Practices for College and University Electronic Records Management (ERM) Programs: Then and Now

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Abstract

This article reports on findings from a research project investigating patterns in practices among North American college and university archives and records management programs regarding their approaches to capturing, storing, organizing, and making available institutional electronic records. The project seeks to provide a picture of the state of the field for archivists in colleges and universities. Initially funded by the National Historical Publications and Records Commission's (NHPRC) Electronic Records Fellowship Program, the study collected data in 2005 from 193 institutions through an online survey administered to 638 archivists and records managers. The survey was followed by interviews with archivists at 20 institutions to explore in depth the development and implementation of their programs. In 2009, a second online survey was sent to the 193 institutions responding in 2005 to identify what changes, if any, had occurred over the four-year period. Sixty-five percent (126) of the original 193 institutions updated their 2005 data, and the results suggest relatively little change in the development of ERM programs over the past four years.

Much has been published about e-records as a serious preservation issue, but little of this general literature addresses the needs of colleges and universities. A 2002 study of 15 U.S. and 15 Canadian universities found that little had changed in records management programs at colleges and universities since 1990 when Don C. Skemer and Geoffrey P. Williams published

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the results of their national survey.[1] Practitioners still had little or no guidance on how to proceed with the new challenges posed by e-records. The study showed that records management functions still largely resided with the archivist and that often there was no systematic way to acquire institutional records. Respondents indicated that they were not included in decisions concerning ERM programs and noted a significant need for "institution-wide electronic records management policies and procedures developed in cooperation with senior administrators, information technology staff, university archivists, and records managers."[2] Moreover, they indicated that even when e-records policies were in place, no implementation system was available to them. Notable exceptions to these early findings were the descriptions of the ERM programs at Indiana University and the University of Michigan.[3]

Institutional digital repositories grew rapidly at North American colleges and universities during the 1990s but were primarily centered within their libraries and focused largely on published materials traditionally managed by library methods, rather than on archival records managed by university and college archives. In December 2000, Congress set aside $100 million for the National Digital Information Infrastructure and Preservation Program (NDIIPP) to bring researchers from both inside and outside the academic community together to provide a digital preservation strategy at the national level.[4] Over the next five years, research advanced, according to Clifford Lynch, to the point where the needs of institutions were "widely recognized and well defined, the technical approaches at least superficially mapped out, and the need for action clear."[5] He argued forcefully for the strategic importance of institutional repositories (IRs) as a way for universities to meet their responsibilities to the campus

[1] Don C. Skemer and Geoffrey P. Williams, "Managing the Records of Higher Education: The State of Records Management in American Colleges and Universities," *American Archivist* 53 (Fall 1990): 532–47.

[2] Bessie Schina and Garron Wells, "University Archives and Records Programs in the United States and Canada," *Archival Issues* 27 (2002): 35.

[3] Philip C. Bantin, "The Indiana University Electronic Records Project Revisited," *American Archivist* 62 (Spring 1999): 153–63; Anne Gilliland-Swetland, "Policies and Politics: The Archival Implications of Digital Communications and Culture at the University of Michigan. A Case Study," report no. PC 307 (Society of American Archivists, 1996). For more recent studies, see Society of American Archivists Campus Case Studies, at http://www.archivists.org/publications/epubs/CampusCaseStudies/casestudies.asp, accessed 30 November 2009.

[4] See *Preserving Our Digital Heritage: Plan for the National Digital Information Infrastructure Preservation Program*, report released October 2002, at http://www.digitalpreservation.gov/, accessed 30 November 2009. Similar digital preservation projects are underway in Europe, such as PLANETS, Preservation and Long-term Access through Networked Services, at http://www.planets-project.eu/docs/reports/Planets_PC3-D7_RepInformationRegistries.pdf, accessed 12 May 2008, and CASPAR Cultural, Artistic and Scientific Knowledge for Preservation, Access and Retrieval, at http://www.casparpreserves.eu/caspar-project, accessed 12 May 2006, both cofunded by the European Union under the Sixth Framework Programme.

[5] Clifford A. Lynch, "Institutional Repositories: Essential Infrastructure for Scholarship in the Digital Age," Association of Research Libraries, no. 226 (2003): 1, at http://www.arl.org/resources/pubs/br/br226/br226ir.shtml, accessed 30 November 2009.

and the wider public by preserving and making available the intellectual output of both faculty and academic units. That those responsible for the stewardship of the intellectual resources at many academic institutions across the country clearly felt this concern to preserve articles, theses, dissertations, institutional research, and other e-records would seem clear from the explosion of digital repositories that followed.[6] H. Frank Cervone posited that without these repositories, the process of managing and migrating the vast array of digital materials held by institutions would become a nightmare.[7]

In response, the research community undertook significant projects to assist in providing standards and strategies for institutions involved in implementing digital repositories. Projects focused on the areas of preservation metadata[8] and on the architecture and technology of trustworthy repositories,[9] including a movement that led to the establishment of certification requirements for digital repositories through the development of audit criteria.[10]

[6] Anne R. Kenney and Ellie Buckley, "Developing Digital Preservation Programs: The Cornell Survey of Institutional Readiness, 2003–2005," *RLG DigiNews* 9, no. 4 (15 August 2005); Richard Fyffe, Deborah Ludwig, and Beth Forest Warner, "Digital Preservation: A Campus-Wide Perspective," *ECAR Research Bulletin* 2005, no. 18 (30 August 2005). Follow-up article, Anne R. Kenney and Ellie Buckley, "Digital Preservation in Action," *ECAR Research Bulletin* 2005, no. 19 (13 September 2005); Carole Ann Fabian, "UBdigit: A Repository Infrastructure for Digital Collections at the University of Buffalo," *RLG DigiNews* 10, no. 3 (15 June 2006).

[7] H. Frank Cervone, "The Repository Adventure," *Library Journal* (1 June 2004): 45.

