two-thirds of the target population accessed an Exchange account and one-third an account on a university-run IMAP server.

2. Interviews with Records Creators

Conducting end-user interviews is an important step in user-centered design of new systems. In order to understand end-user's expectations for an e-mail archiving system, we conducted twelve semi-structured interviews, using a prepared script. We took notes and gave assurances of confidentiality. (See Appendix 3: Interview Script, page 21)

We wanted to validate our assumptions: a) that university record-creators felt a need for better e-mail archiving, and thus would be willing to cooperate; b) that individuals needed guidance about which records would be important for long-term preservation; and c) that administrative support for officers, deans, directors and department heads had diminished over the years, leaving most without an assistant tasked with filing e-mail correspondence.

The first and second assumptions were validated by our interviews, but we learned that there was a great variety of practice as to whether administrative assistants took an active part in filing e-mail messages. Several decision-makers we interviewed had developed disciplined practice with their assistants to have copies of record e-mails preserved outside of their individual mailboxes. Local practice differed, but usually required the assistant to make PDF or paper copies of the boss's messages and place them in a file system in SharePoint, a shared drive, file cabinet or other collaborative document management system.

We also wanted to understand how e-mail was used to support collaborative work. We learned that there was little uniformity of practice, a conclusion that confirms Helen Tibbo's findings in her 2005 study, "Managing the Digital University Desktop."⁶ Sharing was more often conducted by cc'ing colleagues and assistants than by allowing password access, but both practices existed. Sometimes administrators carefully turned over their e-mail to their successors, but more often, they did not, and successors sometimes relied on friendly requests to the previous office-holder to locate needed information in personally controlled e-mail accumulations. Some people were filers, and some relied primarily on search to locate messages in their mailboxes. Some decision makers deleted a message as soon as it had been acted upon, and some maintained enormous legacy collections of e-mail. These individuals negotiated with local IT staff to increase their mailbox size limits, or stored their older messages off-line in PST folders.

Decision-makers we spoke with used Outlook, Outlook Express, Entourage, Apple Mail, Mulberry, Thunderbird, Pine, and U-M webmail. Some used different applications at home and at work, and many used mobile devices to access e-mail. In addition, we learned that a significant number of university leaders forward their university mail to Gmail accounts. All of the leaders we spoke with were aware that their e-mail was subject to Freedom of Information Act requests and we heard several times that you "shouldn't send anything you wouldn't want to read on the front page of the Ann Arbor News." Finally, all interviewees felt overwhelmed by the bulk of e-mail and needed a solution that would not add additional burden to their daily correspondence duties.

⁶ <http://www.ils.unc.edu/digitaldesktop/> downloaded May 30, 2013.

Though the system's primary users would not include attorneys in the Office of General Counsel, we gathered their advice about what the legal requirements for the system for other university executives should be. We determined that functions such as redaction and legal hold should be included, but that because of our relatively small user-base as a proportion of university employees, our system would not be expected to be able to deliver all the requirements of a full-blown eDiscovery application.

3. Environmental Scan

To understand our project in the context of the wider world, we conducted an environmental scan and literature review. We undertook to collect and digest published standards for managing e-mail as a record, record-keeping systems and digital preservation. We interviewed colleagues at Ohio State, Harvard, Ford Motor Company, the State of Michigan, the State of North Carolina and Michigan State. We conducted a literature review, and attended talks by practitioners from Honda Motors, EPA and the National Archives to understand current strategies for managing e-mail as records.

4. Market Analysis

Our next goal was to understand the types of products that were available in the marketplace that might satisfy our requirements. We gathered literature and spoke with vendors at AIIM conferences; reviewed Gartner reports⁷ and industry white-papers, and researched potential solutions. These efforts resulted in a list of vendors to whom we would direct our Request for Proposal. Though we reviewed products that claimed "E-mail Archiving" functionality, these products did not present any management of the messages based on the content of the messages or their foldering or tagging by the end user. Products that could manage documents based on their content were in the "Enterprise Content Management System" sector. (See Appendix 4: Vendors invited to respond to RFP, page 25.)

5. Creation of Functional Requirements

Finally, we began the work of creating the functional requirements for our desired system. As our primary template, we used the ICA's "Principles and functional requirements for records in electronic office environments," which is based on requirements developed by the Archives of New Zealand.⁸ We augmented these requirements with elements from the Department of Defense's 5015.2 "Electronic Records Management Software

⁷ Gartner, Inc. is an information technology research and consulting firm. CIOs and senior IT executives often rely on recommendations in Gartner's reports to inform purchasing decisions. A recent relevant example would be Tom Austin's "New Developments in Cloud Office System Market," published May 22, 2013. The reports often include a "Magic Quadrant" analysis which rates vendors along two criteria, "completeness of vision" and "ability to execute." A vendor is a "leader" if it manages to score higher on both values. The University Library at U-M provides access to Gartner's subscription database.

⁸ International Council on Archives, "Principles and Functional Requirements for Records in Electronic Office Environments: Module 2: Guidelines and Functional Requirements for Electronic Records Management Systems," 2008. Downloaded May 30, 2013 from http://e-records.chrisprom.com/wp-content/uploads/2011/04/ICA_Functional_Requirements_Module_2.pdf.

Applications Design Criteria Standard,”⁹ and a recent RFP that had been issued by the State of Michigan for an electronic record-keeping system. Staff members spent several weeks of long meetings developing the list of functional requirements and considering for each item whether it was a “must-have,” or merely a “nice-to-have” requirement. In the end, we developed a list of 126 separate specifications. The functional requirements we developed were praised by the MAIS colleague charged with coordinating all outgoing technological RFP’s as one of the best sets he had ever seen. (See Appendix 5: MeMail Functional Requirements, page 26.¹⁰)

6. Creation of Technical Requirements

To create the technical requirements we interviewed the administrators of U-M’s Exchange and IMAP servers, directory service and MAIS’s access management team. Many of the technical requirements were generated by boilerplate language inserted in all U-M RFP’s to describe the allowed database platforms and hardware.

7. Comparing Vendor Proposals

In July 2009 we sent the RFP to nineteen vendors, and were surprised to receive only three responses. EMC² (Documentum), IBM (FileNet) and AdvizeX (Mimosa). We quickly determined that the Mimosa application would not meet enough of our specifications, and so it was dismissed from consideration. Although we had not received a proposal from PSI (ImageNow), our enterprise imaging solution, we asked the U-M product manager for ImageNow to indicate its compliance with our functional requirements. Since we had a pre-existing site license for ImageNow, the software cost would have been minimal if it could meet enough of our specifications.

- **Cost and quality:** Quite a large price differential existed among our contenders: the cost estimate for Documentum was \$577,276, FileNet was \$139,858 and for a new module to adapt ImageNow, \$80,000. We determined that, on paper, Documentum had a weighted score of 58 percent of our must-have requirements, FileNet, 51 percent, and ImageNow, 45 percent. All of the applications would have required substantial customizations. We contacted IBM and EMC² to give vendor demonstrations, and the ImageNow product manager agreed to demonstrate ImageNow to us at the same time.
- **User scenarios:** To make sure that the vendors gave relevant presentations, we prepared a series of use cases or scenarios to help us see exactly how their product would work in our context. (See Appendix 6: MeMail Scenarios, page 41.) We prepared a side-by-side-comparison of the three systems compliance with the use cases.
- **Vendor demonstrations:** In December 2009 we saw live demonstrations of ImageNow, FileNet and Documentum. The vendor demonstrations were attended

⁹ U.S. Department of Defense, DoD 5015.02-STD: Electronic Records Management Software Applications Design Criteria Standard,” 2007. Downloaded May 30, 2013, from <http://www.dtic.mil/whs/directives/corres/pdf/501502std.pdf>.

¹⁰ Though these requirements were initially issued with the RFP in July 2009, they were amended in a few places in response to vendor requests for clarification, hence the September 2009 effective date.

not only by staff from the Bentley, but also by colleagues with responsibilities for e-mail system administration, database administration, identity management, security and access systems, and project management. Following the presentations, all who attended participated in a debriefing session to rate their reactions to the vendors and their products.

One glaring gap existed—although the products handled archiving Outlook/Exchange e-mail, IMAP e-mail could not be managed without an awkward work-around. Since one third of our target audience (500 users) did not use Outlook/Exchange, this was a significant disability.

If this gap was overlooked, however, Documentum was the strong favorite among both the technical and the archival members of the collaboration. Both Documentum and FileNet presented much functionality beyond e-mail that would benefit content management across campus. Since our user interviews had indicated that there was a need to manage all kinds of born-digital office documents, the additional functionality seemed valuable and attractive to us.

But after viewing the demonstrations, it was clear that it would not be possible to deploy enterprise content management technology to the leadership of the university alone. For it to be effective, it would need to be available to a much wider audience of university employees. For such a large commitment, a wider participation in tool selection would be beneficial to ensure requirements beyond e-mail archiving were captured and evaluated.

8. Lessons Learned from the RFP Process

These are the lessons we learned from completing the RFP process and viewing the resulting vendor presentations:

- Current vendor tools cannot handle a diversity of types of e-mail servers – if all university e-mail had been routed through an Exchange server, the solution would have been easier and cheaper.
- Tools that can effectively manage e-mail also manage most other types of office documents, and are too expensive to implement for a limited number of VIP users for e-mail alone.
- Cheaper tools exist that can take a copy of all incoming and outgoing mail, but cannot preserve any filing or weeding decisions that the mailbox owner makes from his or her desktop.
- Supporting the variety of computing devices from which users transmit e-mail was beyond these vendor's capabilities.
- Currently available technology for reliably auto-classifying record content is making progress but has still not yet emerged from the beta stage.

