Archival Management Software

A Report for the Council on Library and Information Resources

by Lisa Spiro

January 2009

Council on Library and Information Resources
Washington, D.C.

About the Author

Lisa Spiro directs Rice University's Digital Media Center, where she manages digital projects; provides training in XML markup, digital research tools, and multimedia; studies emerging educational technologies; and oversees the university's central multimedia lab. A Frye Leadership Institute fellow, she received her Ph.D. in English from the University of Virginia, where she worked at the Electronic Text Center and served as the managing editor of *Postmodern Culture*. She has published and presented on book history, institutional repositories, and the scholarly use of digital archives. She blogs about digital scholarship in the humanities at http://digitalscholarship.wordpress.com/.

Contents

Acknowledgments

In preparing this report, I spoke or corresponded with a number of archivists, software developers, metadata specialists, and vendors. I would like to offer my sincere thanks for their insights and frankness; this report would be much less rich without their input. All errors are my own.

- Lisa Atkinson, University of Calgary
- Charles Blair, University of Chicago
- Leah Broaddus, Southern Illinois University Carbondale
- Christopher Burcsik, MINISIS Inc.
- Chris Burns, University of Vermont
- Christine de Catanzaro, Georgia Institute of Technology
- Nicole Cho, Coney Island History Project
- Michele Combs, Syracuse University
- Cara Conklin-Wingfield, The Parrish Art Museum
- Amanda Focke, Rice University
- Julie Grob, University of Houston
- Geneva Henry, Rice University
- Malcolm Howitt, DS Limited
- Cees Huisman, Adlib Information Systems BV
- Seth Kaufman, CollectiveAccess
- Shelly Kelly, University of Houston-Clear Lake
- Anne Kling, Cincinnati Historical Society
- Bill Landis, Yale University
- Daniel Meyer, University of Chicago
- Eric Milenkiewicz, University of California Riverside
- Sammie Morris, Purdue University
- Merilee Proffitt, RLG Programs, OCLC
- Chris Prom, University of Illinois at Urbana-Champaign/Archon
- Merv Richter, Eloquent Systems
- Melissa Salazar, New Mexico State Archives
- Dan Santamaria, Princeton University
- Amy Schindler, College of William and Mary
- Alice Schreyer, University of Chicago
- Jennifer Silvers, Oklahoma Historical Society
- Ilene Slavick, Cuadra Associates, Inc.
- Amanda Stevens, Council of Nova Scotia Archives
- Chuck Thomas, Florida Center for Library Automation
- Melissa Torres, Rice University
- Maxine Trost, Lawrence Livermore National Laboratory
- Peter Van Garderen, Artefactual Systems/ICA-AToM
- Bruce Washburn, OCLC/ArchiveGrid
- Rebecca L. Wendt, California State Archives
- Brad Westbrook, University of California San Diego/Archivists' Toolkit
- Jennifer Whitfield, Past Perfect
- Kathy Wisser, University of North Carolina, Chapel Hill

Foreword

With generous support from The Andrew W. Mellon Foundation, the Council on Library and Information Resources has launched a multiyear program that addresses the challenge of cataloging hidden collections—those materials held in special collections, archives, and other restricted or relatively inaccessible settings. The program has two major dimensions: first, to identify hidden collections of potential value to scholars; and second, to address the thorny issue of cataloging such materials efficiently, effectively, and in such a way that the catalog records are available to scholars through the Web. In this paper, Lisa Spiro describes and analyzes some of the major technologies that are available to librarians, curators, and archivists and the implications of deploying these systems for existing workflows. We offer this report to the community with the hope that it will foster discussion as well as aid CLIR's evaluation of awards and articulation of lessons to be learned. Ms. Spiro has established a wiki at http://archivalsoftware.pbwiki.com/FrontPage. We encourage readers to contribute their experiences.

Amy Friedlander
Director of Programs
Council on Library and Information Resources

January 9, 2009

1. Introduction

Whether called "the elephant in the closet" (Mandel 2004, 106) or a "dirty little secret" (Tabb 2004, 123), hidden collections are becoming recognized as a major problem for archives and special collections. As the Council on Library and Information Resources (CLIR) stated in launching its Cataloging Hidden Special Collections and Archives Program, "Libraries, archives, and cultural institutions hold millions of items that have never been adequately described. These items are all but unknown to, and unused by, the scholars those organizations aim to serve" (2008). Reducing archival backlogs and exposing once-hidden collections will likely require that archives revamp their workflows, but software can play a role in making archives more efficient and their collections more visible.

What technologies can help archives and special collections tackle their "hidden collections" and make them available to researchers? This report explores archival management systems such as Archon, Archivists' Toolkit (AT), Cuadra STAR, and Minisis M2A. It also considers tools for creating and publishing encoded archival description (EAD) finding aids. Archival management systems are a kind of software that typically provide integrated support for the archival workflow, including appraisal, accessioning, description, arrangement, publication of finding aids, collection management, and preservation. (Tools, on the other hand, are software applications that typically focus on specific tasks and can be components of systems.) Rather than explicitly recommending particular software, this report takes archivists through the main decision points, including types of licenses, cost, support for collection management, and flexibility versus standardization. The report draws upon interviews with users as well as on previous studies of archival software and information provided by the developers and vendors. It offers features matrices for selected archival management systems so that archivists can make quick comparisons of different software. Instead of evaluating the performance of the software, this report compares features and reports on the experiences of archivists in implementing them. This report is intended to be a resource for the archival community to build upon; hence it is available as a wiki at http://archivalsoftware.pbwiki.com/, and archivists, information technology (IT) staff, and developers are invited to add new information to it.

2. The Problem of Hidden Collections

According to a 1998 Association of Research Libraries (ARL) survey of special collections libraries, about 28 percent of

manuscript collections are unprocessed, while 36 percent of graphic materials and 37 percent of audio materials have not been processed (Pantich 2001). Furthermore, the survey found that "the most frequent type of available access is through card catalog records or manual finding aids," which suggests that researchers often must be physically present at special collections and archives to know what they hold (Pantich 2001, 8). As the ARL Task Force on Special Collections argues, the failure to process collections holds back research, leads to duplicates being purchased, and makes them more vulnerable to being stolen or lost because libraries and archives don't know what they have. Studies have shown that between 25 percent and 30 percent of researchers have not been able to use collections because they have not been processed (Greene and Meissner 2005, 211). As a result, stakeholders such as researchers and donors become frustrated. Indeed, in a much-discussed article, Greene and Meissner report that "at 51% of repositories, researchers, donors, and/or resource allocators had become upset because of backlogs" (2005, 212).

To confront the problem of unprocessed collections, Greene and Meissner promote "a new set of arrangement, preservation, and description guidelines that (1) expedites getting collection materials into the hands of users; (2) assures arrangement of materials *adequate* to user needs; (3) takes the *minimal* steps necessary to physically preserve collection materials; and (4) describes materials *sufficient* to promote use" (2005, 212-213). Meeting researchers' needs for access to materials trumps achieving perfection in archival description and arrangement. Likewise, the ARL Task Force proposes minimal processing, suggesting that "it is better to provide some level of access to all materials, than to provide comprehensive access to some materials and no access at all to others" (Jones 2003, 5). This access can be provided through the Online Public Access Catalog (OPAC) EAD finding aids, digital collections, or databases. Indeed, providing electronic access is crucial to making hidden collections more visible, since "increasingly, materials that are electronically inaccessible are simply not used" (Jones 2003, 5). Thus, the Library of Congress Working Group on the Future of Bibliographic Control recommends that archives "make finding aids accessible via online catalogs and available on the Internet," streamline cataloging, and "encourage inter-institutional collaboration for sharing metadata records and authority records for rare and unique materials" (2008, 23-24).

Among the criteria that archives and special collections should consider in determining how to process each collection are size, condition, significance, and, perhaps most important, the needs of researchers. Archives should keep in mind that archival descriptions may be part of distributed, federated catalogs, so they should adhere to best practices to ensure consistency of data. The ARL Task Force recognizes that some

collections may require more detailed description than others and that any decision will involve trade-offs. As one drafter of the ARL Task Force Report observed, "Collection-level cataloging is potentially dangerous because if not done right, it will merely convert materials from 'unprocessed' to 'hidden'"(Jones 2003, 9-10).

Institutions have devised different approaches to hidden collections based on the nature of their collections and the resources available. Through the University of Chicago's Andrew W. Mellon Foundation–funded "Uncovering New Chicago Archives Project" (UNCAP), graduate students are working with scholars and cultural heritage professionals to catalog hidden collections housed at a local library and museum (Shreyer 2007). For the museum collection, they are using item-level cataloging, whereas they are using more standard archival practices with the library collection. In addition, a professional archivist is using minimal processing techniques to process a jazz collection and a contemporary poetry collection housed at the university. Whereas the students are producing detailed descriptions, the archivist is taking a more stripped-down approach, allowing Chicago to test the effectiveness of each model. Similarly, to reduce archival backlogs and provide research experiences for graduate students, the University of California, Los Angeles (UCLA) launched the Center for Primary Research and Training (CFPRT), which "pairs graduate students with unprocessed or underprocessed collections in their areas of interest and trains them in archival methods, resulting in processed collections for us and dissertation, thesis, or research topics for them" (Steele 2008). UCLA develops a plan for processing each collection and uses an online calculator to estimate costs.