[8] Brian Lavoie, *Preservation Metadata,* Office of Research, OCLC Online Computer Library Center, Inc., September 2005, at http://www.dpconline.org/docs/reports/dpctw05-01.pdf, accessed 30 November 2009. The PREMIS (Preservation Metadata: Implementation Strategies) Working Group has generated several documents. One is *Data Dictionary for Preservation Metadata*, March 2008 at http://www.loc.gov/standards/premis/v2/premis-2-0.pdf, accessed 18 January 2010 and another is a final report titled *Implementing Preservation Repositories for Digital Materials: Current Practice and Emerging Trends in the Cultural Heritage Community* (Dublin, Ohio: OCLC Online Computer Library, September 2004), at http://www.oclc.org/research/projects/pmwg/surveyreport.pdf.

[9] RLG/OCLC Working Group on Digital Archives Attributes, *Trusted Digital Repositories: Attributes and Responsibilities* (Mountain View, Calif.: RLG, May 2002), at http://www.oclc.org/research/activities/past/rlg/trustedrep/repositories.pdf; State Archives Department, Minnesota Historical Society, "Trustworthy Information Systems Handbook," version 4 (July 2002), at http://www.mnhs.org/preserve/records/tis/docs_pdfs/tis.pdf, accessed 30 November 2009; Gail Hodges, "Digital Preservation and Permanent Access to Scientific Information: The State of the Practice," CENDI Digital Preservation Task Group, National Agricultural Library, February 2004, at http://cendi.dtic.mil/publications/04-3dig_preserv.pdf, accessed 30 November 2009; Kevin Glick and Eliot Wilczek, "Fedora and the Preservation of University Records Project," *RLG DigiNews* 10, no. 5 (16 October 2006).

[10] Center for Research Libraries, *Trustworthy Repository Audit and Certification: Criteria and Checklist* (TRAC), version11.0, NARA/OCLC, February 2007, at http://wiki.digitalrepositoryauditandcertification.org/pub/Main/ReferenceInputDocuments/trac.pdf, accessed 30 November 2009. For information on the working group that is attempting to produce an ISO standard based on this work, see http://wiki.digitalrepositoryauditandcertification.org/bin/view/Main/WebHome, accessed 12 May 2008. Additionally, there are projects in the U.K. and Europe such as NESTOR—Network of Expertise in long term STORage, *Catalogue of Criteria for Trusted Digital Repositories*, version 1 draft for public review, December 2006, at http://edoc.hu-berlin.de/series/nestor-materialien/8en/PDF/8en.pdf, accessed 30 November 2009; Digital Repository Audit Method Based on Risk Assessment (DRAMBORA), a toolkit intended to facilitate an internal audit by providing repository administrators with a means to assess their capabilities, identify their weaknesses, and recognize their strengths, at http://www.repositoryaudit.eu/, accessed 30 November 2009.

In spite of these developments, institutional repositories are not populated with all the intellectual output of faculty as envisioned. Data collected as part of the Making Institutional Repositories a Collaborative Learning Environment (MIRACLE) project on the implementation of IRs on college and university campuses showed that content recruiters find it difficult to acquire faculty materials and turn instead to archives and special collections departments for content. Moreover, archival documents collected for the IRs are not in large part the born-digital materials originally anticipated but rather materials digitized from existing collections. More troubling still was evidence showing that these materials are collected without input from university archives or special collections. The research further indicated that while archivists are involved in the planning, pilot-testing, and implementation phases of these institutional initiatives, few are involved in directing IR processes and none are in charge of fully implemented IRs. The study also suggested that the motivations for implementing these IRs are often at odds with the results reported by early adopters. For example, many institutions report preservation as an intended key function, and yet data confirmed that the IRs are not providing key preservation services and that preservation systems and policies lag behind.[11]

Other studies affirm this conclusion. One found that the University of Oregon's digital collection development and maintenance program is not sustainable even though the university has DSpace and is using CONTENTdm.[12] Another study found that while most libraries support some form of preservation activities, very few have a preservation plan for digital resources.[13] Yet another study at the University of Kansas stated that most efforts toward establishing ERM programs represent only early investigations and tend to focus on technological aspects. The study concluded that a fully developed preservation program needs to address both the roles that staff throughout the organization play and the kinds of policies, education, and training necessary to support those roles.[14] An online survey of participants of an NEH-sponsored digital preservation management and training program investigating institutional readiness showed that too often institutions take on digital stewardship without policies in place. Over 60% of the participants cited insufficient policies and preservation plans; 58%

[11] Elizabeth Yakel, Soo Young Rich, Beth St. Jean, Karen Markey, and Jihyun Kim, "Institutional Repositories and the Institutional Repository: College and University Archives and Special Collections in an Era of Change," *American Archivist* 71 (Fall/Winter 2008): 323–49.

[12] Carol Hixon, "When Just Doing It Isn't Enough: The University of Oregon Takes Stock," *RLG DigiNews* 9, no. 6 (15 December 2005).

[13] Anne R. Kenney and Deirdre C. Stam, "The State of Preservation Programs in American Colleges and Research Libraries: Building a Common Understanding and Action Agenda," a joint study by Council on Library and Information Resources, Association of Research Libraries, University Libraries Group and Regional Alliance for Preservation (Washington, D.C.: Council on Library and Information Resources, December 2002).