The Ground Shifts Under Our Feet: IT Restructuring

While we were toiling at our project, U-M leaders decided that strategically, the university needed to fix its IT infrastructure. An enormous initiative, christened “NextGen Michigan,” identified a goal of “providing a campus IT environment that dramatically advances the university’s academic, teaching, research and clinical programs.” Furthermore, “IT Rationalization will improve IT service delivery, reduce cost and repair the university’s fractured infrastructure, setting the foundation for NextGen Michigan.”¹¹

IT Rationalization meant that our partner, MAIS, would merge with ITCS into a new organization, called Information and Technology Services (ITS). In addition, services, such as help desk support, that could be more efficiently provided centrally, would be transferred from the many scattered IT units in the university’s schools, colleges and business units. The enormous upheaval in the rearrangement of the university’s IT organizations forced us to acknowledge that we were unlikely to achieve campus consensus on such a scale until the IT divisions had emerged from their transformations. In retrospect this was a very good decision, as the changes in IT governance and management have proven to be quite disruptive.

In late 2009, as we learned the early outline of the NextGen Michigan plan, the Mellon Foundation granted the Bentley Library at U-M funding to implement and test a robust system to archive the e-mail correspondence of university executives and star faculty members.¹² Though the infrastructure was beginning to shift, we still felt the urgency to capture correspondence that would otherwise be lost. We needed to make progress on our goals for the development of a strategic solution for content management.

After consultation with our Mellon program officer we began making alternate plans. Our “Plan B,” which will be described in a companion case study, involved conducting a pilot test with university executives to determine whether they could or would nominate individual messages to be deposited in the archives. Briefly, this approach involved creating a second personal archival e-mail account that was simultaneously accessible by the executive and an archivist, and training the executive to drag and drop copies of archival-value correspondence from their primary account to this account. We would also investigate the possibility depositing captured e-mail within our institutional repository, Deep Blue, or within our imaging system, ImageNow. If either of those two were feasible, we would develop an electronic records processing workflow that would allow us to responsibly manage and describe the records. Though we eventually succeeded in achieving these goals, more technological change dogged us.

One of the primary objectives of the IT Rationalization project was to end the siloing and splintering of collaboration systems on campus—primarily calendaring and e-mail. While we struggled on with our work, the university conducted a survey of collaboration tools and determined that there were 40 separate e-mail-related applications in use across the

¹¹ University of Michigan, “NextGen Michigan,” downloaded September 11, 2012, from <http://www.nextgen.umich.edu>.

¹² The project, “E-Mail Archiving at the University of Michigan” was generously funded beginning January 1, 2010, by the Andrew W. Mellon Foundation.

university. By September of 2010, the university had decided to move its e-mail and calendaring functions to a third-party vendor, and had identified Google and Microsoft as the only two viable partners. Members of the project team attended information sessions and vendor presentations and Bentley archivists drafted a document that outlined perceived benefits and concerns related to storing vital university records in the cloud.

In December 2010, the university's IT Council announced a decision to endorse Google as the University's next collaborative services provider. Then, over the next year, though we knew this change was coming, hard details of the implementation plans were not available. The university's lawyers negotiated the contract with Google, and the Bentley was not privy to the terms eventually agreed upon.

The Mellon Foundation grant ran from January 2010 through the end of 2011. Throughout most of that time, we were not sure whether the techniques that we were developing for our pilot experiment on university-owned e-mail systems would work in the new configuration of technology and policy. It was not until the end of 2011 that Bentley team members learned the details of the Google mail transition schedule. Throughout 2012, students, faculty and staff of the U-M have been gradually transitioned to Gmail, with the final transitions being made on October 1, 2012.¹³

Conducting a research project while the infrastructure shifts was extremely challenging. We learned that flexibility and creativity are extremely important and that perseverance will pay off. We also learned that rigid project management time schedules and plans work better with predictable tasks that easily slot into schedules. The project management expertise that ITS contributed was less helpful when creative retrenchment and research were the tasks that needed to be accomplished. In early 2010, Bentley Director Blouin assumed the role of project manager, though ITS continued to supply a representative liaison to the team.

Conclusion

At the end of the first chapter of our e-mail archiving project, in January 2010, we withdrew our RFP without awarding a contract to a vendor. The vendors' products were not able to accommodate the diversity of e-mail services and devices available on our campus and the time was singularly bad for making the financial and organizational business case for an enterprise content management system. The ambitious restructuring of IT services on campus quickly engulfed all technological projects on campus, slowing all but the most vital. Though we had high-level leadership support for our project, in the end, it could not match the needs of a project to radically re-imagine the way IT services were delivered on campus and the commissioning of cloud-based e-mail services. Readers interested in how the Bentley managed to seize victory (in the form of a new digital curation program) from the jaws of defeat should view Part II of this case study: "Will they populate the boxes?: Piloting a low-tech method for capturing executive e-mail and a workflow for preserving it at the University of Michigan."

¹³ The Health System, which had already committed years of planning and resources to migrating to Exchange from GroupWise, elected not to transition with the rest of the University, in part because of the challenges of protecting patient data. Of the University's two branch campuses, Dearborn migrated to Google, but Flint did not.



MeMail Requirements/Analysis Approach DRAFT

I. Introduction

This approach document was created for University of Michigan Administrative Information Services' (MAIS) and the Bentley Historical Library's MeMail Project. The document provides an overview of the activities to be undertaken to select software, processes and systems that will support the identification of e-mail messages deemed to have enduring historical and/or administrative value for the University of Michigan, and their preservation in a digital archive managed by the University Archives and Records Program (UARP).

A. Scope

UARP at the Bentley Historical Library is charged with identifying and preserving the records of the University of Michigan that have enduring historical and/or administrative value. The present configuration of e-mail systems at the university does not support the capture, long-term preservation or re-use of records created by e-mail. This project targets the e-mail records of the top officers, deans and directors of the University, and aims to identify the elements of a system to allow them to be managed and preserved by UARP.

The records will be gathered only with the explicit consent of the records creators, and the developed system must aim to have as little impact on the normal working procedures of those offices as possible. The e-mail users whose records will be archived by the system include executive officers, senior administrators, deans and directors. The executive vice president for medical affairs will be included to the extent feasible. The records of the regents, branch campuses and athletic director are NOT to be included at this time.

The system will be aimed at the archiving of current and prospective record e-mail messages, and their attachments, but will not address the management of record instant messages, or voicemail messages transmitted via e-mail.

Throughout the life-cycle of these records, the system must include adequate controls to insure the protection of confidential, privileged and restricted information; and to maintain the reliability and authenticity of the record as it is moved from the individual desktop to the archival digital repository, and from the repository to the access system. The developed system will address the following three functions:

1. Capture

This project aims to identify and implement a solution that will 1) allow e-mail users to flag or otherwise identify record e-mail, and 2) support the automated identification and categorization of record e-mail. It is anticipated that these applications will be purchased from a vendor, rather than created in-house.

MeMail Project



S2000A - Requirements/Analysis Approach Document

Once the record e-mails have been identified, the solution should allow the harvesting of the records (together with associated metadata) and their deposit into a digital repository where they can be managed for long-term preservation.

2. Long-term preservation

The captured record e-mails will be deposited in a digital repository that conforms to the [Open Archival Information System \(OAIS\)](#) standard.

3. Use of records

The users of the archived records of the University of Michigan include the offices of the record creators, archivists, members of the public and the university counsel's office. Access to the records of the officers and directors of the university transferred to the Bentley's control is restricted to defined users for twenty years, but is subject to Freedom of Information Act requests, regulatory review and subpoena. Sometimes use of the records entails redaction of confidential or restricted information.

As part of our scoping activities we will determine, through interviews with the Freedom of Information Office and the General Counsel's Office, whether the system will need to support litigation holds and records destruction. We will also determine whether the system must include an access system, and the search and retrieval parameters for the requirements.

Deliverables will include:

1. Scope of project:
2. Functional Analysis (Business Processes)
3. Functional Analysis (Changes in Work Process)
4. Technical Analysis
5. Market Analysis
6. Requirements Document
7. Hi-Level Requirements
8. Vendor bids
9. Analysis of bids with preferred vendor
10. Summary of status of project by February 10, suitable to use for letter to Mellon Foundation
11. Weekly status reports to project leadership

II. MeMail Requirements / Analysis Approach

A. MeMail Requirements / Analysis Approach Description

The general methodology/approach for the MeMail Requirements/Analysis Phase at MAIS will involve the following steps

1. Initial planning efforts for this phase will include the establishment of a:
 - a. Project Status reporting approach. This will involve creating a Communications Plan.

MeMail Project



S2000A - Requirements/Analysis Approach Document

- i. There are two Project Document Repositories, because the work on the project is being shared between MAIS and the Bentley Historical Library.
 1. CTools site (MeMail) has been set up. Current members of the site are: Nancy Bartlett, Fran Blouin, Nancy Deromedi, Greg Kinney, Bill Wallach and Brian Williams of the Bentley, and Mike Loviska, Aprille McKay, Jeff Neuman and Kim Rinn of MAIS. As new team members are added, they should receive membership in this site. Mike and Nancy Bartlett are Organizers, and Aprille and Nancy Deromedi are the Owners of the site.
 2. MAIS Project space (Bentley Archive) on the P drive
 - ii. Regular meetings for the implementation team and working groups with minutes and agendas
 - iii. University leadership involved in the project include Director Fran Blouin, VP for MAIS Laura Patterson, Vice Provost for Academic Information John King, and Deputy General Counsel Gloria Hage. These individuals will receive periodic customized communications about the project.
 - iv. Interviews and observations with affected units
 - v. Funding agency: Mellon foundation proposal
 - vi. Vendors
2. Technical Infrastructure Operations (TIO) will provide technical requirements.
3. Initiate Development of Detailed Requirements.
 - a. Gather together & refine initial requirements, then create the S225 Requirements Document.
 - b. Using Product Descriptions, Project Scope/Hi-Level Requirements, and S225, define new or proposed features & functionality, further refining the S225 Requirements Document with this information.
 - c. Define/refine new or proposed non-functional requirements (hardware and performance considerations, quality, security, etc.).
4. Functional Analysis (Business Process Analysis). The Bentley Library part of the team will take the lead in this analysis.
 - a. The Business Process Analysis approach includes the following activities, the results of which will be summarized in the S225 Requirements Document:
 - i. E-mail user interviews (how they use e-mail, and how they want to access the record e-mails. General Counsel's office will be a special case. Find out if password protection/encryption is used)
 - ii. Gathering warrant and mandate information: policies, procedures, regulations, statutes



S2000A - Requirements/Analysis Approach Document

- iii. Gathering relevant recordkeeping and preservation standards (DOD, OAIS, etc.)
 - iv. Definition of classification system
 - v. Determination of requirements for redaction, FOIA review, access restriction based on role
 - vi. Determination of requirements for preservation formats and packaging for the records
 - vii. Determination of requirements for authenticity and completeness checks
 - viii. Determination of what audit capacity is required
 - ix. Definition of required metadata elements
 - x. If this system will include access, determination of search and retrieval requirements
 - xi. Analysis of the requirements necessary for the creation of "Submission Information Package," as defined in the Open Archival Information System (OAIS) standard, an "Archival Information Package," and a "Dissemination Archival Package."
 - xii. Versioning of attachments, read/not read indicia, group distribution lists documentation, linking to X500 directory for automated metadata generation, copyright clearance for attachments, virus scanning, threading
- b. Because this system will create new records-preservation processes, the impact of the selected system on existing processes will to some degree be dependent on the software selected. The S225 Requirements document will identify impacted business processes.
 - c. Determine and communicate those Business Process impacts to affected organizations, groups, end-users, system owners, etc.
5. Functional Analysis (Changes in Work Practice): The Changes in Work Practice Analysis approach includes attention to the following users' practice, the results of which will be summarized in the S225 Requirements Document.