3. The Role of Software in Addressing Hidden Collections

Reducing archival backlogs fundamentally requires adopting more-efficient means of processing collections, but software can contribute to that efficiency and make it easier for archives to provide online access to archival descriptions. At many archives, information is scattered across several different digital and physical systems, resulting in duplication of effort and difficulty in locating needed information. For instance, one archive uses a hodgepodge of methods to manage its collections, including paper accession records; an Access database for collection-level status information; lists and databases for tracking statistics; hundreds of EAD finding aids; hundreds of paper control folders providing collection-level information, some of which is duplicated in Word files or in XML finding aids; and item-level descriptions of objects to be digitized in Excel spreadsheets. This miscellany means that

there are problems with versioning, redundancy, finding information, and making that information publicly accessible. Likewise, Chris Prom found that many archives are using a variety of tools at various steps in their workflows, so much so that "their descriptive workflows would make good subjects for a Rube Goldberg cartoon." Examples include the Integrated Library System (ILS) for the creation of MARC records, NoteTab and XMetaL for authoring finding aids, Access for managing accessions, Word for creating container lists, and DynaWeb for serving up finding aids (Prom 2008, 27). (See Appendix 1 of this paper for a more detailed description of the archival workflow.)

In addition to the inefficiencies of using multiple systems to manage common data, Prom et al. (2007, 158-159) notes a correlation between using EAD and other descriptive standards with larger backlogs and slower processing speeds. (EAD is an XML-based standard for representing archival finding aids, which describe archival collections.) Some institutions simply lack the ability to produce EAD finding aids or MARC catalog records. As Prom et al. suggest, "Until creating an on-line finding aid and sharing it with appropriate content aggregators is as easy as using a word processor, the archival profession is unlikely to significantly improve access to the totality of records and papers stored in a repository" (2007, 159). One of the ARL Task Force on Special Collections' recommendations thus focuses on developing usable tools to describe and catalog archival collections: "Since not all institutions are currently employing applicable national standards, the development of easy-to-use tools for file encoding and cataloging emerge as a priority. These tools should be simple enough to be used by students or paraprofessionals working under the supervision of librarians or archivists" (Jones 2003, 11). Greene and Meissner (2005, 242) suggest that software can play a vital role in streamlining archival workflows by enabling archivists to describe the intellectual arrangement of a collection without investing the time to organize it physically. In 2003, Carol Mandel observed that "I also have been told again and again that we really don't have software for managing special collections. We don't have the equivalent of your core bibliographic system that helps you bring things in and move them around efficiently and know what you are doing with them" (Mandel 2004, 112).

Fortunately, powerful software for managing special collections and archives is emerging. This report is more a sampling of leading archival management systems that offer English-language user interfaces than a comprehensive examination of every potentially relevant application.[1] Of course, software

[1] Archival/collection management and description software that go beyond the scope of this report include Andornot Archives Online, ARGUS/Questor, Collections MOSAiC Plus, CollectionSpace, Embark, Filemaker Pro, HERA2, IDEA, KE EMu, Microsoft Access, Mimsy xg,

itself cannot solve the problem of hidden collections; what matters is how software is used and incorporated into streamlined, effective workflows. Although archival management systems such as Archon and Archivists' Toolkit can play an important role in facilitating the production of EAD and MARC records and streamlining archival workflows, Prom, a developer of Archon, cautions that "archivists should not treat them as magic bullets. They will only prove to be effective in encouraging processing and descriptive efficiency if they are implemented as part of a strategic management effort to reformulate processing policies, processes, procedures" (Prom 2008, 32).[2]

In conversations with archivists, I asked what their dream software would be as a way of identifying what features would be most important to them and envisioning what may be possible. They often responded that they liked the software applications they were currently using, but would add a few features. The responses point out some of the strengths of existing software and future directions for software developers. Through conversations with archivists and a review of existing research, I've identified the following desired features for archival management systems.[3]

- **Integrated:** Rather than having to enter data in multiple databases, an archivist could enter the data once and generate multiple outputs, such as an accession list, EAD finding aids, a MARC record, a shelf list, and an online exhibit. As one archivist remarked, "The ideal approach to minimal processing is that you touch everything only once. Every time you touch it is more staff time."

Minaret, Re:discovery, and VernonSystems Collection. Integrated Digital Special Collections (INDI), currently under development at Brigham Young University, is geared toward large archives or consortia and aims to support a distributed workflow for archival description and management. The accessions and appraisal modules have already been released, but as of August 2008 the future direction of the project was still being determined.

[2] How to efficiently manage archives is beyond the scope of this report, but Greene and Meissner 2005 and Prom 2007 take up the issue in detail.

[3] Many of these desired features jibe with Archivists' Toolkit's (AT) recent survey of 171 users investigating what new features they most desire. The most popular options included "Search improvements" (average of 4.04 out of 5, with 5 being "very important"); "Enable batch editing/ global updating," (4.31); "Web publishing of AT data" (4.2); "Digital objects record revision," which would include support for technical metadata, visual metadata, and independent digital objects (3.97); and a "Use tracking module," which would provide "Support for tracking and reporting the use of a repository's collection" (3.86). See AT User Group Survey Results: Proposed New Features and Functionality at http://www.archiviststoolkit.org/AT%20User%20Group%20SurveyResultsFD.pdf.

- **Supports importing legacy data:** Many archives have already invested a great deal of time in creating EAD finding aids. Likewise, they want an easy way to import other data, such as accessions information. They want software that will seamlessly import existing data—which can be a challenge, given the variability of EAD documents and other forms of archival data.

- **Enables easy exporting of data:** Given how quickly software becomes obsolete, archivists recognize the need for being able to export data cleanly and easily. One archivist commented, "Archival material is so specific that you don't want to get locked into anything… Ideally, I would want something that would also preserve that information in a format that is able to migrate if needed."

- **Provides Web-publishing capabilities:** Many archives lack the ability to make their finding aids available online. By providing a Web-publishing component, an archival management system would enable archives to provide wider access to their collections. Through online access, archives have found that they become more visible. As Victoria Steele (2008) writes, "As new finding aids become viewable online, we have seen, over and over, that researchers are at our door to consult the collections they describe. But it must be said that a consequence of our success has been that staff whose primary focus was the processing of collections are now almost wholly engaged in handling reader requests, reference inquiries, and licensing agreements—leaving them almost no time for processing."

- **Simple yet powerful:** Archivists want software that is "as easy to use as Word but transforms to the Web and generates EAD at the click of a button." Students and paraprofessionals without strong archival training need software that provides simple templates for entering data, so that they know what information goes where. (Clear user guides can also assist in ensuring the quality and consistency of data). If software is too complex or cumbersome to use, much time will be lost. The software should be flexible enough to adapt to the archive's existing workflow.

- **Rigorous, standards-based:** The archival community has embraced standards such as EAD, Describing Archives: A Content Standard (DACS), and Encoded Archival Context (EAC), and archivists want software that ensures conformity to these standards. The potential for inconsistent, incorrect data increases as more people participate in describing archival collections. Archival management systems can reduce the likeli-

hood of error by ensuring that data are entered according to standard archival practices (for instance, making sure that dates are in the proper format).

- **Provides collection management features.** Archivists want software that helps them manage and track their operations more efficiently. Several interviewees wanted to be able to track reference statistics, while others would like to generate temporary records and track locations.

- **Portable:** Archivists often work in environments where they do not have access to a desktop computer or even to the network, such as the home of a donor or a room in a small museum. As a result, they may begin collecting data using offline software such as spreadsheets. Once they return to their offices, they have to redo much of the work to make it fit into their existing systems. According to one archivist, "It would be useful if we could begin processing on-site, where we first encounter the material. We have to begin again each time we start a new stage." Archival software could thus support offline data entry, allowing archivists to enter data into a laptop and then upload it into an archival management system once they have network connectivity. Perhaps archival management system could also support data entry through mobile, wireless device such as iPhones).[4]

- **Aids in setting priorities for processing**: Some archival management systems enable archives to record which collections are higher priorities, thus allowing archivists to plan processing more effectively. In defining approaches to hidden collections, the ARL Special Collections Task Force put forward several recommendations that involve using tools and measures to assess processing priorities. Two of these recommendations are "Develop qualitative and quantitative measures for the evaluation of special collections" and "Support collection mapping to reveal the existence of special collections strengths and gaps, as well as to identify hidden collections" (ARL 2006). Such tools are outside the scope of this report, but it is important to acknowledge the role of related technologies. Examples of tools and protocols that can be used to assess collections and prioritize processing include the Philadelphia Area Consortium of Special Collections

[4] Some tools already provide support for offline editing or data creation through a handheld device. For example, PastPerfect's Scatter/Gather module allows archives to enter information offline through a desktop client, then create a transfer file that is merged with the main data. MINISIS also supports data entry through mobile devices.