[14] Fyffe, Ludwig, and Warner, "Digital Preservation: A Campus-Wide Perspective."

said they lack resources for preservation; and 48% reported inadequate support from senior staff.[15]

Both the distribution of topics presented at the Preservation and Access for Electronic College and University Records (ECURE) conferences and the number of those papers later published provided little guidance for practicing archivists on how to manage the born-digital materials that were coming their way. Between 1999 and 2006 (the last year in which the conference was held), 42% of the papers presented (32 out of 77) at ECURE focused on topics such as administrative systems, security, ethics, privacy, and FOIA. A further 16% of presentations focused on theoretical research regarding metadata, authentic and trustworthy records, the emulation/migration of records, and the legal requirements for e-records. An additional 19% focused on either business support products or on government and large-scale projects such as InterPARES, Cornell's Prism project, an NSF-funded Digital Libraries initiative, and work done by the Canadian National Data Archives Consultation, which studied issues surrounding the preservation of research data.[16] Only 23% of the papers presented (18 out of 77) at ECURE focused specifically on issues pertaining to e-records programs in an academic setting; of these, nearly half (8 out of 18) focused either on raising awareness of e-records issues on campuses, on institutional readiness, or on strategies for developing an e-records program.[17] Only 11 of the ECURE presentations covered topics of practical help to archivists in the trenches. Of these, 4 focused on specific digital repository projects, one of which was a joint project done by Rutgers and Yale on the use of Fedora in the preservation of university records. This NHPRC-funded project produced an ingest guide published on the Web.[18] The remaining 7 pre-

[15] Kenney and Buckley, "Developing Digital Preservation Programs." A recent study has borne out these findings:. Susan E. Davis, "Electronic Records Planning in 'Collecting' Archives," *American Archivist* 71 (Spring/Summer 2008): 167–89.

[16] Philip B. Eppard, "Preserving Authentic Electronic Records: A Report on the InterPARES Project," unpublished paper presented at ECURE 2001, University of Arizona, Tempe; the International Research on Permanent Authentic Records in Electronic Systems (InterPARES) is based at the School of Library, Archival, and Information Studies at the University of British Columbia, in Vancouver, British Columbia, Canada, see http://www.interpares.org/, accessed 18 January 2010, and was an outgrowth of Luciana Duranti's study on "*The Preservation of the Integrity of Electronic Records* (The Netherlands: Kluwer Academic Publishers, 2002); Nancy Y. McGovern, "Cornell's Project Prism: Developing a Preservation Risk Management Program for Web Resources" presented at ECURE 2002, Arizona State University, Tempe; Charles Humphrey, "Preserving Research Data: The Canadian Experience," unpublished paper presented at ECURE 2005, Arizona State University, Tempe, at http://www.asu.edu/ecure/2005/humphrey/HumphreyCharles_bio.html, accessed 25 May 2005.

[17] Philip Bantin, "Collaborative Models for System Design," PowerPoint presentation at ECURE 1999, Mesa, Arizona, at http://www.asu.edu/ecure/1999/bantin/bantin.ppt.

[18] Gregory Colati, David Kahle, and Eliot Wilczek, "All Things to All People: Combining Resources to Build an Integrated Digital Repository," unpublished paper presented at ECURE 2004, Arizona State University, Tempe; Helen Tibbo, "Keeping Carolina: Building a Trusted Repository from the RLG/NARA Audit Checklist," unpublished paper presented at ECURE 2006, Arizona State University, Tempe; Glick and Wilczek, "Fedora and the Preservation of University Records Project"; Fedora and the Preservation of University Records Project, *2.1 Ingest Guide*, September 2006, at http://repository01.lib.tufts.edu:8080/fedora/get/tufts:UA069.004.001.00006/bdef:TuftsPDF/getPDF, accessed 21 August 2007.

sentations focused on the preservation of individual document types such as electronic theses and dissertations,[19] Web-based records,[20] email,[21] research data,[22] and the *Managing the Digital University Desktop* project undertaken by the University of North Carolina at Chapel Hill and Duke University, which focused on the problems of records created by faculty on their desktops.[23]

Although some studies targeting specific sets of records have been made public, such as one at Duke focused on managing the records of the Public Affairs Department, and another at Indiana University on incorporating recordkeeping requirements for administrative transaction processing and information systems,[24] they are few in number. A picture emerges of a community of archivists whose needs have largely been left unmet by the research and implementation projects of the last decade. Moreover, projects that might be of benefit are often unpublished and therefore unknown.

The Determining Current Practices Project

Study Design

The Determining Current Practices Project was designed as a mixed-methods study exploring what patterns, if any, exist in practices among North American college and university archives and records management programs regarding their approaches to capturing, storing, organizing, and making available institutional e-records. In this study, the term *e-records* covered a broad range of materials, such as administrative records, digital assets, email, institu-

[19] Gail M. McMillan and Leonard K. Peters, "Electronic Theses and Dissertations at Virginia Tech," unpublished paper presented at ECURE 1999.

[20] Rob Spindler, "Preserving Web-Based Records," unpublished paper presented at ECURE 1999; Johanne Pelletier and Garron Wells,"Web-Based Record Keeping: Risk Analyses and Policy Agendas for Records Management," unpublished paper presented at ECURE 2001.

[21] David A. Wallace, "Email in Higher Education: Policy Issues and Strategies," unpublished paper presented at ECURE 1999, 2000, 2001; Helen Tibbo, "Evidence-Based E-Mail Management at UNC: A Search for Best Practices and User Compliance," unpublished paper presented at ECURE 2001.

[22] Sarah M. Pritchard, "Faculty Research Data: Informatics and Archiving," unpublished keynote address presented at ECURE 2005.

[23] Janice Holder, "Empowering the Individual: Managing the Digital University Desktop," presented at ECURE 2005; see also Helen Tibbo and Timothy Pyatt, "Managing the Digital University Desktop: Empowering the Individual . . . Preserving the Public Record and Institutional History: Email Management, Electronic Records, and Beyond," PowerPoint presentation, MARAC Spring 2006 Conference, an NHPRC-grant-funded project to study computer file management practices in academic units and administrative offices across the sixteen-campus UNC system and at Duke, at http://www.ils.unc.edu/digitaldesktop/, accessed 21 August 2007.