MeMail Project



S2000A - Requirements/Analysis Approach Document

- a. Impact on record creators (metadata creation, granting permissions, releasing possession and control, access to archived e-mail)
 - b. Impact on archivists (transfer of records, metadata creation, integrity checks, virus scanning, preservation activities, access to archived e-mail, reference services, training record creators to use the system, creation of communications, creation of policies and procedures)
 - c. Impact on General Counsel's office/FOIA officer on work process for release of records (**litigation discovery procedures? Policy creation?**)
 - d. Impact on repository admin?
6. Technical Analysis. The MAIS part of the team will take the lead for this analysis.
 - a. Referencing the S225 Requirements Document, Analyze the Non-Functional Requirements. Update S225 as needed.
 - b. Analyze the University of Michigan E-mail System. The document, "Attachment C: E-mail Environment," created Feb. 8, 2005 (<http://www.itd.umich.edu/itstaff/e-mail/emailarch.pdf>) provides a useful starting place. This will include the gathering of information about the use of other systems that will touch this system, including SharePoint and Document Imaging.
7. Market Analysis: MAIS Shared Services will take the lead here.
 - a. Analysis of tools that are in use internally at the University of Michigan or by other higher education organizations
 - b. Analysis of packages available in the market
8. Formal Review
 - a. Prepare the Requirements/Analysis Review material (S225, Project Scope, Hi-Level Requirements, etc.).
 - b. Perform a Cross-Team Walkthrough of the material.
 - c. Present the Review Material to the Customer and Business Process and System Owner(s) for approval or acknowledgement.
 - d. Review New/Impacted Business Processes & System Functionality with Users.
 - e. Update any deliverables as needed as a result of the Reviews.

III. Status and Reporting Metrics

A. Time Tracking & Reporting

MAIS staff will be tracking time devoted to this work effort.

MeMail Project



S2000A - Requirements/Analysis Approach Document

B. Requirements/Analysis Phase Steering Meeting

During Requirements/Analysis Analysis Phase, a weekly Steering Meeting will be held at the same scheduled time on the same day each week, currently Fridays, at the Bentley, at 9:30. This meeting will support a communication process to inform the project team on Project Status, Issues, Risks, and Changes. The Agenda can include a review of open high and medium issues, the overall Requirements/Analysis Analysis Phase schedule, and any action items from the previous week.

- Meeting minutes will be taken that include a list of attendees, discussion points, and action items. Lessons Learned should be identified and reviewed. Changes in Scope or Schedule should be managed.
- Weekly Status Reports will be prepared and distributed at the Steering Meeting. These status reports will inform the committee members of the past week's accomplishments, open issues and concerns, slipping tasks and activities and a report on the key planned events for the coming week.

E. Acknowledgement

- Where deliverables require an "acknowledgement", this means that the acknowledger has reviewed the deliverables and feels that the documentation and/or Requirements/Analysis effort was sufficient. Fran Blouin, or his designee, will approve the deliverables, "Scope of project," "Functional Analysis (Business Processes)" and Functional Analysis (Changes in Work Practice). Kim Rinn will approve all other deliverables listed in Section IA, namely: Technical Analysis, Market Analysis, Requirements Document, Hi-Level Requirements, Vendor Bids, and Analysis of bids with preferred vendor, following consultation and input from other team leaders. Refer to MAIS Project Management Methodology, "M110 – Log of Project Deliverables" for additional information.

IV. Assumptions and Risks

A. Assumptions

The following assumptions are critical to the successful accomplishment of this Approach to the Requirements/Analysis Analysis Phase for MeMail:

- Realistic levels of availability and commitment are obtained for all resources involved in Requirements/Analysis Analysis Phase activities.
- Reviewers have availability and commitment to review, respond, and approve deliverables in a timely manner.
- End-User and Business Owner buy-in to proposed changes and modifications.
- Immediate focus is on record e-mail and accompanying attachments.

MeMail Project



S2000A - Requirements/Analysis Approach Document

- The solution will be created for prospective e-mails, not for retroactive ones.
- The top-down approach to selecting records of the university means that the number of affected units will be relatively small. At this time students, and the non-administrative work of faculty are not included.
- Costs absorbed by participating departments.
- We are NOT assuming that MAIS will necessarily administer or support the system. A hosted solution could be chosen, or another unit may provide the support for the system.

B. Risks

- Delayed availability of interview subjects in Provost's, VP's, University Counsel's office, etc.: Escalate request to Fran Blouin to help negotiate.
- Inadequate commitment and/or allocation of team members' effort.
 - If within MAIS: Escalate to Kim Rinn.
 - If within the Bentley: Escalate to Nancy Bartlett
- Team members not trained in use of Methodology.
- Insufficient or not agreed-upon Scope definition.
- Impacts between teams and/or users will not be communicated and tracked effectively.
- Insufficient End-User and Business Owner buy-in.
- Inadequate level of Management commitment and follow-up to proposed Policy or Business Process changes.

APPENDIX 2

Project Schedule

		Start Date	End Date	
	M eMail- Phase1	Start Date 12/9/2008	End Date 8/29/2009	
2.2	Project Execution	1/12/2009	8/28/2009	
2.1	Requirements	1/12/2009	5/19/2009	
2.1.1	Plan for Partner Interviews	1/12/2009	4/7/2009	
2.1.2	Partner Interviews	4/1/2009	5/1/2009	
2.1.3	Document and Analyze requirements	4/1/2009	5/19/2009	
2.1.4	e-mail corpus Evaluation	3/16/2009	4/15/2009	
2.2	Develop RFP	4/15/2009	7/6/2009	
2.2.1	Draft RFP document based on requirements	4/15/2009	5/15/2009	
	Technical team assess requirements and defines technical requirements			
2.2.2		5/15/2009	6/5/2009	
2.2.3	MAIS-LA Review and approval	6/5/2009	6/19/2009	
2.2.4	Purchasing Office Review and approval	6/22/2009	7/3/2009	
2.2.5	RFP sent to vendors	7/6/2009	7/6/2009	
2.3	Product Market scan	1/5/2009	4/15/2009	
	Research current market space via Gartner/Burton groups			
2.3.2		1/5/2009	1/23/2009	
	Research products in use by clients comparable to UoM e.g. Rockefeller, Smithsonian, Ohio State	1/19/2009	4/15/2009	
2.3.2		3/16/2009	3/30/2009	
2.3.3	Define criteria for vendor selection	3/16/2009	3/30/2009	
2.3.4	Contact vendors for product information	3/16/2009	3/30/2009	
2.3.5	Review finalists with project manager	3/30/2009	4/14/2009	
2.4	Vendor Selection	2/6/2009	8/21/2009	
	Develop Selection criteria and weighting system for RFP evaluation			
2.4.1		4/14/2009	6/1/2009	
	Conduct project team meetings to evaluate responses			
2.4.2		8/3/2009	8/14/2009	
2.4.3	Vendors identified for demos	3/16/2009	8/10/2009	
2.4.4	Conduct Pre-RFP vendor demos	2/6/2009	6/1/2009	
2.4.5	Conduct Post RFP demos	8/17/2009	8/21/2009	
2.5	Create Recommendation for Product Selection	8/21/2009	8/28/2009	
2.5.1	Submit Recommendation to Steering Committee	8/28/2009	8/28/2009	

Interview Questions for E-Mail Record Creators

Aprille McKay
March 24, 2009

- 1. Identifying the functions and activities transacted through email that need to be documented in records** (Definition of a record for these purposes: Does it explain, justify or document an action or decision related to your duties at the University?)
 - a. Your position has certain functions and those functions require recordkeeping. These functions may include making commitments, evaluating programs, problem solving and cultivation of donors. We have found in recent transfers to the University Archives that many deans use email now to correspond with donors, negotiate faculty contracts and make commitments to faculty. What functions or activities are documented in your email?
 - i. Interviewer: In addition to those volunteered by the interviewee, make suggestions based on finding aids for that unit
 - ii. If records were classified by these functions, would it make searching for these messages easier for you when you wanted to find them again? Do you have alternative suggestions?
 - b. Do you feel like there is a serious need for an e-mail archiving solution? Why?
 - c. What are important issues for you in using e-mail as a tool to accomplish your work?
 - d. Do you think we need to have more systematic access to e-mail?
 - e. Do you feel the need to maintain your records in a way that is useful to your successor in office?
 - f. Do you rely on digital documents for your critical functions? In other words, does the authoritative copy of a document reside on a hard drive, with copies printed only for access? Or do you print and file authoritative copies?
 - g. Does your e-mail have a digital signature? If yes, why is the signature important?
- 2. The current recordkeeping system, identifying what records exist in the email format now.**
 - a. What email program is in use in the office?
 - b. Does everyone use the same, or does it vary from person to person?
 - c. If the office uses Outlook, do people use Outlook Express? Do you ever use the university webmail system mail.umich.edu?
 - d. Do you ever use Gmail, Yahoo, Comcast etc. for university business?
 - e. Do you use a PDA? What kind? If yes, how does your email synching work?
 - f. Do you use your Umich account for personal business?
 - i. If yes, is it just occasional or is the umich account your main point of contact for all email?
 - ii. If no, how many other email accounts do you maintain? Do you forward them together somehow? If yes, where does that occur?