Libraries (PACSCL) Consortial Survey Initiative,[5] OCLC's WorldCat collection analysis tool,[6] the University of California, Berkeley's survey tool,[7] and Columbia University's Mellon Survey database.[8] In some cases, such as with the PACSCL FileMaker database, the information collected through these survey tools can be used as the basis for accessions databases and for DACS-compliant EAD or MARC records (Di Bella 2007).

4. Research Method

In compiling this report, I relied on the following sources:

- Archival management system reviews produced by other groups, including Fondren Library's Woodson Research Center (2008), Archivists' Toolkit (2008), the International Council on Archives (Lake, Loiselle, and Wall 2003), the International Council on Archives-Access to Memory (ICA-AtoM) (Mugie 2008), and the Canadian Heritage Information Network (CHIN 2003).[9] These reviews tend to focus on available features rather than performance.
- Information provided by software developers and vendors on their Web sites and through other documentation.
- Phone interviews with users and developers of archival management systems.[10] By talking to users of different archival management systems, I was able to get a detailed view of their strengths and weaknesses. Unfortunately, I was able to arrange interviews only with users of AT, Archon, Cuadra/STAR Archives, CollectiveAccess, and Eloquent, so the analysis of the other software is based on what the developers say about it rather than on user experience. I also spoke and/or corresponded with representatives from AT, Archon, Cuadra/STAR, CollectiveAccess, ICA-AToM, Minisis, Adlib, CALM, PastPerfect, and Eloquent. I briefly experimented with demo versions of CollectiveAccess, Archon, and AT, and I saw demos of Cuadra/STAR and Eloquent.

---

[5] http://www.pacsclsurvey.org/

[6] http://www.oclc.org/collectionanalysis/default.htm

[7] http://blogs.lib.berkeley.edu/bancsurvey.php/2008/06/02/bancroft_survey_project

[8] http://www.columbia.edu/cu/lweb/services/preservation/surveyTools.html

[9] See also Collections Trust 2008 and Stevens 2008.

[10] Interviews were conducted between May and July 2008. The names of interviewees are kept anonymous. I tried to represent what interviewees said as accurately as possible, but occasionally quotations contain paraphrases or supplied words.

To ensure accuracy and fairness, developers and vendors were given the opportunity to respond to user comments and to the features matrices that I developed (see Appendixes 2–4).

5. How to Select Archival Management Software

With an increasing number of options for archival management software, archivists may feel overwhelmed. Fortunately, they can adopt sound, rational processes for selecting software. The Canadian Heritage Information Network (CHIN) offers both a detailed review and an online course focused on selecting collection management software, which is closely related to archival management software (CHIN 2003). (While collection management systems typically support cataloging, managing, and making available archival, museum, and private collections, archival management systems include many of these features but focus on the particular needs of archives, such as archival description and conformance to archival standards.) Rather than replicate that work, I will provide a few general recommendations for selecting software based on the CHIN guide and other sources.[11]

Selecting software should be a collaborative process so that all the stakeholders (archivists, technical staff, administration, researchers, etc.) can describe how they would use it and provide input into what is selected. To ensure that the selection process stays on course, the team should establish a project plan with clear milestones and areas of responsibility. As a first step, archives should conduct a needs assessment to evaluate current gaps and workflows. Do they really need new software, and is now the best time (given available resources, current projects, etc.) to pursue it? What are the weaknesses of their current software? How does information flow through the system? What kind of information is captured, by whom, when, and for what purposes? What workflows do archives want to change—and retain? What is the desired outcome of adopting new software? Answering these questions will help organizations define their requirements.

Working collaboratively, team members should then prioritize requirements, generating a weighted "features checklist."[12] In addition to features such as "support for EAD" or "support for managing locations," archivists should weigh factors such as the quality of user support, the reputation of the vendor, cost, technical requirements, and the robustness and appro-

[11] For more guidance on selecting software, see Dewhurst 2001; TASI 2007; and Baron 1991.

[12] For detailed, if slightly out-of-date, requirements for archival and collection management software from an international perspective, see Groot, Horsman, and Mildren 2003.

priateness of the technology platform. Often the best way to evaluate the quality of the software and support is to speak with a variety of users (both those recommended by the vendors and those who are independently identified). Through a site visit, evaluators can see the software in action and understand it in the context of archival workflows. Most vendors, and all open source projects, make available a demo version or can arrange an online demonstration of the software. Archivists should take the software through a variety of tasks to determine whether it is easy to use, does what it needs to do, and has any bugs. If a commercial application is selected, organizations should carefully spell out the terms of the contract, including support and training. They should also develop a maintenance plan for regular updates, training, and so forth. If an open source application is selected, archives should likewise determine how staff will be trained and how the technology will be kept up-to-date.

6. Criteria for Choosing Archival Software

No single archival management system will be appropriate for every archive, given the variation in technical support available at the institution and the need for particular features. Comparing archival management systems yields several key factors that distinguish them from each other. Here are some of the criteria that archives should consider in selecting an archival management system:

- **Automating the processing and description of collections through the archival management system versus generating EAD by hand and managing collections through other software**

  Archival management systems offer a number of advantages, particularly to archives that do not already have large quantities of EAD finding aids or are dissatisfied with current workflows. A primary advantage of archival management systems is the ability to enter data once and generate multiple outputs. Rather than being isolated in separate systems, data can be brought together through a single interface, reducing redundancy and making it easier to find and manage information. Instead of having to understand the intricacies of EAD and XML markup, archivists, paraprofessionals, and student workers can create a valid EAD finding aid by entering information through a series of Web- or desktop-based forms, saving time and producing more consistent finding aids. Some archival management systems also enable organizations to publish their finding aids on the Web, thus making archival information more widely available.

  However, archival management systems can be difficult to

implement in some organizations and may not provide the flexibility that archivists require. Several archivists reported difficulty importing existing EAD data into systems such as Archon and AT, a problem due in part to the flexibility of EAD and the resulting variability of finding aids. Although archival management systems typically can be customized and feature user-defined fields, they do enforce a certain consistency and workflow, which frustrates archivists who have an established way of working. As one archivist stated, "Archon and Archivists' Toolkit are great, but it means that someone else has done the thinking for you about the workflow." Homegrown approaches may be more flexible and may better reflect the archive's own workflow. Furthermore, some archivists argue that putting archival description into a database structure is reductive and oversimplifies the process of producing a finding aid. In the process of encoding a finding aid, archivists better understand the texture, structure, and contents of the document. Also, XML and word processing editors provide greater flexibility than databases. As an archivist noted, "If we are doing rearranging while we're going along, we can't shift things around very easily if we're using a database. We have parts of finding aids that we can shift around in Word. …The tool has to combine flexibility with rigor."

Other archivists emphasize the importance of adhering to standards to facilitate exchange of information and consistency. As one user of an archival management system noted, "We could have customized things to meet past practice, but we also decided to move away from old practices. We don't want to be too flexible any more." Katherine Stefko (2007) acknowledges the trade-offs in sacrificing flexibility for consistency: "To use the AT effectively implies a commitment to using current professional standards, and while it would be hard to argue anything other than this being a good thing, it undeniably raises the bar in terms of the time, training, and expertise an archivist needs in order to use it. … Accordingly, we've redirected staff time and modified our workflow so that more time is now spent accessioning material, with the understanding that retrieval and reporting will [be] easier and reference and administrative work less later on." Indeed, one interviewee argued that the rigor and inflexibility of archival management systems are actually strengths, since by using such software, archives will ultimately produce more consistent data and facilitate the exchange and federation of archival information. If each archive, or even each collection, took its own approach to archival description, creating a federated finding aids repository would be difficult. In that sense, the development of archival management systems such as Archon and AT is an important step toward realizing the ARL Task Force on Special Col-

lection's recommendation: "Since not all institutions are currently employing applicable national standards, the development of easy-to-use tools for file encoding and cataloging emerges as a priority. These tools should be simple enough to be used by students or paraprofessionals working under the supervision of librarians or archivists" (Jones 2003, 11).