[24] Tim Pyatt, "Managing the Records of Public Affairs in the Digital Era: Assessment, Scheduling, and Transfer," unpublished archivist's report, Duke University, 2007, copy provided by author July 2007, see Indiana University Bloomington, "Indiana University Electronic Records Project," at http://www.indiana.edu/~libarch/ER/, accessed 25 May 2005.

tional publications, and websites; and an *ERM program* was defined as a formal system to take in, evaluate, and manage e-records. Characteristics of a formal system included specific polices or procedures for dealing with at least one type of institutional e-record and an organizational commitment of staff time and funding. The study had three parts: a survey phase and an interview phase in 2005–2006 and a follow-up survey in 2009. Data collected in the initial survey were used to identify a baseline of practices in the field and to solicit participants for interviews. Data collected in the interviews were used to develop a detailed picture of practices in 2006 and to identify, as far as possible, exemplars that could be used to provide best practice guidance for practitioners. The follow-up survey conducted in 2009 was designed to identify what changes, if any, had occurred over the four-year period.

To identify a baseline of current practices at colleges and universities, the researchers sought a broad sample of archivists and records managers at institutions of varying sizes, both public and private. Permission was received from the Society of American Archivists (SAA) to use the membership list of the College and University Archives Section. A preliminary questionnaire was developed and pretested with 10 practitioners at institutions not on the survey list. In November 2005, a revised questionnaire containing 22 questions was sent to 638 archivists and records managers using the SurveyMonkey.com software (see Appendix A).

We recruited participants for interviews conducted spring through fall 2006 from individuals who indicated on the questionnaire that they or their institutions were actively implementing or planning an ERM program. Selection criteria for the interviews also included size/type of institution, type of program implemented or planned, geographic location, and scheduling constraints. Use of such selection criteria is consistent with theoretical and/or purposive sampling techniques. The interviews were conducted using a semistructured interview protocol (see Appendix B), which was pretested with two practitioners not on the interview list. Interviews were conducted both in person and by phone. Face-to-face interviews lasted an average of four hours and were tape recorded for referential accuracy. Phone interviews lasted an average of one hour, during which detailed notes were taken.

The interview phase used a multiple-case-studies design,[25] which allowed the researchers to use later cases/interviews to confirm or disprove the patterns identified in earlier ones. In practice, this meant that the interview protocol was revised during the course of the study in response to new information. The interviews were sequenced so that the first group of interviewees had as many characteristics (size/type of institution, type of program, etc.) in com-

[25] Lisl Zach, "Using a Multiple-Case-Studies Design to Investigate the Information-Seeking Behavior of Arts Administrators," *Library Trends* 55, no. 1 (Summer 2006): 4–21.

mon as possible (*literal replication*); those interviews provided (as far as possible) a baseline of current practices and identified priorities. The remaining cases/interviews were selected to explore and confirm or disprove the patterns identified in the initial interviews (*theoretical replication*). Data were collected during the interview phase of the study until saturation—that is, until no significant new findings were revealed. In this study, a total of 7 face-to-face and 15 telephone interviews were conducted before saturation was reached in the fall of 2006.

Data Collection

Baseline survey

The 638 individuals who received the initial online questionnaire were affiliated with a total of 418 institutions. Some institutions had as many as 10 staff members, faculty, and students who were members of the College and University Archives Section. When the questionnaire was first sent, no attempt was made to identify the most appropriate person at a particular institution. However, review of responses after the initial data collection period ended showed that a surprising number of key institutions on the list had not returned questionnaires. After sending two follow-up requests for responses, the researchers began to target specific individuals at these key institutions and contacted them by telephone. In some cases, the person who had originally received the survey completed and returned it; in other cases, he or she referred the researchers to a more appropriate person at the same institution whose name was not on the SAA list. In still other cases, however, the staff member was willing to discuss informally the lack of any ERM program at his or her institution and the reasons why, but was unwilling to go on record in any way, even after being assured that the data would be kept confidential. In the end, 193 institutions provided at least one response to the survey.[26] Of the responses received, only 15 institutions reported that they had a formal ERM program. Another 81 institutions indicated that they had a program in the planning stages.

Data collected in the survey phase were analyzed primarily using the tools provided by SurveyMonkey.com, which provide summary reports of frequencies of responses. Open-ended questions on the questionnaire were analyzed manually and used to identify candidates for the in-depth interviews.

[26] Of the 638 individual questionnaires sent out in the survey phase of the project, 57 went to bad email addresses that could not be corrected; 40 people declined to participate; and 224 responses were received. Of the remaining 317 individuals who did not respond, many were from institutions with two or more members of the College and University Archives section, and one member had already responded.

Interviews

The second phase began in May 2006 with a series of face-to-face interviews. Fifteen institutions indicated they had an active ERM program, but only 5 out of the 15 respondents indicated they would be willing to be interviewed. When we contacted these 5 institutions, we found that they did not have specific polices or procedures to handle institutional e-records. Instead they either relied on procedures designed to handle paper records and dealt with e-records on a case-by-case basis, or they had a policy or procedure in place to deal with one type of e-record but were still in the early stages of developing policies and procedures to address the handling of other types of e-records. The researchers then contacted a subset of the institutions (42 of 81) that indicated both that they were in the early stages of implementing an ERM program and that they were willing to be interviewed. These exploratory telephone calls revealed that several of these institutions were considerably further along than those reporting an active program,[27] so the researchers decided to use this group as the pool from which to select interview candidates.

Following the multiple-case-studies design, the researchers selected 4 institutions that had as many characteristics (size/type of institution, type of program, etc.) in common as possible while still providing a geographic distribution for the initial face-to-face interviews. The researchers visited each of the 4 institutions, spending up to a full day with the archivist. The interviewers used a semi-structured interview protocol but found that the archivists were eager to tell their stories and needed little prompting. The interview protocol was used primarily to ensure that all the interviews at least touched on all the same major issues. After each interview, additional questions were added to the interview protocol based on new information uncovered in the interview. The final step was to confirm some of the findings from the later interviews with the earlier interviewees. These 4 in-person interviews formed the baseline for further interviews.