- g. Does your office maintain any email addresses that are role-based rather than identity-based? (For example, the president's office has presoff@umich.edu). How is that mailbox managed?
- h. About how many messages do you send in a day?
- i. About how many messages do you receive in a day? What percentage are deleted without further action? What percentage do you file, but don't reply or act on immediately?
- j. Do you file your incoming email? If yes, what categories do you use? Subject, date?
- k. Do you file your sent mail? If yes, what categories?
- l. Do you have an assistant who has a designated duty to file e-mail?
- m. How many people have access to the contents of the office holder's email?
- n. What are their responsibilities for managing the flow, filtering, organizing and storing email? Can they file old email? Can they send mail on the office holder's behalf? Can they schedule meetings? Do they need to be able to search the office holder's old email?
- o. Does your mailbox ever fill up? When that happens, what do you do?
- p. What kinds of attachments do you generally get?
 - i. PDF, Word, Powerpoint, spreadsheets, images, sound files, CAD?, moving images?
 - ii. How are they filed? Are they filed separately from the email messages? In paper or digitally?
- q. If you "archive" your email, do you know whether the resulting file is stored locally on your computer, or on a shared drive?
- r. Do you ever delete your old (more than 3 months old) email?
- s. What happens when you get a new computer? Do you make efforts to transfer your old email to your new computer? How does that work?
- t. What is the current system for capturing record email? Print to paper? Or is there some other system locally?
- u. Who is in charge of making recommendations for how older email is maintained in the office?
- v. Who is in charge of recordkeeping for the office?
- w. Do you do much instant messaging? If yes, do you think that there are university records there?

3. Identifying any legal or other recordkeeping requirements related to the records

- a. Are there specific laws or regulations that your unit needs to comply with for the records?
- b. Do the records contain confidential student materials?
- c. Do the records contain confidential employee materials?
- d. Do the records contain confidential patient materials?
- e. Do the records contain sensitive intellectual property that may be subject to contract or use agreements?
- f. Do the records contain the advice of university or outside legal counsel?

- g. Are you currently flagging or tagging digital records with confidentiality restrictions? Do they contain any, for example standardized language that you could search for? (ie “Attorney-Client Privileged”)
 - h. Does your unit regularly deal with litigation? How have you handled the discovery process? Was it expensive and time consuming, or relatively easy? Who got deposed? Do you have a copy of that deposition?
- 4. The interviewee’s ideas about how long they need to keep the records for current use, and their requirements for future use of the records.**
- a. How long do you think you need to have instantaneous access to your old email?
 - b. What are the types of things you might look up in an email message that is more than three months old?
 - c. What kind of access do you need to have to the email attachments? For example, would a PDF of a Powerpoint presentation generally suffice, or would you need the Powerpoint file?
 - d. For messages more than 90 days old, would it be adequate to receive access to a read-only copy – an image of the file where cut and paste would not be possible?
- 5. Expectations for the new system**
- a. If you had to nominate records to be included in the archives, do you think you’d do it? Do you have an assistant who would do it?
 - b. If the selection into the archives is automated, would you or a designee be ready to delete out personal materials?
 - c. How would you feel if the system captured all outgoing email, with a six month window to allow you or your designee to delete personal materials before anyone else had access?
 - d. If the selection into the archives is automated, would you or your designee be willing to sort the messages into categories for the archives?
 - i. The categories might help us determine special recordkeeping requirements such as whether there was confidential patient/student/attorney client materials
 - ii. Or the categories might be topical (ie Pfizer campus)
 - iii. Or the categories might be functional (ie commitment)

Questions for IT Support Staff in the Units:

1. What is the e-mail setup in your unit? How many servers? What software?
2. How many e-mail boxes do you manage?
3. Do you have an idea of total volume per day? Incoming? Outgoing? Average per mailbox?
4. What messaging programs do staff members use?
5. Are you concerned about performance issues on your e-mail server because of accumulated e-mail? How do you manage that problem today?
6. Are there mailbox quotas in place? What is the size of the quota?

7. If staff members store their old e-mail outside of their mailbox, where does it go? Shared drive or desktop/laptop drive?
8. Have you ever been deposed for a lawsuit where lawyers were looking for the locations of electronically stored information?
9. How did the discovery go? Did you have any ideas about what might have made it go easier? Did you make any changes to your system afterwards?
10. Do your PC support materials make suggestions about how staff should handle their old e-mail?
 - a. Where is that located?
 - b. Can we have a copy?
 - c. What is the level of compliance with your recommendations?
 - d. Is there any training of new staff about proper use of e-mail?
 - e. Can we have copies of that training material?
11. What kind of spam management do you use? Where does that fit in the architecture?
12. What policies/procedures does your unit have about PDA's? Using Gmail or Yahoo for official business?

Vendors invited to respond to RFP

1. PSI ImageNow (<http://www.imagenow.com/products>)
2. Symantec Enterprise Vault (<http://www.symantec.com>)
3. Tower Software TRIM Context 6
(http://h18000.www1.hp.com/products/software/im/governance_ediscovery/trim/index.html)
4. Recommind (http://www.recommind.com/decisiv_email.html)
5. ZL Technologies (<http://www.zlti.com/products>)
6. Google - <http://www.google.com/postini/email.html>
7. EMC Documentum (www.emc.com)
8. OpenText LiveLink
(<http://www.opentext.com/news/pr.html?id=1555>)
9. IBM FileNet Records Manager (<http://www-01.ibm.com/software/data/content-management/filenet-records-manager/>)
10. Microsoft Office Sharepoint Server 2007 with DOD Addon pack
<http://www.microsoft.com/Sharepoint/default.aspx>
11. Mimosa Systems (<http://www.mimosasystems.com>)
12. CA (<http://www.ca.com/us/records-management.aspx>)
13. Stellent FileNet (<http://www.oracle.com/stellent/index.html>)
14. ASX (<http://www.axsone.com/>)
15. Waterford technologies (<http://www.waterfordtechnologies.com/>)
<http://www.waterfordtechnologies.com/products/MailMeterArchive/>
16. Autonomy Zantaz (<http://www.zantaz.com/>) (autonomy)
17. Quest Software
<http://www.quest.com/unified-communications/archivingediscovery-compliance.aspx>
18. RivetLogic (Alfresco) (<http://rivetlogic.com/>)

APPENDIX 5

M-email System
Functional requirements draft
30 June 2009

Characteristics of electronic records and archival systems:

Once records have been created, they must be managed and maintained for as long as required to ensure they have the following characteristics:

1. **Authenticity:** the record can be proven to be what it purports to be, to have been created or sent by the person that created or sent it, and to have been created or sent at the time it is purported to have occurred
2. **Reliability:** the record can be trusted as a full and accurate representation of the transaction to which they attest, and can be depended on in the course of subsequent transactions
3. **Integrity:** the record is complete and unaltered, and protected against unauthorized alteration. This characteristic is also referred to as 'inviolability.'
4. **Usability:** the record can be located, retrieved, preserved and interpreted.

Entities

The following entities interact with the system:

1. **Record creator (RC):** The person whose messages are being archived by the system
2. **Office of origin (OO):** The University of Michigan unit which is the owner of the record store to which a particular email record belongs. Some Record Creators have affiliations in more than one Unit of Origin
3. **Archivist (A):** An individual who manages the email records within the system on behalf of the University Archives and Records Program of the Bentley Historical Library
4. **System administrator (SA):** An individual who manages the configuration of the system, access and role status of users, and performs other systems management tasks on behalf of MAIS.
5. **Researcher (R):** An individual who may be a university employee or a member of the public who wants to solve an information need by reviewing records in the archival system
6. **Archival system (AS):** Since actions are sometimes performed by the system without direction from a human actor, or are system characteristics, the system is an entity as well.

Requirement	Priority	Entity	Status	Comment
1. Create An archival system enables an organization to capture evidence of its activities. This involves identifying a set of information to serve as the evidential record comprising both content and context. So, in order for information to have the capability of functioning as a record, it is necessary to augment that content information with metadata that places it in the context of the business operations and computing environment in which it was created.				
1.1. Capture An archival system uniquely captures, classifies and identifies records to ensure that their content, structure and context of creation are fixed in time and space. These records management processes facilitate the making of complete, authentic and useable records.				
1.1.1.Allow individual Record Creators and/or Offices of Origin to identify as records individual email messages (and attachments) which originate or are received by their University of Michigan email account	Required	RC, OO	Reviewed by UARP (RBU) 5/27	
1.1.2.Allow individual Record Creators and/or Offices of Origin to identify as records the email messages (and their attachments) that reside in particular folders within their University of Michigan-supported email applications	Required	RC, OO	RBU 5/27	
1.1.3.Allow Record Creators and/or Offices of Origin to direct those identified messages to a particular unit's record store within the product if the individual has affiliations in more than one unit	Required	RC, OO	RBU 5/27	
1.1.4.Allow the Systems Administrator to set a default target unit record store within the product for each individual, based on that individual's primary appointment affiliation	Desired	SA	RBU 5/27	
1.1.5.Be capable of retrieving the identified messages and their attachments and placing them in the archival system	Required	AS	RBU 5/27	
1.1.6.Allow the batch harvesting of all sent email (and attachments) of	Required	AS	RBU 5/27	