- **Open source versus commercial**

  Perhaps the most fundamental choice that archives will make is whether to select an open source or a commercial system. Increasingly, governmental and educational organizations are embracing open source software. For instance, the European Commission has endorsed open source software because it offers a greater diversity of solutions, improves the development process through community input, offers faster deployment through customizability, and leads to enhanced technical skills of IT staff (OSOR.EU 2008). According to OSS Watch, a service funded by JISC, open source offers many advantages: it facilitates rapid bug fixing, is typically more secure, enables customization, supports internationalization, and protects against vendor lock-in or the collapse of the vendors (Wilson 2007). In addition, open source software is typically free, flexible, and continually evolving—assuming an active development community (Lakhan and Jhunjhunwala 2008). Open source software is often supported on or portable to a number of platforms (Office of Government Commerce 2002, 3). Although some worry about the sustainability of open source projects, other developers can maintain and enhance the code should the original developer abandon the project; indeed, as Stuart Yeates from the JISC's OSS Watch argues, "Sustainability is an issue for proprietary software as much as for open source software" (Smart 2005). Many believe that open source software is actually more secure than proprietary software, since open source applications can be scrutinized and verified by "many eyes" and security issues can be resolved quickly (Whitlock 2001).

  Some institutions, however, lack the technical staff to implement open source software. Others may oppose it because of they fear security risks or high maintenance costs. Implementing open source software can be challenging, particularly if no support is available or if support structures vanish. With commercial software, customers can contact the vendor for training, assistance in importing data, or other services; with open source software, archives often rely on the community for help. Sometimes open source projects are abandoned before reaching fruition (Lakhan and Jhunjhunwala 2008). Documentation of open source applications can be weak (Office of Government

Commerce 2002, 4). Although open source software typically is available without licensing fees, significant costs can result from implementing and customizing it at a local institution. Studies comparing the total cost of ownership of open source versus proprietary software have produced conflicting findings. Each organization should consider what it costs to switch software and what the total cost of adopting the software, including staffing and hardware, will be (Ven, Verelst, and Mannaert 2008, 55-56). Organizations should also consider the maturity of the software, including its functionality as well as support, training, and documentation (Wilson 2006).

- **Hosted by company or local institution**

  Some institutions lack the technical infrastructure to install and maintain an archival management system themselves. Many companies will host software for organizations, enabling archives to focus on their core work. In addition to hosting, many companies will assist customers in importing legacy data into the software. Generally, customers who pay a company to host their data reported that there were few technical problems and that the company's servers rarely went down. One archivist felt relieved that a company in another part of the country was hosting and backing up her data, since her institution is in an area vulnerable to hurricanes.

  Although hosted solutions offer noteworthy conveniences and efficiencies, one archivist voiced her frustration that she felt that she was in less control of her data and the way they were presented. If the data were hosted locally, she could play around with the user interface rather than having to rely on the company to make requested changes. Indeed, some institutions feel uncomfortable relying on anyone but themselves to curate their data. What will happen to an archive's data if the company fails? How will the archive retrieve that data, and in what format? Archives should also consider the annual costs of a hosted solution, although hosting data locally also entails costs in hardware, technical support, licensing fees, etc. Commercial vendors typically provide hosting services, although some service bureaus will also host open source software (for instance, hosting is being planned for ICA-AToM). If organizations are considering a hosted solution because they fear the complexity of installing and maintaining software, they should note that most archival management systems are designed to be easy to install and maintain.

- **Cost**

  For many institutions, cost is a key factor in determining what software to select. The purchase cost for archival

management software can range from free (for open source) to hundreds of thousands of dollars (for commercial products with all the bells and whistles and licenses for many clients). Even open source software entails significant costs, including hardware, technical support, and customization—costs that also apply to commercial projects. Along with the cost of the license, archivists should factor in recurring costs, such as maintenance fees, user support, training, hardware, technical support, and customization. Several interviewees noted that companies were willing to "work with us" to find an appropriate cost and that smaller institutions often benefited from a price break. As one might expect, more-expensive products often come with more features. Archives must decide which features are essential.

- **Sustainability**

  Software comes and goes, and archivists are rightly concerned about their data being locked into a closed system. If a company collapses or ends support for a product, how will that affect archives who rely on it? Open source projects seem to offer some advantages for sustainability, since other programmers can continue to maintain and develop open source software should the original developer abandon it. However, some open source projects fade away after an initial burst of development activity, and archives, already stretched thin, may not have the technical resources to pick up development work. Nevertheless, open source projects such as AT and ICA-AToM are developing detailed business plans to ensure sustainability, looking at ways to charge fees for training and other services, offer membership, and affiliate with stable organizations that can offer support for the software. Adapting the open source model, some companies allow customers to buy in to escrow plans that will provide them with the code should the company end its support of a product. In any case, to make sure that their data can be used for the long term, archives should make sure that they can easily batch export the data in standard formats.

- **Quality of customer support**

  Inevitably, archivists will run into problems using archival management software, whether because of bugs, difficulty importing data, the need to customize certain features, confusion over how to use the software, or technical problems. Thus, they rely on good customer support from vendors or, in the case of open source software, the developers and user community. Many interviewees mentioned user support as a key factor in their satisfaction with a particular software package. Vendors typically provide assistance via phone or e-mail, user forums, frequently

asked questions, and user training. In some cases, help is included in annual maintenance fees, but in others it entails additional costs. Open source projects may seem to be weaker than commercial projects with regard to user support. As one archivist using an open source system commented, "There's no help desk." However, lively communities often form around open source projects and provide support to new users or those experiencing problems. With Archon, CollectiveAccess, and Archivists' Toolkit, archivists noted how responsive the developers are to questions. In addition, support for open source software may be available from consultancies or even the developers themselves. For example, the business plan for ICA AToM includes a provision for "charging a commission for brokering ICA-AtoM technical services between recommended third-party contractors and institutions seeking assistance with ICA-AtoM installation, hosting, customization, new feature development, etc." To evaluate user support, talk to users of different software packages.

- **Support for archival standards**

  To facilitate interoperability and adherence to best practices, archives will want to select software that meets archival standards such as EAD, DACS, and MARC, as well as emerging standards such as EAC. Some archival systems, such as ICA-AToM, focus more on international (ICA) standards rather than on U.S. standards. In the case of archival software developed in Europe, Prom et al. warn that "such tools use a much more rigorous system of classification and provenance than do US repositories" (Prom et al. 2007, 159). However, even many non-U.S. applications support crosswalking between standards and include EAD support.

- **Web-based versus desktop client**

  .

  Some archival management software (such as Archon, CollectiveAccess, and ICA-AToM) is entirely Web based, while other such software requires a desktop client (typically a PC) and connect to a database backend. Web-based software can be more intuitive for some users and enables distributed cataloging, since anyone with Web access can contribute records. With systems such as Archon, information can be published to the Web as soon as it is entered. However, some archives worry about the security and reliability of an entirely Web-based system; one archivist noted her colleagues' reluctance to "put all of our eggs in one basket." If the Internet connection goes down, work stops (which is also true of networked client/server software). A client-based interface may offer greater control over data, but institutions may need to pay a fee for

each computer on which the software is installed. Licensing models vary, however, so this is not always the case.

- **Support for publishing finding aids online versus generating EAD for export**

  Many archives face difficulty not only in creating EAD files but also in publishing them online. As one archivist remarked, "There's been a big hole—people have been producing EAD for 10 years, but it's still kind of difficult." Some archival management systems address this problem by enabling archives to make available their finding aids on the Web. Indeed, a primary reason that Archon was developed was to facilitate publication of archival information online. Once an archivist enters information into Archon, it is automatically searchable and discoverable by Google (although archives can choose to defer publication of records until they have been approved). Likewise, many commercial systems offer support for online access to their collections, sometimes through the purchase of an additional module. However, some archives already have a mechanism for publishing their finding aids on the Web, so they may prefer software that enables them to easily export finding aids that they can then import into their existing Web-publication system. Since most browsers now provide support for XML, archives could simply upload their EAD files to a Web server, include a call-out to an XSLT stylesheet at the top of each file for the purposes of presentation, and display their finding aids without too much effort. Projects such as the EAD Cookbook have made stylesheets freely available. Although this simple approach does not offer sophisticated searching and other features, it enables archives to publish their finding aids online at minimal cost.

  If archival management software does enable publishing archival collections online, archives should consider the quality and customizability of the end-user interface. Does it provide search and browse functions? Can users run advanced searches? Does it offer additional features, such as stored searches? Is the design clean and simple to navigate? Can it be easily customized to reflect the unique identity of the archive? Does the interface meet accessibility standards? Can it be translated into other languages?

- **Support for linking to digital objects**

  In addition to providing access to archival collections, archives may wish to make available digital surrogates of items, such as images, texts, audio files, or video. Many archival management systems offer a "digital library" or "online exhibit" function to provide Web-based access to items in their collections. In evaluating these features, ar-

chives should consider what kind of media and metadata formats they support as well as how media are presented. For instance, CollectiveAccess has rich features for media support, including the automatic generation of MP3s upon loading an audio file to the server, an image viewer with pan and zoom, and the ability to mark time codes within video files. However, some archives may want to use a separate digital asset management system (DAM), such as ContentDM, DSpace, or Fedora, to provide online access to their collections, since they are using these robust systems for other digital collections. These institutions will want an easy way to batch export relevant metadata from their archival management system or, even better, a way to plug in their archival management system to their DAM. (ICA-AToM plans to use a plug-in architecture for exposing the application to Web services or allowing it to interface with other Web services, such as DSpace or Fedora.)