The majority of the remaining interviews (15 of 18) were conducted by telephone for practical reasons. The 15 telephone interviews were used primarily to confirm or disprove the findings identified in the first 4 interviews. Most of the second group of interviews (10 of 15) were with archivists whose institutions were in the early or exploratory stages of developing ERM programs. The average length of these phone interviews was one hour. Finally, 3 further face-to-face interviews were conducted with institutions representing different models of e-records management. By the end of the project, a total of 22 interviews had been conducted, representing 20 institutions. The distribution of institutions interviewed for the study is shown in Tables 1 and 2.

[27] This can possibly be accounted for by the simple fact that many of the practitioners who had reported being in the early stages showed a greater appreciation for the full scope of the problem than did the others.

Table 1. Institutions of Interviewees by Geographic Location

	Mid-Atlantic	Midwest	Northeast	Southeast	Southwest	West
Private	2	1	7	–	–	1
State	1	3	1	1	1	2

Table 2. Institutions of Interviewees by Enrollment Size

	< 5,000	5,000–8,000	8,001–15,000	15,000–25,000	25,001–45,000	>45,000
Private	3	2	2	2	2	–
State	–	1	1	2	3	2

Notes taken during the interviews and while listening to the tape recordings were transcribed and reviewed for possible patterns. The researchers sought to build explanations for each pattern as it was identified. Finally, the researchers looked for disconfirming or contradictory evidence.

Follow-up survey

In July 2009, a second online survey was sent to each of the 193 institutions that provided responses in 2005. This survey asked the same questions as the previous survey (see Appendix A) and included two additional questions about major changes to the institution's ERM program and major barriers or obstacles encountered since December 2005. Of the email addresses collected in the baseline survey, the majority (174) appeared to be working; 19 addresses came back as undeliverable. New contact information for these institutions was identified from the college's or university's website; if the name of the archivist could not be found, the request for participation was sent to the generic email provided in the "contact us" section of the archives' description. Individual emails were sent to each previous and new respondent to encourage participation. Many respondents from the initial survey commented on the importance of continuing the research in this area. At the end of August 2009, a total of 126 institutions (65%) provided updated information in response to the survey. Of the responses received, only 11 institutions reported that they had a formal ERM program in place. Another 51 institutions indicated that they were in the planning stages.

Findings

Of the 193 institutions responding to the 2005 questionnaire, only 49.7% (96 of 193) reported having a formal ERM program either in place or in the planning stages. In 2009, the results were virtually the same; 49.2% (62 of 126)

of the institutions reported having a formal ERM program either in place or in the planning stages.

Organizational structures

Ninety-six percent of the institutions responding to the 2005 survey reported having a designated archivist. This is hardly surprising given the source of the sample. Of these, 71% (137) reported to the director or dean of the library; 18% (35) reported to the director of special collections or other library department head; and 7% (13) reported elsewhere on campus including to the associate vice president for legal affairs, the associate vice president for information technology, and the university secretariat; only 4% (8) reported directly to the provost or college president. In 2009, only one of the responding institutions reported that it did not have an archivist. The reporting structure remained largely unchanged with 70% (88) of the archivists reporting to the director or dean of the library (see Table 3).

In 2009 as in 2005, these reporting structures suggest a lack of recognition of the importance of the archival function on college and university campuses since they are largely buried within the library rather than having their own reporting lines. If anything, the data appear to show a slight trend in favor of moving the archives position into the special collections area rather than outside of the library.

The percentage of institutions reporting a designated records manager rose by just over 10% between 2005 and 2009. In 2005, only 36% (69 of 193) of the institutions had a designated records manager; in 2009, 47% (59 of 126) reported having one. In both 2005 and 2009, a relationship appears between institutions with a records manager and those with an ERM program in place or in the planning stages. Of the 96 institutions with ERM programs in place or in the planning stages in 2005, 47% (45) reported having a records manager. In 2009, 61% (38 of 62) of the institutions with current or planned ERM programs reported designated records managers.

Of the 124 institutions without records managers in 2005, 42% (52) indicated that the archivist identified records needing to be saved. Seventeen percent (21 of 124) responded that the individual departments made this

Table 3. Archivists' Reporting Structure 2005 and 2009

	Director/Dean of Libraries	Special Collections	Outside Library	President or Provost
2005	70.9%	18.1%	6.7%	4.1%
n=193	(137)	(35)	(13)	(8)
2009	69.8%	21.4%	4.8%	4.0%
n=126	(88)	(27)	(6)	(5)

determination, and 9% (11 of 124) indicated that the decision was negotiated between the archivist and the individual departments. Thirty-two percent of the institutions (40 of 124) reported having no consistent guidelines and that records were transferred to the archives unsystematically, if at all. This situation is consistent with the findings of the 2002 study by Schina and Wells[28] and points to the continued need for the development and implementation of formal, institution-wide policies and procedures. In 2009, although only 68 institutions responded to the question, other institutional units were beginning to take the lead in determining which records should be retained, and fewer institutions reported that there were no consistent guidelines available. The other units taking responsibility in the records management function included the office of legal counsel, the vice president for finance and administration, and the office of risk management (see Table 4).

These other units also appear to be involved in developing ERM programs. Most of the institutions with formal ERM programs either in place or in the planning stages involve a variety of stakeholders from other units on campus. This involvement begins to address the need for intra-institutional cooperation identified in the 2002 Schina and Wells study (see Table 5).

The slight increase in the percentage of records managers involved in the development of ERM programs between 2005 and 2009 is consistent with the increase in the percentage of institutions reporting that they have a designated records manager.

Table 4. Institutions without Records Managers 2005 and 2009: Who Makes Decisions about Material to Be Retained?

	Archivist	Individual Departments	Negotiated	Other Units	No Consistent Guidelines
2005	41.9%	16.9%	8.9%	—	32.3%
n=124	(52)	(21)	(11)	0	(40)
2009	42.6%	20.6%	5.9%	8.8%	22.1%
n=68	(29)	(14)	(4)	(6)	(15)

Table 5. Stakeholders in ERM Program Development

	Archivist	Records Managers	CIO or Data Managers	Campus Attorney	Others
2005	90.9%	51.1%	62.5%	60.2%	53.4%
n=88/96	(80)	(45)	(55)	53	(47)
2009	91.2%	57.9%	61.4%	68.4%	42.1%
n=57/62	(52)	(33)	(35)	(39)	(24)

[28] Schina and Wells, "University Archives and Records Programs in the United States and Canada."