Requirement	Priority	Entity	Status	Comment
specified Record Creators and their deposit in the archival system				
1.1.7.Allow the batch deposit into a specified unit's record store by Records Creators, Offices of Origin or Archivists of accumulated sent and received email messages (and their attachments) which is no longer directly associated with an email messaging application	Required	RC, OO, A	RBU 5/27	
1.1.8.Provide an automated process to allow selection of record email based on business rules	Required	SA, OO, RC or A?	RBU 5/29	
1.1.9.Track the particular business rules that are applied to automatically select email over time for each mailbox.	Nice-to-have	SA	RBU, 6/26	
1.1.10. Allow the reuse of filters defined pursuant to 1.1.8	Required	SA, OO, RC or A?		
1.1.11. Enable integration with IMAP/SMTP email applications, so that records created by those application can be captured by the archival system	Required	AS	RBU 5/27	
1.1.12. Enable integration with Exchange/Outlook email applications, so that records created by those applications can be captured by the archival system	Required	AS	RBU 5/27	
1.1.13. Allow individual Record Creators to place email records from non-university email accounts (such as Yahoo, Gmail, Comcast, etc.) into the archival system	Nice-to-have	RC	RBU 5/27	
1.1.14. Indicate to the Record Creators when an individual record is captured within the archival system	Nice-to-have	AS	RBU 5/27	
1.1.15. Allow the Record Creator to opt in to receiving 1.1.13 notifications	Nice-to-have	RC	RBU 5/29	
1.1.16. Indicate to the Record Creator when the system fails to capture a record within the archival system	Nice-to-have	AS	RBU 5/27	
1.1.17. Allow the Record Creator to opt in to receiving 1.1.15 notifications	Nice-to-have	RC	RBU 5/29	
1.1.18. Capture and automatically store the data identified below if	Required	AS	RBU 5/27	

Requirement	Priority	Entity	Status	Comment
available from the e-mail system, as part of the record metadata when an e-mail system, as part of the record metadata when an e-mail message is filed as a record. (“Intelligent name” is defined as clear, uncoded, identifications of the individual. Thus, not a naked email address.) • The intelligent name of the sender and the email address • The intelligent name and email addresses of all primary addressees (or distribution lists) • The intelligent name and email address of all other addressees (or distribution lists) shall be automatically entered into a data field separate from the primary addressee(s) • The date and time the message was sent • For messages received the date and time the message was received (if available) • The subject of the message	, but Nice-to-have for membership lists			
1.1.19. Product should have the capability to select descriptive values from other database systems based on metadata contained within the archive system.	Required	AS	RBNewIT 6/25	
1.1.20. The system should have the ability to restrict the ability to delete records to authorized individuals.”	Required	AS	RBU, 6/26	
1.1.21. Ensure that the content of an email message cannot be amended in any way once the email has been captured	Required	AS	RBU, 5/29	
1.1.22. Automatically track the date and time the record is added to the system as a metadata element linked to each record	Desired	AS	RBU, 5/29	
1.1.23. For records retrieved and placed in the system pursuant to 1.1.5, 1.1.6, 1.1.7 or 1.1.8, capture the name of the folder containing the message	Required	AS	RBU, 5/29	
1.1.24. For records retrieved and placed in the system pursuant to 1.1.5, 1.1.6, 1.1.7, or 1.1.8 capture the message’s filepath within the e-mail messaging system as a metadata element linked to each record	Required	AS	RBU, 5/29	
1.1.25. Support the capture of attachments created in native file formats from the following applications:	Flexibility	AS	RBU, 6/26	

Requirement				Priority	Entity	Status	Comment
	Format	File extension	Mime type	See what packages are			
	PDF	.pdf	application/pdf				
	Plain Text UTF-8 (Unicode)	.txt	text/plain; charset=UTF-8				
	Plain Text ANSI X3.4 ECMA-6/US-ASCII (7-bit)	.txt	text/plain; charset=US-ASCII				
	SGML	.sgm, sgml	application/sgml				
	XML	.xml	text/xml				
	HTML	.html, .htm	text/html				
	LaTeX	.latex	application/x-latex				
	Postscript	.ps	application/ps				
	Rich Text	.rtf	text/richtext				
	TeX	.tex	application/x-tex				
	Plain Text ISO 8859-x (8 bit)	.txt	text/plain				
	Microsoft Word	.doc .docx	application/msword				
	Microsoft PowerPoint	.ppt .pptx	application/vnd.ms-powerpoint				
	Microsoft Project	.mpp	application/vnd.ms-project				
	Microsoft Excel	.xls .xlsx	application/vnd.ms-excel				
	JPEG	.jpg	Image/jpeg				
	TIFF	.tiff	image/tiff				
	JPEG 2000						
	PNG	.png	image/png				

Requirement				Priority	Entity	Status	Comment
	BMP	.bmp	image/x-ms-bmp				
	GIF	.gif	image/gif				
	Photo CD	.pcd	image/x-photo-cd				
	Photoshop	.psd	application/x-photoshop				
	AIFF	.aif, .aiff	audio/aiff, +				
	Wave	.wav	audio/x-wav or audio/wav				
	Audio/Basic	.au, .snd	audio/basic				
	MPEG audio	.mp3	audio/mpeg, audio/mp3				
	AAC_M4A	.m4a, .mp4	audio/m4a, audio/mp4				
	Real Audio	.ra, .rm, .ram	audio/vnd.rn-realaudio				
	Windows Media Audio	.wma	audio/x-ms-wma				
	AVI	.avi	video/avi, video/msvideo, video/x-msvideo +				
	Quicktime	.mov	video/quicktime, video/x-quicktime				
	MPEG-1	.mp1	video/mpeg				
	MPEG-2	.mp2	video/mpeg2				
	MPEG-4	.mp4	video/mp4				
	Windows Media Video	.wmv	video/x-ms-wmv				
	ZIP/tar	.zip, .gz, tar.gz	application/zip; application/x-gzip				
1.1.26. Be able to extend the range of file formats supported as new file formats are introduced for business purposes or for archival retention				Required	AS (and SA?)	RBU, 5/29	

Requirement	Priority	Entity	Status	Comment
1.1.27. Email messages and their attachments are compound records. The system must capture compound records so that the relationship is retained, the structural integrity of each record is retained, and each compound record is retrieved, displayed and managed as a single unit	Required	AS	RBU, 5/29	
1.1.28. Allow Records Creators to capture compound records easily, preferably with one action, for example a single click (e.g. no need to separately save attachments to hard drive first)	Required	RC	RBU, 5/29	
1.1.29. For each message the system should generate a unique hash ID based on the email using a hash algorithm like SHA-1 or SHA-256	Required	AS		
1.1.30. The system should record the hash value created pursuant to 1.1.29 as a metadata element associated with each message	Required	AS		
1.2. Identification To verify their existence within the system, every record must have a unique identifier persistently linked to it. This allows the user to locate records and helps them to distinguish between versions.				
1.2.1. Allocate an identifier, unique within the system, to each record at point of capture automatically	Required	AS	RBU, 5/29	
1.2.2. Allow the System Administrator to configure a custom identifier field	Required	SA	RBU, 5/29	
1.3. Classification Within an archival system implementation, aggregations are often used to enable inheritance of characteristics to records created or related at a lower level of aggregation. Typically in archival systems, information is managed as record objects, and the archivist may aggregate these objects into a set of series or files.				
1.3.1. Be able to support multiple simultaneous classification schemes – each record may be categorized in several user-defined dimensions	Required	AS	RBU, 5/29	
2. Maintain Records captured into the archival system must be actively maintained to ensure their continued accessibility. Establishing appropriate security controls, and building in disposal outcomes facilitates comprehensive, authentic, useable, tamper-proof and appropriately disposed records				
2.1. Records management process metadata Metadata about the processes of managing the record, including the				

Requirement	Priority	Entity	Status	Comment
disposal of the record, needs to be documented to ensure the integrity and authenticity of the record, so that alterations are able to be authoritatively tracked over time. Records exist at different layers of aggregation, for example, as documents, files or series. Although the record may be fixed and inviolable, the records management metadata will continue to accrue throughout the administrative life of the record. It must be persistently linked to the record to ensure that the record is authentic, unaltered and reliable.				
2.1.1.Be capable of creating unalterable metadata of records management events that are taken on records. The metadata should include the following records management elements • type of records management events, such as add, delete, modify • user initiating and/or carrying out the event; and • date and time of the event	Required	AS	RBU, 6/1	
2.1.2.Be able to export metadata for specified records and selected groups of records without affecting the metadata stored by the archival system (e.g. last modified data metadata within a Word document)	Required	AS	RBU, 6/1	
2.1.3.Insure that an audit trail exists to record actions taken to modify or delete record metadata or the record itself	Required	AS	RBU, 6/1	
2.2. Migration, export and destruction The ability to import and export records, and interoperability with other systems is required functionality. Many records will need to be retained for longer than the lifespan of the software system itself, and therefore there is a need to be able to export records when transitioning to a new system.				
2.2.1.Provide a well-managed process to allow users to export either single or multiple records	Required	RC, OO, SA, A	RBU, 6/1	
2.2.2.Meet industry standards for data transmission for all metadata elements and the digital objects themselves	Required	AS	RBU, 5/29	
2.2.3.Allow users to transfer or export an aggregation (at any level) in one sequence of operations so that:	Required	RC, OO,	RBU, 6/1	

Requirement	Priority	Entity	Status	Comment
- all attachments and annotations associated with an email message are exported together with the message as a related unit - all links between the record and its records management metadata are retained; and		SA, A (or AS?)		
2.2.4. Produce a report detailing any failure during a transfer, export or destruction. The report must identify any records destined for transfer that have generated processing errors, and records that are not successfully transferred, exported or destroyed	Required	AS	RBU, 6/1	
2.2.5. Allow the System Administrator to confirm that records have been successfully transferred before deleting records	Required	SA (and A?)	RBU, 6/1	
2.2.6. Provide a utility or conversion tool to allow users to convert records marked for transfer or export into a specified file transfer or export format	Required	SA (and A, RC, OO?)	RBU, 6/1	
3. Security				
3.1. Access and security controls: Organizations need to control access to their records. Typically, access to records and aggregations is limited to specific users and/or user groups. Records captured into an archival system must be protected against intentional or accidental alteration of their content, structure and context throughout their life to retain their authenticity. Archival systems must control access to, or alteration of, metadata.				
3.1.1. Allow the System Administrator to restrict access to product functionality according to user's role	Required	SA	RBU, 6/1	
3.1.2. Permit single sign-on between the email system and the archival system	Required	AS	RBU, 6/1	
3.1.3. Allow direct access to the archival system via password authentication	Required	AS	RBU, 6/1	
3.1.4. Allow a System Administrator (when advised by General Counsel's office) to lock, for the purposes of legal hold, the ability to relocate, delete or modify a given mailbox owner's email records contained in	Required	SA	RBU, 5/29	