- **Support for collection management**

  Some systems offer robust support for managing archival collections, including appraisals, locations, condition and conservation, and rights and restrictions. Some even allow users to create deeds of gift and location labels, track usage statistics, and manage requests for materials and reference help. Others focus more on archival description than on collection management. Many do both. Archives should determine what features are most essential to them, while noting that new versions of software often add features that they may desire.

- **Reports, statistics, and project management**

  Some software can enable institutions to run reports to, for example, track unprocessed collections or determine what is stored in a particular location. How easy is it to create and print out such reports? Through archival management software, organizations may also be able to track statistics such as the size of various collections, how many linear feet have been processed or deaccessioned over a year, and the most frequently requested collections.[13] Such statistics can help archives determine how to set processing priorities and can be valuable in reporting to organizations such as ARL. Indeed, some software even allows institutions to mark accessions that are high priority for processing, helping them manage hidden collections.

- **Reliability and maturity**

[13] The University of Michigan is developing archival metrics: http://www.si.umich.edu/ArchivalMetrics/

Some archives are shying away from software that is still in development such as Archivists' Toolkit and Archon because "there are still bug reports." Users did report that there were some bugs or missing features for both tools, as well as for commercial systems. However, they also said that their error reports were taken seriously and that the development teams are responsive to user questions and suggestions. In the contemporary computing environment, software is continually evolving; witness the "permanent beta" status of Web 2.0 tools such as Google Documents. It is possible for software to be *too* mature, built using out-of-date technologies or approaches. On the other hand, some software never makes it out of beta or may not go in the direction anticipated, so institutions may lose time and resources if they adopt untested software.

7. Types of Software

In 2005, Katherine Wisser reported on an EAD Tools Survey that revealed the diversity of ways in which archives created finding aids and the difficulty that smaller institutions in particular had in authoring and publishing EAD. Wisser divided EAD tools into four categories: authoring, publishing, discovery (search tools), and knowledge (best practice guides). One of the most used tools at the time was the EAD Cookbook, which provides a set of templates, stylesheets, and guidelines for creating finding aids. Wisser found a disparity in the kinds of tools institutions used: archivists at smaller archives tended to rely upon the EAD Cookbook, while those at larger institutions often developed their own solutions. Some institutions were willing to share those solutions, with the caveat that they reflected local practices.

More recently, open source archival management systems such as Archon and AT and commercial solutions such as Cuadra STAR and MINISIS have offered other methods for creating archival description. The promise of such systems is that archivists no longer have to hand-code EAD, but can create it through entering information into database fields. Rather than keeping archival data in multiple systems, archivists can manage, search, and manipulate data through a single interface. However, such systems can also enforce a rigor that may challenge existing workflows, and importing legacy data into them can be difficult.

Below I briefly describe a range of archival software packages that support exporting or publishing EAD and MARC or are likely to do so soon. Since the focus of this report is archival management systems, only brief descriptions of more specialized EAD authoring and publishing tools are provided, and no information is offered about digital asset management systems, institutional repository software, integrated library

systems, or digital collections software.[14] Appendix 2 summarizes the features of archival management systems in brief, while Appendix 3 offers a detailed summary of these features. Appendix 4 presents summaries of my interviews with current users of several leading archival management systems.

1. EAD Authoring

According to a 2006 study by Chris Prom, archivists use a variety of tools to create descriptive records, favoring "simple" tools: "Eighty-two percent use word processors; 55%, library catalog software; 34% custom databases; 31% text or HTML editors; 22% XML editors, and 14% digital library software" (Prom 2008, 21). Archives using XML editors typically have a larger backlog (58% of the collection) than those using word processors (37%), leading Prom to suggest that "[a]t least some of our backlog problems seem attributable to the adoption of complex tools and methodologies" (2008, 22). However, these institutions may have had larger backlogs to begin with. Prom found a low adoption rate of MARC and EAD—access to only an average of 37 percent of collections is provided through MARC, 13 percent through EAD (2008, 23-24).

Often archives use a mix of methods to create finding aids. For instance, UC Berkeley converted legacy finding aids to EAD through a multifaceted approach, entering basic descriptive information into Web templates (http://www.cdlib.org/inside/projects/oac/toolkit/templates/) and employing WordPerfect to create the initial hierarchy for the collection. It then converted the WordPerfect files to EAD using macros and Perl scripts (http://www.cdlib.org/inside/projects/oac/toolkit/). XML editors were primarily used as "reference tool[s]," since "[i]t is far faster to programmatically convert text to EAD in broad strokes than to apply the copy and paste method required when using these editors" (Digital Publishing Group, UC Berkeley Library, n.d.). Likewise, the University of Chicago uses Web forms to create the front matter for finding aids; archivists write inventories using Word, and then a script is run to generate EAD. Post-processing is done using an XML editor such as Oxygen. According to archivists at the University of Chicago, such an approach "provides the archivist with a lot of flexibility."

Among the particular technologies used to create EAD are the following:

A. XML/text editors

XML editors enable archivists to see the entire hierarchy of a

[14] For more information about metadata description tools, see Smith-Yoshimura and Cellentani 2007.

finding aid and engage in the intellectual activity of marking up an archival collection.[15] As one archivist noted, "The act of writing a finding aid is something where you need to be able to view contents as you write series description. Creating finding aids is not data entry, but an intelligent process. I think that encoding EAD helps you to write finding aids, to understand the texture of a document." However, relying solely on XML editors to generate finding aids can be inefficient. According to "informal studies" at the University of Illinois-Urbana Champaign, "a skilled worker took 20 hours to encode a 100-page finding aid, using standard XML markup tools, on top of the time needed to actually write the collection description and develop a general box listing of its content" (Prom et al. 2007, 159).

XML and customizable text editors include:

1. **XMetaL**:[16] Extensible, collaborative commercial software for authoring XML. To provide a more user-friendly interface for creating and editing finding aids, Yale University has developed a finding aids authoring tool layered over XMetaL. Yale's FACT tool customizes XMetaL to provide a "word processing" view of finding aids for staff who didn't want to work with the XML elements. Archives such as the University of Minnesota have developed tips for using XMetaL to author EAD.[17]

2. **Oxygen**:[18] Easy-to-use, commercial "cross platform XML editor providing the tools for XML authoring, XML conversion, XML Schema, DTD, Relax NG and Schematron development, XPath, XSLT," etc. Several archives and consortia, including Northwest Digital Archives, provide documentation for using Oxygen to create EAD.[19]

3. **NoteTab:** A free or inexpensive text editor. Several projects, including NC Echo,[20] Virginia Heritage,[21] and the EAD Cookbook,[22] have created clipbook libraries for NoteTab that facilitate the creation of EAD. According to a recent report by the Florida Center for Library Automation (FCLA), "the existing, customizable NoteTab templates maintained by FCLA have been very helpful for many organizations wishing to create

[15] See ArchivesHub's Data Creation Web page for more on XML editors: http://www.archiveshub.ac.uk/arch/dc.shtml
[16] http://na.justsystems.com/content.php?page=xmetal
[17] https://wiki.lib.umn.edu/Staff/FindingAidsInEAD
[18] http://www.oxygenxml.com/
[19] See http://orbiscascade.org/index/northwest-digital-archives-tools
[20] See http://www.ncecho.org/ncead/tools/tools_home.htm
[21] See http://www.lib.virginia.edu/small/vhp/admin.html
[22] See http://www.archivists.org/saagroups/ead/ead2002cookbook.html

EAD-encoded finding aids" (Florida Center for Library Automation 2008).

4. **EAD Cookbook:** The EAD Cookbook aims to make it easier for archives to create finding aids by providing authoring tools for Oxygen, XMetaL, and NoteTab. In addition, it offers a set of stylesheets for transforming XML finding aids into HTML and detailed guidance on creating and publishing EAD finding aids.

5. **MEX (Midosa-Editor in XML-Standards):** Describes itself as "a set of tools for everyday description work in archival institutions including the production of online finding aids with digitized images from the archival records."[23] An open source application developed by the Federal Archives of Germany with support from The Andrew W. Mellon Foundation, MEX enables archivists to create, import, and edit EAD finding aids; attach digital objects; examine an entire XML file or a single element; create online presentations of finding aids; and provide both search and structured browsing. It is a plug-in to Eclipse, an open source Java development platform.