ERM program priorities and best practices

Comparing survey data from 2005 and 2009 suggests that the priorities of college and university ERM programs have shifted. In 2005, the top priorities among those institutions with current or planned ERM programs were institutional websites, administrative records, digital asset management, and institutional publications. In 2009, email replaced digital asset management as one of the top priorities (see Table 6). These ERM program priorities are largely reflected by all the institutions responding to the questions regarding desired best practice guidance, whether they are already in the process of implementing an ERM program or not. Administrative records are one of the highest concerns in both 2005 and 2009. Email again replaced digital asset management as a top concern in 2009 as compared to 2005. In both years, fewest institutions felt the need for best practices in the areas of course management systems and faculty publications (see Tables 6 and 7).

Interview results

Twenty-two interviews with archivists were conducted spring through fall 2006. The results of those interviews indicated that even at the best-funded and most prestigious institutions, no comprehensive programs existed for managing e-records to use as models for the field. Further, in those institutions with some e-records management initiatives underway, those initiatives focused on only specific areas, such as email, institutional publications, or theses and dissertations, rather than providing an overall approach. In 2006, the researchers found that 8 out of the 20 institutions interviewed had no functional ERM programs, and another 2 institutions had just completed their first surveys to identify what types of electronic records were generated by the university. Although the

Table 6. ERM Program Priorities 2005 and 2009

	2005		2009
Institutional websites	50.0%	Administrative records	63.3%
Administrative records	48.9%	Email	60.0%
Digital asset management	48.9%	Institutional publications	55.0%
Institutional publications	47.8%	Institutional websites	46.7%
Web pages and documents	45.6%	Electronic theses and dissertations	40.0%
Email	42.2%	Web pages and documents	38.3%
Electronic theses and dissertations	37.8%	Digital asset management	36.7%
Faculty publications	34.4%	Faculty publications	25.0%
Research data	32.2%	Research data	23.3%
Course management systems	25.6%	Course management systems	23.3%
Other types of records	17.8%	Other types of records	18.3%
	90/96		60/62

Table 7. Desired Best Practice Guidance for ERM Programs 2005 and 2009

	2005		2009
Administrative records	85.1%	Administrative records	88.5%
Digital asset management	78.7%	Email	82.0%
Institutional publications	77.7%	Digital asset management	73.0%
Institutional websites	75.7%	Institutional websites	69.7%
Email	74.8%	Web pages and documents	64.8%
Web pages and documents	61.9%	Institutional publications	62.3%
Electronic theses and dissertations	45.5%	Research data	43.4%
Course management systems	43.6%	Course management systems	41.8%
Faculty publications	41.1%	Electronic theses and dissertations	41.0%
Research data	38.6%	Faculty publications	35.2%
Other types of records	8.4%	Other types of records	8.2%
	174/193		122/126

interview phase was not repeated in 2009, results from the 2008 Yakel study suggest that, although institutional repositories are proliferating, they are collecting very small numbers of born-digital material and are not collecting university administrative e-records.[29]

Several factors may account for the slow growth of ERM programs. Interviewees in 2006 noted repeatedly a lack of the necessary institution-level policies to ensure a sustainable program. At a more fundamental level, the researchers found that the common complaint was a general lack of interest on the part of administrators to commit significantly to managing institutional records of any kind, much less e-records. The survey results (both from 2005 and 2009) also reflect this lack of institutional support for archival and records management functions. All respondents made it clear that ERM programs are expensive to run, both in staffing and technology, and that poor institutional support often leaves archivists struggling to capture and preserve what documents they can in a piecemeal fashion. It was generally agreed that for any ERM program to succeed, a basic records management program must be in place, since it is first necessary to identify what record types should be preserved before worrying about how to deal with specific formats.

Seven of the 20 institutions (35%) cited lack of administrative support as the single most important obstacle to any significant progress in managing e-records. One archivist at a large public institution put it very succinctly, "The library school can say all it wants about digital archiving, but the administration isn't listening, and it isn't giving us anything." Another archivist at a large private institution had a similar complaint: "We looked at the problem and decided that until the Provost or the head of Office of Institutional Technology (OIT) put some level of effort in, or some off-the-shelf software solution came along, it wasn't going to happen." Conversely, the 13 institutions with a significant start on ERM

[29] Yakel et al., "Institutional Repositories and the Institutional Repository."

programs had support from their campus administrations. Need for support at the campus level proved to be a factor even for campuses that were part of a systemwide program with a mandate to preserve e-records. In those cases where a systemwide program and technical infrastructure were already in place, it was still incumbent on each institution to engage in a formal agreement with the system and to implement a program on its campus. Each campus succeeded in implementing an ERM program only in proportion to the support it received from high-level campus administrators.

Interviewees repeatedly mentioned the most important supporters as being the provost, various VPs (communications, financial affairs, etc.), the office of information technology, and the president. As one archivist at a small, private institution said, "The [enterprise-wide document system] planning committee was the most important thing [that has happened] because it includes the archivist, the VP for Financial Affairs, and IT." Of the 20 institutions interviewed, 13 stated that they had a good working relationship with their campuses' technology departments. The remaining 7 respondents indicated that the lack of communication between archivists/records managers and "those computing folks" was a significant roadblock to implementing an ERM program. Of the 13 institutions where the archivists/records managers and IT people worked together, 9 said they also have the support of some high-level administrator. In spite of this dual support, only 3 of these institutions reported having dedicated staffing and/or funding streams for e-records initiatives.