Requirement	Priority	Entity	Status	Comment
the archival system				
3.2. Establishing security control Normal systems controls over access and security support the maintenance of authenticity, reliability, integrity and usability.				
3.2.1.Allow the System Administrator to set up and maintain user profiles and allocate users to groups and roles	Required	SA	RBU, 6/1	
3.2.2.Allow the System Administrator to configure the system to limit access to specific records, aggregations and records management metadata to specified users, roles or user groups	Required	SA	RBU, 6/1	
3.2.3.Allow the System Administrator to configure the system to restrict the viewing or modifying of specific metadata elements by group, role or user	Required	SA	RBU, 6/1	
3.2.4. Allow changes to security attributes for groups or users (such as access rights, initial password allocation and management) to be made only by the System Administrator	Required	SA	RBU, 6/1	
3.2.5. Allow the System Administrator to alter the custom access category (e.g. sensitive, confidential, public) of all records meeting user-defined criteria in one operation.	Required	SA (and/or A?)	RBU, 6/1	
3.2.6. The action of changing a custom access category should be logged.	Required	AS		
3.2.7. Allow the Archivist or authorized user from the Office of Origin to alter the custom access category of individual records	Required	A, OO (and SA?)	RBU, 6/1	
3.2.8. Allow the System Administrator to prevent the access of record content while allowing metadata to be viewed by authorized users	Required	SA	RBU, 6/1	
3.2.9. Log all unauthorized attempts to access the archive repository	Required	AS	RBU, 6/1	
3.2.10. Allow the System Administrator to configure user roles	Required	SA	RBU, 6/1	
3.2.11. Allow many users to be associated with each role	Required	SA	RBU, 6/1	
3.2.12. Allow the System Administrator to restrict user's access to selected reports	Required	SA	RBU, 6/1	
3.3. Assigning security levels				
3.3.1.Allow only the System Administrator to attach to the user profile attributes that determine the features, functions, records	Required	SA	RBU, 6/1	

Requirement	Priority	Entity	Status	Comment
management metadata fields, records or aggregations to which the user has access. The attributes of the profile will: • prohibit access to the archival system without an accepted authentication mechanism attributed to the user profile • restrict user access to specific records or aggregations by security, classification or specific set of criteria, including unit affiliation • restrict user access to particular features (for example, read, update and/or delete specific records management metadata fields) • deny access after a specified date, • be able to deny access during certain dates and/or times of day, and • allocate the user to a group or groups				
3.3.2.Allow the System Administrator to set up groups of users and provide the same control functions for members of those groups	Required	SA	RBU, 6/1	
4. Disseminate An archival system must be able to search for, retrieve and render the records that it maintains. These functions facility useable records				
4.1. Search and retrieval Searching is the process of identifying records or aggregations through user-defined parameters so that the records and/or their associated records management metadata can be retrieved. Search and navigation tools are required to locate records, aggregations or records management metadata by employing a range of searching techniques to cater for novice and sophisticated users. Retrieval is the process of preparing the located records for rendering and viewing.				
4.1.1.Provide a flexible search tool that can be easily used by both novice and expert system users	Required	AS	RBU, 6/1	
4.1.2.Allow the System Administrator to configure and change the search interface based on user group	Nice-to-have	SA	RBU, 6/1	
4.1.3.Searching tool should allow for: • Free-text searching of combinations of records management	Required	AS	RBU, 6/1	

Requirement	Priority	Entity	Status	Comment
- metadata elements and record content; - Boolean searching of records management metadata elements. - Word proximity searching 'Wild card' searching of records management metadata - Complex database searches across multiple data tables - Search based on content of custom fields.	Proximity Nice-to-have			
4.1.4.Display the total number of search results on a user's screen together with the results list	Desired	AS	RBU, 6/1	
4.1.5.Allow records featured in the search results list to be selected, then opened (subject to access controls) by a single click or keystroke	Desired	RC, OO, A, SA	RBU, 6/1	
4.1.6.Allow users to retrieve records directly through the use of a unique identifier	Required	RC, OO, A, SA	RBU, 6/1	
4.1.7.Users should be able to view the record or record content in metadata sort order	Required	RC, OO, A, SA	RBU, 6/1	
4.1.8.Allow users to refine (that is, narrow) searches	Desired	RC, OO, A, SA	RBU, 6/1	
4.1.9.The system should support a graphical user interface that allows for a drill down or other graphical record selection process without needing to write a SQL statement	Required	AS	RBU, 5/29	
4.2. Rendering: displaying records Rendering is the production of a human-readable representation of a record, usually to a visual display screen or in hardcopy format. Archival systems typically contain records in a range of file formats. The user must be able to have human-readable access to records stored in all these formats through an appropriate rendering interface.				
4.2.1.The system should be able to render or download records that the search request has retrieved	Required	AS	RBU, 6/1	
4.2.2.The system should be able to render all the types of electronic records in a manner that preserves the information in the records as	Required	AS	RBU, 6/1	

Requirement	Priority	Entity	Status	Comment
well as the metadata about that record. E.g. The last access date should not change for a Word document when it is rendered within the archival system				
4.2.3. Provide the user with flexible options for printing records and their relevant records management metadata, including the ability to print a record with records management metadata specified by the user	Required	RC, OO, A, SA, AS	RBU, 6/1	
4.2.4. Allow the Archivist/FOIA officer to download a copy of a record for the purposes of redaction	Required	A	RBU, 6/1	
4.2.5. Include a feature for rendering those records that cannot be meaningfully printed to an appropriate output device (say, MP3 to iTunes)	Desired	AS	RBU, 6/1	
5. Administer As with most software applications, there is a need for a system administrator to undertake system maintenance and other support functions. Administration facilitates useable records, reliable systems, systematic practices and the routine application of records management procedures.				
5.1. Administrator functions				
5.1.1. Allow the System Administrator to retrieve, display and re-configure system parameters	Required	SA	RBU, 6/1	
5.1.2. Allow the System Administrator to make mass updates to values within record fields/attributes. Examples include but are not limited to: - Reassigning record ownership from one university unit to another - Changing attribute values for records for a specific time range	Required	SA	RBU, 6/1	
5.1.3. Allow the System Administrator to initiate import of records via an on-line process	Required	SA	RBU, 6/1	
5.1.4. Allow the System Administrator to schedule the import of records via a batch process.	Required	SA	RBU, 6/1	
5.2. Metadata administration				
5.2.1. Allow the System Administrator to create, define and delete metadata elements, including custom fields	Required	SA	RBU, 6/1	

Requirement	Priority	Entity	Status	Comment
5.2.2.Allow the System Administrator to define which metadata may be modified	Required	SA	RBU, 6/26	
5.2.3.Allow the System Administrator to determine which fields are required or optional	Required	SA	RBU, 6/26	
5.2.4.Allow the System Administrator to define default values for custom fields (For example, that records are “confidential” by default.)	Required	SA	RBU, 6/26	
5.2.5.The system should be able to validate values for record attributes against user or system defined tables	Required	AS	RBU, 5/29	
5.3. Reporting				
5.3.1.Provide English Language ad hoc reporting tools for the Archivist and the System Administrator. The ad hoc tool must be able to - Filter and sort the report on any record attribute including media type (e.g. mp3, .pdf) - Perform functions such as sum, count, subtotals, group by - Save ad hoc reports and queries - Publish ad hoc reports for general availability	Required	A, SA (OO?, RC?)	RBU, 6/1	
5.3.2.Allow the System Administrator to request regular periodic reports and ad hoc reports	Required	SA (and A?)	RBU, 6/1	
5.3.3.Allow the System Administrator to define and save report filters	Required	SA (and A?)	RBU, 6/1	
5.3.4.Allow the System Administrator to report on metadata based on selected: - custom fields; - user groups; and - other records management metadata	Required	SA (and A?)	RBU, 6/1	
6. Design				
6.1. Ease of use				
6.1.1.Online documentation should be available to help users understand how to operate the product’s functionality	Required	AS	RBU, 6/1	
6.1.2.Users should be able to easily navigate the application to the information to which they have access.	Required	RC, OO,	RBU, 6/1	

Requirement	Priority	Entity	Status	Comment
		A, SA		
6.1.3.The application should provide a graphical user interface for all functions of the application	Required	AS	RBU, 6/1	
6.1.4.Allow the System Administrator to apply customized branding to the user interface	Required	SA	RBU, 6/1	
7. Operations				
7.1. Disaster recovery				
7.1.1.This is not a mission critical system and would not need to be recovered within the 2-5 business days standard		AS	RBU, 6/1	Not for RFP
7.2. System availability				
7.2.1.Application should be available during the following hours of operations: [Fill in]		AS	RBU, 6/1	Not for RFP
7.2.2.Product should be able to extract e-mail from multiple domains, servers, and e-mail products	Must	AS	Incompl. 6/1	Add this to interoperability in the RFP under 6.4

Open Ended Questions:

1. Does the product allow use of documents in their source formats or must the user have access to desktop applications for rendering?
2. How do users interact with the attachments of the email messages in the product? Can they download a copy in the original format to use as a template to create a new document?
3. Are there any practical limitations on the number of records that can be added to the archival system?

MeMail Scenarios

23 November 2009

This project, collaboration between the University Archives and Records Program at the Bentley Historical Library and Information and Technology Services (ITS), targets the e-mail records of the top officers, deans, directors and department heads of the University. It aims to implement a system to allow them to be managed and preserved. Identification, capture and preservation of the record e-mail messages of the University will promote the documentation of the impact of the University on scholarly disciplines, higher education, and the national, state and local governments. It will also ensure the proper handling of the evidence of administrative decisions, actions and commitments, and their timely retrieval and use.