B. Word processing templates

A number of archives use or have used word processing software such as Microsoft Word, WordPerfect, or Open Office to create preliminary finding aids. In some cases, organizations have created templates that make it easy to enter standard archival information. Often they also use macros or scripts to aid in the conversion to EAD. For example, Yale has experimented with Open Office as tool for EAD creation (Yale University Library 2003), the Bentley Library at the University of Michigan has developed macros to convert Word files to EAD XML (Bentley Historical Library, n. d.), and the Utah State Archives used WordPerfect to create container lists (Utah State Archives 2002). Similarly, the Utah State Archives produces container lists using Excel and MailMerge (Perkes 2008).

C. Forms

By using forms to produce finding aids, archives can speed their creation and ensure greater consistency. Forms can be Web based or desktop based:

- **Berkeley Web Template:** CGI script is a customizable cgi-driven Web application "that generates a user-defined HTML form template and then generates markup using

[23] See http://mextoolset.wiki.sourceforge.net/ and http://www.bundesarchiv.de/daofind/en/

the values filled in by users. … Output may be in the form of METS, TEI, EAD, XML or SGML, even HTML or PDF" (University of California, Berkeley 2005).

- **Online Archive of California:** Makes available Web forms "for generating collection- through series-/subseries-level finding aids that are compliant with the OAC BPG EAD and EAD Version 2002. Encoders cut and paste segments of their non-EAD finding aids into the form. The form is then converted to a text file and saved as a XML EAD file."[24]

- **ArchivesHub:** Provides a Web form for generating EAD 2002.[25]

- **EAD XForms:** Justin Banks's EAD templates allow users to enter archival information into a form. The templates were built using Altova's StyleVision2006 and require an XML editor such as Altova Authentic2006 or Altova XMLSpy to implement.[26]

- **X-EAD**: The University of Utah is developing form-based desktop software for authoring and editing EAD.[27]

D. EAD Validation

By validating EAD files, archives can ensure their adherence to standards and facilitate participation in union catalogs and regional repositories. Several online validation services are available, including the following:

- **Florida Center for Library Automation's Encoded Archival Description Validator and XSL Transformer:** A Web page that was "created for museums, archives, libraries, historical societies, and similar agencies in Florida who create collection finding aids (guides) according to the Encoded Archival Description (EAD) standard, version 2002. The tools on this page permit EAD creators to a) validate (test) their EAD documents against the rules described in the EAD Document Type Definition maintained by the Library of Congress, b) generate a HTML version of their finding aid from the original EAD encoding, using a XSL stylesheet maintained for the ARCHIVES FLORIDA database, and c) derive Dublin Core metadata records from their original EAD documents."[28]

[24] http://www.cdlib.org/inside/projects/oac/toolkit/
[25] http://www.archiveshub.ac.uk/arch/dc.shtml#tools
[26] http://www.archivists.org/saagroups/ead/tools.html
[27] http://www.lib.utah.edu/digital/tools.php
[28] http://good-ead.fcla.edu/

- **RLG EAD Report Card:** "The first automated program for checking the quality of your EAD encoding."[29]

E. EAD Publishing

As several interviewees noted, publishing EAD finding aids online presents a real challenge, especially to smaller archives without much technical support. Finding aids can be converted to HTML and placed on a Web server or loaded into an XML-database/publishing system—operations that are beyond the capabilities of many archives. Alternatively, archives can upload the XML file, include a call-out to an XSLT stylesheet, and use the browser to transform XML to HTML. Some archives deposit their finding aids with a regional repository such as Online Archive of California (OAC), Texas Archival Resources Online (TARO), or North Carolina ECHO, and/or with an international repository such as OCLC's Archives Grid. Other archives have adopted XML publishing platforms that allow searching and presentation of finding aids, an approach that requires much more technical support but also provides greater control over data. These publishing platforms include:

- **PLEADE:** "PLEADE is an open source search engine and browser for archival finding aids encoded in XML/EAD. Based on the SDX platform, it is a very flexible Web application."[30]

- **XTF:** "The CDL eXtensible Text Framework (XTF) is a flexible indexing and query tool that supports searching across collections of heterogeneous data and presents results in a highly configurable manner."[31] The California Digital Library uses XTF to enable search and display of its finding aids, text and image collections, and other scholarly projects.

- **Apache Cocoon:** Archives and consortia such as Five College Archives & Manuscript Collections[32] are using the open source XML publishing framework Cocoon to publish finding aids.

- **University of Chicago's Mark Logic XML Database:** The University of Chicago is developing an XML publishing infrastructure built on MarkLogic[33] a native XML database. MarkLogic, which is a commercial product, was selected because it is robust, scalable, and easy to use. MarkLogic uses XQuery, which supports a feature called "collection." Through the collection tag,

[29] http://tinyurl.com/6qrzqb
[30] http://www.pleade.org/en/index.html
[31] http://www.cdlib.org/inside/projects/xtf/
[32] http://asteria.fivecolleges.edu/about.html
[33] http://www.marklogic.com/

different collections and archives can be defined, thus enabling the creation of a multi-institutional repository. Users can search the whole database or particular collections. The front end can be built on any platform and can be displayed in any way the archives want. The University of Chicago took this approach because their UNCAP project is multi-institutional and could be multiconsortial. Such an architecture will give participants the flexibility to create unique interfaces for different collections and projects. Chicago's code will be available to anyone who asks. Archives that want to use the software will need MarkLogic, but there is a free version for a limited number of CPUs that will be sufficient for small institutions.

II. Archival Management Systems

Archival management systems may be less flexible than EAD creation tools, and getting legacy data into these systems can be challenging. However, they offer a number of features that may lead to greater efficiency and sustainability, such as support for authority control, reduced redundancy of data, easy data entry interfaces, the ability to analyze archival data through the generation of reports, and Web-publishing capabilities. Both open source and commercial archival management systems are available.

A. Open Source

1. **Archon** (http://www.archon.org)
Developed by archivists at the University of Illinois at Urbana-Champaign, Archon makes it easy for archives to publish their finding aids online. As its developers explain, "Archon automates many technical tasks, such as producing an EAD instance or a MARC record. Staff members do not need to learn technical coding and can concentrate on accomplishing archival work. Little or no training is needed to use the system, assuming the staff member or student worker has at least a passing familiarly with basic principles of archival arrangement and description" (Prom et al. 2007, 165). Archon, which is built on PHP 5 and MySQL, enables archivists to capture information about accessions, create and publish finding aids online, and export EAD and MARC. A digital library module supports presenting digital objects along with finding aids. A winner of the 2008 Mellon Awards for Technology Collaboration (MATC), Archon is easy to customize and provides support for authority control. Explaining the appeal of Archon, one archivist noted, "Archon is free and pretty easy to implement without much IT intervention. … It gave us a quick and easy way to put collections up on online, let patrons search them, and

see everything we had." Others caution, however, that importing existing finding aids into Archon can be difficult, given the variability of EAD.

2. **Archivists' Toolkit (AT)**
(http://www.archiviststoolkit.org/)
Developed by a consortium including the University of California, San Diego Libraries, the New York University Libraries, and the Five Colleges, Inc., Libraries and supported by The Andrew W. Mellon Foundation, AT bills itself as "the first open source archival data management system to provide broad, integrated support for the management of archives." AT uses a Java desktop client and a database back-end (MySQL, MS SQL, or Oracle). Users report that AT makes it easier to produce finding aids and export EAD and MARC, generates useful reports, provides robust authority control, and offers good support for standards such as METS. Several archivists believe that AT will provide an integrated tool set for managing and describing archival information: "I like the promise of having a single database for collection management. You do the accession record, push a button, convert to a resource record, and export as EAD and MARC. It's not quite there yet, but moving in that direction." Another archivist noted that AT helps archives establish processing priorities by allowing them to mark and then find high-priority collections. In a presentation on AT, Georgia Tech Archives highlights several reasons for adopting it, including "developed by archivists," "promotes efficiency and standardization," "serves as master version of finding aid," "improves description workflow," and "decreases need for training in XML and encoding" (de Catanzaro, Thompson, and Woynowski 2007). However, archivists noted that it can be difficult to import existing finding aids and make AT accommodate existing workflows. AT does not yet provide Web-publishing capabilities.

3. **CollectiveAccess** (http://www.CollectiveAccess.org)
The recent recipient of a Mellon Collaborative Technology Grant, CollectiveAccess allows museums and archives to manage their collections and provide rich online access to them. CollectiveAccess is a Web-based tool built on PHP and my SQL, so it is cross-platform. According to its developer, Seth Kaufman, its chief advantages are that it
    - is free;
    - is customizable;
    - has a flexible data model that accommodates many types of collections and supports different data standards and controlled vocabularies;

- provides robust support for multimedia, including images, audio, video, and text; is capable of automatic conversion of audio files to MP3 and video files to flash format; can zoom and pan images; and enables time-based cataloging of media files; and
- has a Web-based structure that facilitates distributed cataloging and enables administrative users to enter metadata and search collections online.