Ten of the institutions interviewed reported having functioning institutional repositories or other digital content management systems in place. Another 4 indicated that they were working on getting something up and running, while the responses from the remaining 6 institutions ranged from, "we are doing nothing" to "we are just keeping everything live." Six of the 10 institutions with functioning repositories were "parking" documents in a variety of programs such as Greenstone, CONTENTdm, and other proprietary content management software, as well as in institutional repositories designed using DSpace and other open-source systems. All of these digital repositories essentially provide short-term preservation and access for discrete documents. Among the institutions interviewed, only 1 private institution and the 2 institutions connected with systemwide university programs were developing in-house software solutions to allow for long-term preservation. Whatever the system in use, nearly all the digital repositories documented in this study were being used to manage discrete objects only, not record series such as administrative records. Moreover, all the institutions interviewed indicated that they are focusing on only a few select categories of e-records, such as theses and dissertations or university and faculty publications. Further, the focus of these specific projects was often in response to larger campus concerns or mandates and the result of priorities set by the archivists.

Models for Success

Based on the interviews, the researchers identified two models of successful EMR programs, both of which are still in development but may provide examples useful to archivists and records managers. The models are taken from different ends of the range of institutions interviewed—the first represents a relatively small, private institution and the second represents a large, multicampus public institution.

The first model has a specific department dedicated to managing digital collections with five full-time employees: a director; an assistant who handles reference, processing, and description; a technology manager; a digital resources archivist; and a university records manager. Before the campus started looking at managing e-records and establishing a digital repository, the archives department reported to the library director. The digital collections department now reports to the provost but does not have a separate funding stream; money comes from both the provost's office and from the academic technology office. This department works closely with the academic technology office, and the heads of the respective departments meet once a week. The department also works closely with the campus lawyers and institutional compliance officer. The provost mandates university-wide policies regarding both the records management and archives program and the digital repository.

In 2006, the director of this department considered the ERM program to be only in the early stages of development as they were just starting to accession e-records and were working to build the infrastructure for that process. Their infrastructure and digital repository, which are now in place, are based on Fedora,[30] a Linux-based operating system chosen because of the flexibility of its architecture. This department envisions developing a common repository for a variety of digital objects including archival series. The goal is for the digital objects to be delivered through a single interface; the interfaces could come and go, but the repository and digital objects should remain stable. To accomplish this, the archives will set limits and rules for the formats it will accept to maintain readability. The archivist stated, "There are just no shortcuts if you want to do it right," and "the most important thing to a good preservation system is policy. Policy, policy, policy."

The second model, a large, multicampus university system, began looking at the problem of digital preservation of theses and dissertations in 2000. The digital archives was started with the help of an IMLS grant, which also allowed the institution to hire some additional staff. This archival system is designed for preservation only and does not provide any user access. The system for the archives is homegrown and is similar to OAIS. It is designed to meet the trusted

[30] Fedora and the Preservation of University Records Project, *2.1 Ingest Guide*.

digital archive rules developed by the RLG/NARA Taskforce on Digital Repository and Certification and the U.K. Digital Curation Center (DCC).[31] At the time of the interview, the institution indicated that it planned to put the system through the International Standards Organization (ISO) standards committee for review.

As of 2006, this archives was set up to service 11 campuses and was free to all of them. The archives has the same executive board of 11 directors and the same funding stream as that of the systemwide OPAC. Each campus must sign an agreement drawn up by campus council that delineates the relationship and responsibilities between the individual campus and the archives. Individual campuses are able to enter materials into the archives, and the archives will guarantee long-term usability of the file format so that the institution can get a copy back if its user copy becomes lost or corrupted. Each campus, however, is expected to have its own system for providing access. Some are using CONTENTdm, some Greenstone, and others are using open-source forms of institutional repositories. At the time of the interview, the archives was up and running for ingest only, but the interviewee reported they were moving toward taking in datasets.

Although the central archives may supply expertise, people, and hardware necessary to support long-term preservation, it is not designed to provide policies or procedures at the campus level necessary to ensure that e-records are identified and contributed. Successful institutions must commit to creating a trustworthy repository on the one hand and developing sound archiving and records management strategies and policies on the other. Communication among all parties is needed. At one campus, the interface with the central archives is through the Digital Library Center (a separate department from the University Archive), which is also responsible for building an institutional repository. The university archivist reported, "They think they will do the archiving for the campus, but they have no real relationship with the archives and they really do not know what they are doing." The archivist further noted that "The current library director has let them go their own way unchecked and even the systems people (OIT) have nothing good to say about them."

[31] For example, see Joanne Kazmerek et al., "Using the *Audit Checklist for the Certification of a Trusted Digital Repository* as a Framework for Evaluating Repository Software Applications: A Progress Report," *D-Lib Magazine* 12, no. 12 (December 2006), at http://www.dlib.org/dlib/december06/kaczmarek/12kaczmarek.html, accessed 18 January 2010; Robin L. Dale, "Making Certification Real: Developing Methodology for Evaluating Repository Trustworthiness," report of the RLG-NARA Digital Repository Certification Task Force charged with producing certification requirements for identifying and establishing trustworthy repositories, *RLG DigiNews* (15 October 2005). See also Ronald Jantz and Michael J. Giarlo, "Architecture and Technology for Trusted Digital Repositories," *D-Lib Magazine* 11, no. 6 (June 2005).

Conclusions

Based on the responses to the 2005–2006 survey and interviews and the 2009 survey, no uniform solution appears to be available for developing and implementing a successful ERM program. Certain conditions need to be met if archivists are to move forward with institutional ERM programs. First, support at the institutional level, from the provost, president, or board of trustees, is essential for an effective overall ERM program; even piecemeal development requires some high-level support to make any progress. Second, cooperation from the office of information technology (or equivalent function) is essential—involving the CIO in ERM program development is a key to success. This importance of external relationships has been noted in previous research, and the results of this study confirm their importance.

To be successful, archivists and records managers do well to find a champion with influence within their institution, pay attention to the needs of the campus at large, and seek to leverage any existing program. Forming strategic alliances with key players outside of the library is essential for success, so archivists and records managers should begin by building relationships/teams with others in the college or university setting and working to establish common values with other stakeholders. To do this they must reduce the barriers between departments and develop an environment of information sharing and collaboration.