E-mail service at the UM is not uniform. Basic e-mail at UM is a traditional IMAP/POP/SMTP e-mail account on the main UM e-mail server, mail.umich.edu. Individuals who elect this service may use webmail at that location, or may access their mail through a variety of IMAP-compliant messaging programs, including Apple Mail, Entourage, Eudora, Mulberry, Outlook, Pine, and Thunderbird. Alternately, many university administrators access their e-mail through an Exchange server. Several university units and schools maintain their own Exchange servers. In addition, UM also provides a centralized Exchange service. Schools without dedicated Exchange servers that wish to offer Exchange/Outlook capability to their staff can subscribe to this service. University administrators use Exchange accounts for their e-mail in greater proportion than do others in the university community – perhaps 2/3 of our target population retrieves their mail through an Exchange server. It is presumed that a majority of these individuals use Outlook to read their mail, but a significant proportion use Entourage, or other messaging applications. There are no mandates as to which e-mail clients must be used.

In all, the system is expected to serve less than 1500 mailbox owners: the University's students and most of the faculty and staff, are not within the expected user population. The developed system must aim to have as little impact on the normal working procedures of those offices as possible. The goal is to have available both "push" and "pull" technology. That is, administrators, or their designees, should have the ability to tag for harvesting or forward e-mail they deem appropriate. Additionally, the ability should exist to allow for a behind-the-scenes evaluation of e-mail accounts and their content, and their selection into the archive.

The solution should permit the discovery and reuse of these records. The users of archived records include the offices of the record creators, University archivists, the University counsel's office, and members of the public, though the public use of the records is mediated through archivists or the Freedom of Information Office. Throughout the life-cycle of these records, the system must include adequate controls to insure the protection of confidential, privileged and restricted information; to place legal holds; and to maintain the reliability and authenticity of the record as it is moved from the individual desktop to the archival digital repository, and from the repository to the access system.

The following entities will interact with the desired system:

1. **Record creator:** The person whose messages are being archived by the system
2. **Office of origin:** The University of Michigan unit which is the owner of the record store to which a particular e-mail record belongs. Some Record Creators have affiliations in more than one Unit of Origin

3. **Archivist:** An individual who manages the e-mail records within the system on behalf of the University Archives and Records Program of the Bentley Historical Library
4. **System administrator:** An individual who manages the configuration of the system, access and role status of users, and performs other systems management tasks on behalf of ITS.
5. **Researcher:** An individual who may be a university employee or a member of the public who wants to solve an information need by reviewing records in the archival system
6. **Archival system:** Since actions are sometimes performed by the system without direction from a human actor, or are system characteristics, the system is an entity as well.

Scenarios	Related Functional Requirements
1. A dean would like to set up his e-mail archive so that he could mark individual messages in his mailbox for permanent storage without sorting them into folders. a. Show us how he declares items for the record store.	5.1.1.1: Allow individual Record Creators and/or Offices of Origin to identify as records individual e-mail messages (and attachments) which originate or are received by their University of Michigan e-mail account 5.1.1.5: Be capable of retrieving the identified messages and their attachments and placing them in the archival system 5.1.1.8: Provide an automated process to allow selection of record e-mail based on business rules 5.1.1.12: Enable integration with Exchange/Outlook e-mail applications, so that records created by those applications can be captured by the archival system
b. Show us how the System Administrator can set the parameters of harvest to the record store so that the dean has two months to undeclare messages that have been superseded.	5.3.3.1: Allow direct access to the archival system via password authentication 5.6.1.2: Users should be able to easily navigate the application to the information to which they have access. 5.1.1.6: Allow the batch harvesting of all sent e-mail (and attachments) of specified Record Creators and their deposit in the archival system 5.1.1.5: Be capable of retrieving the identified messages and their attachments and placing them in the archival system 5.1.1.12: Enable integration with Exchange/Outlook e-mail applications, so that records created by those applications can be captured by the archival system

	5.1.1.8: Provide an automated process to allow selection of record e-mail based on business rules 5.5.1.3: Allow the System Administrator to initiate a batch-sweep of records from particular mailboxes via an on-line process 5.5.1.4: Allow the System Administrator to initiate a batch-sweep of records from particular mailboxes based on a regularly recurring schedule 5.6.1.3 The application should provide a graphical user interface for all functions of the application
c. Can this dean simultaneously declare records and note the sensitivity of the record (so, “personnel” “student” “privileged”)?	5.1.3.1: Be able to support multiple simultaneous classification schemes – each record may be categorized in several user-defined dimensions
d. How can the product be configured by the System Administrator to correctly limit access based on these “custom access fields”?	5.3.2.1: Allow the System Administrator to set up and maintain user profiles and allocate users to groups and roles 5.3.2.2: Allow the System Administrator to configure the system to limit access to specific records, aggregations and records management metadata to specified users, roles or user groups 5.3.2.3: Allow the System Administrator to configure the system to restrict the viewing or modifying of specific metadata elements by group, role or user 5.3.2.7: Allow the Archivist or authorized user from the Office of Origin to alter the custom access category of individual records 5.3.2.6: The action of changing a custom access category should be logged. 5.3.2.8: Allow the System Administrator to prevent the access of record content while allowing metadata to be viewed by authorized users 5.3.3.1: Allow only the System Administrator to attach to the user profile attributes that determine the features, functions, records management metadata fields, records or aggregations to which the user has access. The attributes of the profile will: • prohibit access to the archival system without an accepted authentication mechanism attributed to the user

	profile • restrict user access to specific records or aggregations by security, classification or specific set of criteria, including unit affiliation • restrict user access to particular features (for example, read, update and/or delete specific records management metadata fields) • deny access after a specified date, • be able to deny access during certain dates and/or times of day, and • allocate the user to a group or groups
2. A dean would like to designate particular folders in her Outlook store as topics that are appropriate for the archive. Sometimes there are nested folders – so there is not a simple flat structure. She would like to be able to use her folder titles to help her retrieve e-mail messages in the future, so it is important that when the system harvests her e-mail folder, it keeps the folder name in metadata somehow, including the file path. a. Show how the System Administrator configures the account so that particular folders are deposited in the record store.	5.6.1.2: Users should be able to easily navigate the application to the information to which they have access. 5.3.3.1: Allow direct access to the archival system via password authentication 5.1.1.2: Allow individual Record Creators and/or Offices of Origin to identify as records the e-mail messages (and their attachments) that reside in particular folders within their University of Michigan-supported e-mail applications 5.1.1.12: Enable integration with Exchange/Outlook e-mail applications, so that records created by those applications can be captured by the archival system 5.1.1.8: Provide an automated process to allow selection of record e-mail based on business rules 5.1.1.23: For records retrieved and placed in the system pursuant to 5.1.1.5, 5.1.1.6, 5.1.1.7 or 5.1.1.8, capture the name of the folder containing the message 5.1.1.24: For records retrieved and placed in the system pursuant to 5.1.1.5, 5.1.1.6, 5.1.1.7, or 5.1.1.8 capture the message's filepath within the e-mail messaging system as a metadata element linked to each record
b. Show how the dean would access an archived message that resides in a folder in the record store.	5.6.1.2: Users should be able to easily navigate the application to the information to which they have access.

	5.4.1.9: The system should support a graphical user interface that allows for a drill down or other graphical record selection process without needing to write a SQL statement 5.3.1.2: Permit single sign-on between the e-mail system and the Archival System 5.3.1.3: Allow direct access to the archival system via password authentication
c. Can the dean place a related PDF (that is not associated with an e-mail message) in one of these folders? Show how this would work.	This was not on our list of functional requirements, but Nancy Deromedi suggested this would be interesting to see.
d. If this may be done, show how the dean retrieves this file.	This was not on our list of functional requirements, but Nancy Deromedi suggested this would be interesting to see.
e. After this dean retires (and she is no longer credentialed by the system) she finds a PST file on her laptop that she would like to add to the archive. She sends the PST file to an archivist. Show how he adds it to the system.	5.1.1.7: Allow the batch deposit into a specified unit's record store by Records Creators, Offices of Origin or Archivists of accumulated sent and received e-mail messages (and their attachments) which is no longer directly associated with an e-mail messaging application
3. A department head would like to set up his e-mail box so that every e-mail he sends (but not receives) is automatically captured by the system. He is not willing to spend any time putting in any additional metadata. The department head wants to have the opportunity to weed out personal mail from his outgoing mail stream for sixty days before it is deposited into the record store. a. Show how the System Administrator sets parameters so that all sent mail is captured, two months after the sent date.	See, Scenario 1. Is anything different?
b. Show what metadata would be automatically captured.	5.1.1.18: Capture and automatically store the data identified below if available from the e-mail system, as part of the record metadata when an e-mail system, as part of the record metadata when an e-mail

	message is filed as a record. • The intelligent name of the sender and the e-mail address • The intelligent name and e-mail addresses of all primary addressees (or distribution lists) • The intelligent name and e-mail address of all other addressees (or distribution lists) shall be automatically entered into a data field separate from the primary addressee(s) • The date and time the message was sent • For messages received the date and time the message was received (if available) • The subject of the message 5.1.1.22: Automatically track the date and time the record is added to the record store within the product as a metadata element linked to each record. Note that the date a message is sent or received can be different from the date that a record is added to the permanent record store. 5.1.1.30: The system should record the hash value created pursuant to 1.1.29 as a metadata element associated with each message 5.1.2.1: Allocate an identifier, unique within the system, to each record at point of capture automatically 5.6.1.3 The application should provide a graphical user interface for all functions of the application
4. A dean is sending a job offer to an outside candidate. It consists of a message with a PDF offer letter on university letterhead attached. a. He has asked the System Administrator to set up his record store so that only he, his secretary and the archivist have read access to his record store. Show us how the System Administrator complies. b. Show us how these permissions can be modified if the secretary leaves her position.	5.3.3.1: Allow direct access to the archival system via password authentication 5.6.1.2: Users should be able to easily navigate the application to the information to which they have access. 5.6.1.3 The application should provide a graphical user interface for all functions of the application 5.3.1.1: Allow the System Administrator to restrict access to product functionality according to user's role 5.3.2.1: Allow the System Administrator to set up and maintain user profiles and allocate users to groups and roles 5.3.2.2: Allow the System Administrator to configure the system to

	limit access to specific records, aggregations and records management metadata to specified users, roles or user groups 5.3.2.8: Allow the System Administrator to prevent the access of record content while allowing metadata to be viewed by authorized users 5.3.3.1: Allow only the System Administrator to attach to the user profile attributes that determine the features, functions, records management metadata fields, records or aggregations to which the user has access. The attributes of the profile will: • prohibit access to the archival system without an accepted authentication mechanism attributed to the user profile • restrict user access to specific records or aggregations by security, classification or specific set of criteria, including unit affiliation • restrict user access to particular features (for example, read, update and/or delete specific records management metadata fields) • deny access after a specified date, • be able to deny access during certain dates and/or times of day, and • allocate the user to a group or groups 5.5.1.2 Allow the System Administrator to make mass updates to values within record fields/attributes. Examples include but are not limited to: • Reassigning record ownership from one university unit to another • Changing attribute values for records for a specific time range
c. Show us how the dean declares the message for the record store.	5.1.1.1: Allow individual Record Creators and/or Offices of Origin to identify as records individual e-mail messages (and attachments) which originate or are received by their University of Michigan e-mail account 5.1.1.5: Be capable of retrieving the identified messages and their attachments and placing them in the archival system