Designed more as a collection management than archival management system, CollectiveAccess does not yet provide support for exporting EAD or MARC, although that is promised for a future release. One user commented, "It's so much easier than traditional collection management systems that I've worked with."

4. **International Council on Archives-Access to Memory (ICA-AtoM)** (http://www.ica-atom.org/)
ICA-AToM is open source, Web-based archival description software that aims to make it easy for archives to provide online access to their archival holdings, adhere to ICA standards, and support multiple collection types (even multirepository implementations) through flexible, customizable software. According to project lead Peter Van Garderen, the impetus behind ICA-AToM was to expose hidden collections around the world by enabling small archives with limited resources to make available their collections online. ICA-AToM is designed to support aggregation of data from multiple institutions through OAI, IETF Atom Publishing Protocol (APP), and possibly other mechanisms. Developers are working on a pilot project with the Archives Association of British Columbia to build an aggregated union list portal. ICA-AToM aims to distinguish itself through its support for translation and internationalization, basis in ICA standards such as ISAD-G and ISAD-H, flexibility and customizability, and ease of installation and use. As a fully Web-based application, ICA-AToM can be accessed from anywhere with an Internet connection and can be hosted at a minimal cost. In the long term, the developers want ICA-AToM to become a platform to manage archival information, including creating digital repository interfaces to systems such as DSpace and Fedora through a plug-in architecture. They plan to build in Web 2.0 features such as user-contributed content, user tagging, and social networking.

ICA-AToM is currently in beta testing. Version 1.2, due to be released in summer 2009, will provide support for accessioning, OAI harvesting, crosswalking to

standards such as DACS, EAD import and export, and many other features. Although ICA-AToM is designed more in accordance with ICA standards than U.S. standards, Van Garderen indicated that someone could easily add support for standards such as DACS and EAD and that version 1.2 will support EAD/MARC data import and export. For ICA-AToM, then, standards such as EAD and EAC will be exchange formats, while ISAD standards will be the core data format.

ICA-AToM is new, and many of its features have yet to be released. For this reason, it is difficult to evaluate this software. However, members of the archival community are excited about its potential. An archivist who recently saw a presentation on ICA-AToM observed that the project has "impressive people on the team" and that the project lead is a trained archivist. Development seems to be proceeding quickly: within a month, the developers added the capability of attaching digital objects and are working speedily on making ICA-AToM RAD compliant. A developer noted that "smart people" are behind ICA-AToM, but it is currently focused on archival description, so it might be limited for institutions that want fuller support for collection management and presentation.

B. Commercial

1. Cuadra STAR/Archives
(http://www.cuadra.com/products/archives.html)
Cuadra STAR/Archives offers a number of features for managing and describing archival collections, including creating accessions, tracking donors, creating finding aids, providing a Web interface to collections, and exporting EAD and MARC. Cuadra will host customers' data and provide assistance in importing existing data into the system.

2. CALM (http://www.crxnet.com/page.asp?id=57)
Calm for Archives, developed by DS, bills itself as "the leading archival solution in the UK." It has a client/server architecture and requires Windows. Calm allows significant user customization and enables linking to digital objects. It supports EAD and General International Standard Archival Description [ISAD (G)], and is compliant with International Standard Archival Authority Record for Corporate Bodies, Persons, and Families [ISAAR (CPF)], and National Council on Archives (NCA) name authority guidelines. It offers OAI support (with the provision of an additional module) and rich searching options. There is

a CalmView Web server module (based on .NET technology) for Internet or intranet access.

3. **MINISIS M2A**
(http://www.minisisinc.com/index.php?page=m2a)
MINISIS M2A was developed by MINISIS Inc. in collaboration with the Archives of Ontario in the 1990s. Since then, the precursor, ADD (archival descriptive database), has been enhanced to include more fields, more databases, more functionality, and more workflow and processing to become M2A as we know it today. M2A is flexible and customizable, and it supports standards such as EAD, ISAD(G), and RAD. Additional modules, such as client registration and space management, are available. MINISIS M2A is fully Web enabled and conforms to MARC, RAD, and EAD. MINISIS M2A can be expensive, but M2A Web, which is geared toward smaller archives, provides an inexpensive hosted solution for online creation and publishing of archival information.

4. **Adlib Archive 6.3.0 (**http://www.adlibsoft.com/)
Developed by a company based in the Netherlands, Adlib Archive 6.3.0 offers support for international standards such as ISAD(G) and ISAAR(CPF). Adlib uses a Windows-based desktop client and a database backend. Web publishing of archival information is available through the purchase of the Adlib Internet Server, which is built on Microsoft technologies. Adlib Archive provides support for OAI.

5. **Past Perfect 4.0**
(http://www.museumsoftware.com/pastperfect4.htm)
Past Perfect describes itself as "affordable, flexible and easy to use" collection management software. It provides support for a number of collection management tasks, such as accessions and deaccessions, loans and exhibits, fundraising, membership, and object-level cataloging. The application is PC based, but a Web-based catalog can be built with the pur-chase of the Past Perfect Online[34] module, which can be hosted by Past Perfect or installed on a local server. Past Perfect does not currently provide support for EAD, but that is being considered for a future release.

6. **Eloquent Archive**
(http://www.eloquentsystems.com/products/archives.shtml)
Eloquent Archives describes itself as "an integrated application including all the functions for archival

[34] http://www.pastperfect-online.com/

description, accessioning/de-accessioning, controlling vocabulary, custodial management, research requests, tracking, and other workflow management." In addition to enabling archivists to manage and describe their collections, it provides support for tracking researchers and the usage of collections. Hosting for online access is available.

8. Possible Approaches to Federating Archival Description from Multiple Repositories

Researchers face many challenges in identifying and gaining access to archival holdings distributed at archives and special collections across the United States. Many archives have not described all of their collections or made that information available online. Even if archival description is online, researchers have to look in several places to find relevant resources, searching MARC records in WorldCat, MARC and EAD records in ArchiveGrid, National Union Catalog of Manuscript Collections (NUCMC) records in Archives USA, EAD finding aids aggregated in regional repositories such as Online Archive of California and TARO, and/or finding aids provided through the Web sites of particular archives. In order to facilitate discovery of archival resources, the CLIR Hidden Collections Program aims to provide a federated catalog drawing from multiple repositories. As the 2008 program description states, "The records and descriptions obtained through this effort will be accessible through the Internet and the Web, enabling the federation of disparate, local cataloging entries with tools to aggregate this information by topic and theme." Archivists whom I interviewed recognize the value of aggregating information from multiple repositories. As one interviewee noted, "We just have to federate—there really isn't a reason to stop at the stage of putting things on the Web. The point of EAD was not to put finding aids online, but to share, to get everyone together, to do things across a collection. If we don't make the step forward to sharing, we might as well be using HTML."

However, federating archival descriptions poses some significant challenges. For one thing, an appropriate technical infrastructure needs to be developed, perhaps leveraging OAI-PMH or RDF (Resource Description Framework). A federated catalog needs to be flexible enough to accom-modate the diverse data generated by archives, yet rigorous enough to present data in a standard format. Options for federating archival data include:

1. **Make MARC and EAD available through a national/international service such as ArchiveGrid, Archives USA, or Archives Hub.**

OCLC's ArchiveGrid[35] includes archival information from thousands of archives in the United States, the United Kingdom, Germany, Australia, and other countries. Archive Grid draws from two main data streams: archival records in WorldCat (about 90 percent of the total records) and finding aids harvested from contributing institutions.[36] These finding aids can be written in EAD, HTML, or plain text. To set up the harvesting, OCLC asks contributors to point to a Web site of finding aids that can be crawled. The crawler brings over the text of the finding aid, parses it so that it maps to the ArchiveGrid's record structure, and adds it to the index. For harvested finding aids, ArchiveGrid links from its search results to the full finding aid on the contributor's Web site, similar to a Google result. Thematic collections are not currently represented; ArchiveGrid does not yet have consistent topical categories to apply across its varied contributions, but that could change. Archives pay nothing to contribute records to ArchiveGrid, but access to the full records in Archive Grid is available only through a subscription. However, through OpenWorldCat, researchers can access a large subset of archives' MARC records that are also available through ArchiveGrid. It is possible that an archival version of the freely available OpenWorldCat—Open ArchiveGrid?—could be developed so that a subscription would not be required. One archivist reported satisfaction with Archive Grid: "Archive Grid is harvesting our EAD files. … It seems to be gathering those OK."