The 2005–2006 and 2009 research results indicate that little has changed in the intervening years. Although institutional repositories have proliferated, a critical disconnect remains between the library collecting digital materials and the needs of the archival and records management functions of the campus. Electronic records management programs need to concentrate on capturing current institutional digital records. Further research into the administrative structure of archival and records management functions and their relationships with library administration could yield insights into why the electronic records management functions have not progressed at the same pace as institutional repositories over the past several years.

Appendix A. E-Records Management Survey[32]

1. Welcome

   Thank you for agreeing to participate in this study funded by the NHPRC Electronic Records Research project. Your responses will help us determine current practices for college and university e-records management programs and identify potential "best practices" for managing and delivering multiple types of permanently valuable content.
   Please enter the title/position of the person completing this survey:

2. Does your institution have an archivist?

   Yes
   No (go to question 4)

3. To whom does he/she report?

   The Library Director
   Associate/Assistant Dean of Library
   Provost
   Other (please specify)

4. If your institution does not have an archivist, who manages campus records deemed archival?

5. Does your institution have a records manager?

   Don't know
   Yes
   No (go to question 7)

6. To whom does he/she report?

   The Library Director
   Associate/Assistant Dean of Library
   Provost
   Other (please specify)

7. If your institution does not have a records manager, how does your institution determine which records should be transferred to the archives?

[32] This survey was administered online using SurveyMonkey.com software. The survey had imbedded logic that took participants from question to question depending on their answers. Therefore, not every participant saw all of the questions.

8. Does your institution have a formal e-records management program?

   Don't know
   Yes
   No (go to question 15)

9. Does the e-records management program include provisions for handling records deemed archival?

   Don't know
   Yes
   No

10. Does the e-records management program include one or more policies specifically intended to address individual types of e-records?

    Don't know
    Yes (go to question 13)
    No

11. If the e-records management program does not have any policies specifically intended to address individual types of e-records, are there any in the planning stages?

    Don't know
    Yes
    No

12. If yes, which types of e-records will these policies be intended to address? (Please check all that apply.)

    Administrative records
    Course management systems (e.g., WebCT)
    Digital asset management (digital objects like photographs, videos)
    Electronic theses and dissertations
    Email
    Faculty publications
    Institutional publications
    Research data
    Web pages and documents
    Other types of records (please specify)

13. If yes, which types of e-records are these policies intended to address? (Please check all that apply.)

    Administrative records
    Course management systems (e.g., WebCT)
    Digital asset management (digital objects like photographs, videos)
    Electronic theses and dissertations
    Email
    Faculty publications
    Institutional publications
    Research data
    Web pages and documents
    Other types of records (please specify)

14. Which stakeholders were/are involved in the process of developing the e-records policies? (Please check all that apply.)

    Archivists
    Campus Attorney
    CIO
    Data Managers
    Records Managers
    Others (please specify)

15. If your institution does not have a formal e-records management-program, is there one in the planning stages?

    Don't know
    Yes
    No

16. If yes, will your institution develop a comprehensive policy or specific policies intended to deal with individual types of records? (Please check all that apply.)

    Comprehensive policy
    Administrative records
    Course management systems (e.g., WebCT)
    Digital asset management (digital objects like photographs, videos)
    Electronic theses and dissertations
    Email
    Faculty publications
    Institutional publications
    Research data
    Web pages and documents
    Other types of records (please specify)

17. Which stakeholders will be involved in the process of developing the e-records management program? (Please check all that apply.)

    Archivists
    Campus Attorney
    CIO
    Data Managers
    Records Managers
    Others (please specify)

18. If a set of "best practices" were to be developed, which categories would you find most useful? (Please check all that apply.)

    Administrative records
    Course management systems (e.g., WebCT)
    Digital asset management (digital objects like photographs, videos)
    Electronic theses and dissertations
    Email
    Faculty publications
    Institutional publications
    Research data
    Web pages and documents
    Other types of records (please specify)

19. Is your institution state-supported or private?

    State-supported
    Private
    Other (please specify)

20. What is the size of your institution? (Number of students: FTE)

21. Would you be willing to be interviewed concerning your program/policies?

    Yes
    No

22. Contact information (optional)

    Name
    Title/Position
    Institution
    Email
    Phone

Appendix B. Interview Protocol

I. Organizational structure
   a. How does your campus identify records deemed archival?
   b. Who manages these records? (reporting structure)
   c. Describe your current program
      1. specific types of e-records managed
         i. Administrative records
         ii. Course management systems (e.g., WebCT)
         iii. Digital asset management (digital objects such as photographs, videos, etc.)
         iv. Electronic theses and dissertations
         v. Email
         vi. Faculty publications
         vii. Institutional publications
         viii. Institutional websites
         ix. Research data
         x. Web pages and documents
         xi. Other
      2. software/hardware used
      3. specific issues that you have encountered

II. Administrative authorization
   a. Is there a campus-wide mandate for e-records management? If so, from whom?
   b. Is there a campus-wide oversight committee? If so, who is involved?
   c. Is there dedicated funding?
      1. who controls the budget for e-records management?
      2. how much is the budget?
   d. Is there dedicated staff? (If not, who is responsible?)
      1. if so, what positions?
      2. what credentials/experience are required?

III. Cooperation and coordination
   a. Who are the major stakeholders in the e-records management program?
   b. Who was included in developing the e-records management policies and procedures?
   c. What is your relationship with OIT? (how established?)
   d. What is your relationship with legal counsel? (how established?)

IV. Training and outreach
    a. Do you conduct training for staff/units on campus? (describe)
    b. Do you publicize your program? (if so, how and to whom?)
V. Best practices
    a. What do you consider to be the most important issues in e-records management?
    b. If a set of "best practices" were to be developed, in which areas would you be most interested?