	5.1.1.12: Enable integration with Exchange/Outlook e-mail applications, so that records created by those applications can be captured by the archival system 5.1.1.25: Support the capture of attachments created in native file formats from the following applications: * pdf 5.1.1.27 E-mail messages and their attachments are compound records. The system must capture compound records so that the relationship is retained, the structural integrity of each record is retained, and each compound record is retrieved, displayed and managed as a single unit 5.1.1.28: Allow Records Creators to capture compound records easily, preferably with one action, for example a single click (e.g. no need to separately save attachments to hard drive first) 5.6.1.3 The application should provide a graphical user interface for all functions of the application
d. What feedback does he receive that this is accomplished?	5.1.1.14: Indicate to the Record Creators when an individual record is captured within the archival system
5. A year later, this dean needs to access the letter. He asks his secretary to get him a copy of it. She's not sure of the date, or the pre-umich e-mail address of the recipient, but knows the offeree's name. Note that the offeree's full name might only reside in the attachment. a. Using this information, how would she retrieve it?	5.6.1.2: Users should be able to easily navigate the application to the information to which they have access. 5.4.1.1: Provide a flexible search tool that can be easily used by both novice and expert system users 5.4.1.3: Searching tool should allow for: • Free-text searching of combinations of records management metadata elements and record content; • Boolean searching of records management metadata elements. • Word proximity searching • 'Wild card' searching of records management metadata • Complex database searches across multiple data tables • Search based on content of custom fields. 5.4.4.1: Display the total number of search results on a user's screen

	together with the results list 5.4.1.5: Allow records featured in the search results list to be selected, then viewed (subject to access controls) by a single click or keystroke, rather than requiring the user to click through several screens. 5.4.1.7: Users should be able to view the record or record content in metadata sort order 5.4.1.8: Allow users to refine (that is, narrow) searches 5.4.1.9: The system should support a graphical user interface that allows for a drill down or other graphical record selection process without needing to write a SQL statement 5.4.2.1: A record list is created as the output of a search request. The user should be able to view or download one or all of the records listed by means other than resubmitting the search request or typing in a specific record key. 5.4.2.2: The system should be able to render all the types of electronic records in a manner that preserves the information in the records as well as the metadata about that record. E.g. The last access date should not change for a Word document when it is rendered within the archival system 5.4.2.3: Provide the user with flexible options for printing records and their relevant records management metadata, including the ability to print a record with records management metadata specified by the user 5.6.1.3 The application should provide a graphical user interface for all functions of the application 5.7.1 Does the product allow use of documents in their source formats or must the user have access to desktop applications for rendering? 5.7.2 How do users interact with the attachments of the e-mail messages in the product? Can they download a copy in the original format to use as a template to create a new document?
6. An archivist needs to search across all archived mail to retrieve records on the topic “Mott Children’s Hospital Expansion Project” (or another search term that better fits the vendor’s test e-mail corpus).	5.6.1.2: Users should be able to easily navigate the application to the information to which they have access. 5.3.1.3: Allow direct access to the archival system via password authentication

a. Show how she executes the search. Note that she needs to recover all relevant materials, not just those that mention the topic in the subject line.	5.4.1.1: Provide a flexible search tool that can be easily used by both novice and expert system users 5.4.1.3: Searching tool should allow for: • Free-text searching of combinations of records management metadata elements and record content; • Boolean searching of records management metadata elements. • Word proximity searching • 'Wild card' searching of records management metadata • Complex database searches across multiple data tables • Search based on content of custom fields. 5.4.4.1: Display the total number of search results on a user's screen together with the results list 5.4.1.5: Allow records featured in the search results list to be selected, then viewed (subject to access controls) by a single click or keystroke, rather than requiring the user to click through several screens. 5.4.1.7: Users should be able to view the record or record content in metadata sort order 5.4.1.8: Allow users to refine (that is, narrow) searches 5.4.1.9: The system should support a graphical user interface that allows for a drill down or other graphical record selection process without needing to write a SQL statement 5.4.2.1: A record list is created as the output of a search request. The user should be able to view or download one or all of the records listed by means other than resubmitting the search request or typing in a specific record key. 5.4.2.2: The system should be able to render all the types of electronic records in a manner that preserves the information in the records as well as the metadata about that record. E.g. The last access date should not change for a Word document when it is rendered within the archival system 5.6.1.3 The application should provide a graphical user interface for all functions of the application
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b. A subset of these records is required for a subpoena. Show us how these records are extracted from the system for legal counsel.	5.2.1.2: Be able to export metadata for specified records and selected groups of records without affecting the metadata stored by the archival system (e.g. last modified data metadata within a Word document) 5.2.2.1: Provide a well-managed process to allow users to export either single or multiple records 5.2.2.2: Meet industry standards for data transmission for all metadata elements and the digital objects themselves 5.2.2.3: Allow users to transfer or export an aggregation (at any level) in one sequence of operations so that: • all attachments and annotations associated with an e-mail message are exported together with the message as a related unit • all links between the record and its records management metadata are retained; and 5.4.2.4: Allow the Archivist/FOIA officer to download a copy of a record for the purposes of redaction 5.4.2.3: Provide the user with flexible options for printing records and their relevant records management metadata, including the ability to print a record with records management metadata specified by the user 5.4.2.5: Include a feature for rendering those records that cannot be meaningfully printed to an appropriate output device (say, MP3 to iTunes) 5.6.1.3 The application should provide a graphical user interface for all functions of the application
7. A dean realizes that he has allowed a personal e-mail into the record store and wants to delete it. He contacts the archivist on the phone. a. Show us how the archivist deletes it from the system.	5.1.1.20: The system should have the ability to restrict the ability to delete records to authorized individuals. 5.6.1.2: Users should be able to easily navigate the application to the information to which they have access. 5.3.1.1: Allow the System Administrator to restrict access to product functionality according to user's role 5.3.3.1: Allow only the System Administrator to attach to the user profile attributes that determine the features, functions, records

	management metadata fields, records or aggregations to which the user has access. The attributes of the profile will: • prohibit access to the archival system without an accepted authentication mechanism attributed to the user profile • restrict user access to specific records or aggregations by security, classification or specific set of criteria, including unit affiliation ** restrict user access to particular features (for example, read, update and/or delete specific records management metadata fields) • deny access after a specified date, • be able to deny access during certain dates and/or times of day, and • allocate the user to a group or groups
b. There should be an audit trail that indicates that the event happened. Is there an opportunity to indicate a reason for the deletion?	5.2.1.1: Be capable of creating unalterable metadata of records management events that are taken on records. The metadata should include the following records management elements • Type of records management events, such as add, delete, modify • User initiating and/or carrying out the event; and • Date and time of the event 5.2.1.3: Insure that an audit trail exists to record actions taken to modify or delete record metadata or the record itself
8. Show us the standard reports delivered with your system. Show us the process for creating ad hoc reports.	5.5.3.1: Provide English Language ad hoc reporting tools for the Archivist and the System Administrator. The ad hoc tool must be able to • Filter and sort the report on any record attribute including media type (e.g. mp3, .pdf) • Perform functions such as sum, count, subtotals, group by • Save ad hoc reports and queries • Publish ad hoc reports for general availability 5.5.3.2: Allow the System Administrator to request regular periodic

	reports and ad hoc reports 5.5.3.3: Allow the System Administrator to define and save report filters 5.5.3.4: Allow the System Administrator to report on metadata based on selected: • custom fields; • user groups; and • other records management metadata
9. Show us the online help or other documentation provided with the system. Can it be modified by the archivist?	5.6.1.1: Online documentation should be available to help users understand how to operate the product's functionality
Questions	Functional requirements
1. Once a record is moved to the record store, is it fixed as a non-changeable digital object? Please explain how this works in your system.	5.1.1.21: Ensure that the content of an e-mail message cannot be amended in any way once the e-mail has been captured 5.5.2.2: Allow the System Administrator to define which metadata may be modified
2. How are attachments stored in your product? In open source formats, or in formats that can only be retrieved by their native tools? If retrieval by native tools is necessary, how does the product address accessing these records if the tool becomes obsolete? For example, if Word 2007 is no longer available to open .docx attachments?	5.4.4.6: Provide a utility or conversion tool to allow users to convert records marked for transfer or export into a specified file transfer or export format
3. E-mail service at the UM is not uniform. Some individuals' e-mail at UM is a traditional IMAP/POP/SMTP e-mail account on the main UM e-mail server, mail.umich.edu. Individuals who elect this service may use webmail at that location, or may access their mail through a variety of IMAP-compliant messaging programs, including Apple Mail, Entourage, Eudora, Mulberry, Outlook, Pine, and Thunderbird. While we understand that your product is optimized for Exchange, what work-arounds might allow messages from IMAP-based systems to be pushed to the record store?	5.1.1.11: Enable integration with IMAP/SMTP e-mail applications, so that records created by those application can be captured by the archival system