Another aggregation model is provided by Archives Hub, the United Kingdom's "national gateway to descriptions of archives in UK universities and colleges."[37] Supported by Mimas, "a JISC and ESRC [Economic and Social Research Council]-supported national data centre" for higher education,[38] Archives Hub offers a distributed model for aggregating content from individual archives. Archives can become "spokes," enabling them to retain control over their data and provide a custom search interface to their collections while also making their content available through a common interface (Archives Hub 2008). Archives Hub is built on the Cheshire full-text information retrieval system, which includes a Z39.50 server. Archives Hub focuses on higher education institutions in the United Kingdom, but will accept

[35] http://archivegrid.org/

[36] Author's interview with Bruce Washburn, consulting software engineer for RLG Programs, July 1, 2008.

[37] http://www.archiveshub.ac.uk/index.html

[38] http://www.mimas.ac.uk/

contributions from other relevant repositories. (Nevertheless, it is probably more appropriate as a model than as a repository for U.S. finding aids.)

ProQuest's Archives USA "is a current directory of over 5,500 repositories and more than 161,000 collections of primary source material across the United States."[39] It provides online access to the NUCMC from 1959 to the present, names and subject indexes from the National Inventory of Documentary Sources (NIDS) in the United States, and collection descriptions contributed by archives. Like ArchiveGrid, Archives USA allows repositories to contribute finding aids at no cost, but requires a subscription to access.

2. Harvest EAD from distributed repositories through OAI-PMH, Atom, or another technology

Existing technologies such as OAI-PMH[40] and Atom[41] support harvesting and aggregating content from distributed repositories. The University of Illinois-Urbana Champaign (UIUC) has already developed preliminary OAI services and tools to harvest information from EAD and other sources.[42] As UIUC found, converting EAD to OAI-PMH poses several challenges: mapping a single EAD file to multiple OAI records; the variability of EAD-encoding practices; the complex hierarchical structure of EAD finding aids; and contextualizing individual results within the overall hierarchy (Prom and Habing 2002). Illinois experimented with "a schema that produces many DC [Dublin Core] metadata records from a single EAD file," producing a collection-level record that linked to the EAD finding aid as well as providing links to related parts of the collection (Cole et al. 2002). Archon is now experimenting with harvesting finding aids from a static directory via OAI-PMH, but nothing has been released yet. Other archival management systems, including CALM for Archives, MINISIS M2A, and Adlib Archive, already provide support for OAI. The FCLA is also exploring using the OAI-PMH protocol to harvest EAD from registered provider sites (Florida Center for Library Automation 2008). While Kathy Wisser was at the North Carolina Echo Project, she developed a proof-of-concept distributed repository using the Internet Archive's Heretrix Web crawler and XTF as the indexer.

[39] http://archives.chadwyck.com/marketing/about.jsp
[40] http://www.openarchives.org/
[41] http://www.atomenabled.org/
[42] http://oai.grainger.uiuc.edu/

3. Adopt an archival management system that supports federation.

ICA-AToM is being designed to support harvesting and syndication via OAI and IETF Atom Publishing Protocol. According to its Web site, "it can be set up as a multi-repository 'union list' accepting descrip-tions from any number of contributing institutions." Perhaps software such as ICA-AToM could be adopted to provide a union list, although such a solution may not be flexible enough to accommodate the varied methods archives use to deliver archival information.

9. Conclusion

Hidden collections pose complex challenges to archives and special collections, but implementing appropriate software can help organizations work more efficiently and provide broader access to archival information. Adopting new software, however, will require that archives adjust their workflows and import existing data into the new system. This study identifies some of the key requirements for archival management software so that archivists can make informed selections. In choosing software, archives should determine which requirements are most important: Do they need to publish finding aids online? Do they need to import and export data in particular formats? Do they want support for key management functions, such as accessioning and gener-ation of reports? Do they prefer commercial or open source software? In addition, they should carefully study factors such as cost, customer service, and core functionality. This report has aimed to outline the collective understanding of archival management software at this time and to provide a basis for expanding that knowledge.

Works Cited

Author's note: I have bookmarked over 200 Web pages relevant to this study, including most of the resources below, at http://www.diigo.com/user/lspiro/archival_tool_study.

Archives Hub. 2008. Archives Hub: Creating and Managing Spokes. Available at http://www.archiveshub.ac.uk/arch/spokesnew.shtml.

Archivists' Toolkit. 2008. Features Matrix: Archivists' Toolkit, Archon, and PastPerfect. Available at http://www.archiviststoolkit.org/Comparison_of_Archival_Management_Software_3.pdf.

Archon. October 2008. Archon™: Facilitating Access to Special Collections Project Update. Available at www.archon.org/ArchonUpdateOct2008.pdf.

Association of Research Libraries Special Collections Task Force. 2006. Special Collections Task Force Final Status Report. Washington, D.C: Association of Research Libraries. Available at http://www.arl.org/rtl/speccoll/spcolltf/status0706.shtml.

Baron, Robert. 1991. Choosing Museum Collection Management Software: The Systems Analysis. Available at http://www.studiolo.org/MusComp/STATEMNT.htm.

Bentley Historical Library, University of Michigan. n. d. MS Word 2000 EAD Templates and Macros. Available at http://bentley.umich.edu/EAD/bhlfiles.php.

Canadian Heritage Information Network. 2003. Collections Management Software Review. Available at http://www.chin.gc.ca/English/Collections_Management/Software_Review/introduction.html.

Canadian Heritage Information Network. 2002. Collections Management Software Selection. (Last modified April 27, 2002.) Available at http://www.chin.gc.ca/English/Collections_Management/Software_Selection/index.html.

Cole, Timothy, Joanne Kaczmarek, Paul Marty, Chris Prom, Beth Sandore, and Sarah Shreeves. 2002. Now That We've Found the 'Hidden Web' What Can We Do With It? The Illinois Open Archives Initiative Metadata Harvesting Experience. Presented at the Museums and the Web 2002, Boston, Mass., April 18-20, 2002. Available at

http://www.archimuse.com/mw2002/papers/cole/cole.html
.

Collections Trust. 2008. Software Survey—SPECTRUM Partners' Systems. Available at http://www.mda.org.uk/software.

Council on Library and Information Resources. 2008. Cataloging Hidden Special Collections and Archives: Building a New Research Environment. Washington, DC: Council on Library and Information Resources. Available at http://www.clir.org/activities/details/hiddencollections.html.

de Catanzaro, Christine, Jody Lloyd Thompson, and Kent Woynowski. 2007. Archivists' Toolkit: Issues in Implementation. Presented at the GALILEO Users' Group Meeting, Fort Valley, Georgia, May 17, 2007. Available at http://smartech.gatech.edu/handle/1853/14405.

Dewhurst, Basil. 2001. Planning and Implementing a Collection Management System. *Health and Medicine Museums Newsletter* 20 (July). Available at http://archive.amol.org.au/hmm/pdfs/hmm20.pdf.

Di Bella, Christine. 2007. Philadelphia Area Consortium of Special Collections Libraries (PACSCL) 30-month Consortial Survey Initiative. *Society of American Archivists Manuscript Repositories Newsletter* (Summer). Available at http://www.archivists.org/saagroups/mss/summer2007.asp#5.

Digital Publishing Group, UC Berkeley Library. n. d. EAD History. Available at http://www.lib.berkeley.edu/digicoll/bestpractices/ead_history.html.

Florida Center for Library Automation. May 28, 2008. Sustaining & Growing The Opening Archives In Florida Project: Report of Ad Hoc Project Advisory Group Meeting. Available at http://www.fcla.edu/dlini/OpeningArchives/advisoryGroupMeeting.pdf.

Greene, Mark, and Dennis Meissner. 2005. More Product, Less Process: Revamping Traditional Archival Processing. American Archivist 68(2): 208-263. Available at http://archivists.metapress.com/content/c741823776k65863.

Groot, Tamara, Peter Horsman, and Rob Mildren. November 2003. OSARIS: Functional Requirements for Archival Description and Retrieval Software. Paris: International Council on Archives. Available at

http://www.archiefschool.nl/docs/Osaris%20Draft%20Requirements.pdf.

Jones, Barbara. Hidden Collections, Scholarly Barriers. 2003. Association of Research Libraries Task Force on Special Collections. Available at http://www.arl.org/bm~doc/hiddencollswhitepaperjun6.pdf .

Lake, David, Russell F. Loiselle, and Debra Steidel Wall. 2003. Market Survey of Commercially Available Off-the-Shelf Archival Management Software. International Council on Archives. Available at http://www.ica.org/en/node/30064.

Lakhan, Shaheen E., and Kavita Jhunjhunwala. 2008. Open Source Software in Education. *EDUCAUSE Quarterly* 31(2): 32-40. Available at http://connect.educause.edu/Library/EDUCAUSE+Quarterly/OpenSourceSoftwareinEduca/46592.

Library of Congress Working Group on the Future of Bibliographic Control. 2008. On the Record: Report of the Library of Congress Working Group on the Future of Bibliographic Control. Available at http://www.loc.gov/bibliographic-future/news/index.html.

Mandel, Carol. Hidden Collections: The Elephant in the Closet. Fall 2004. *RBM: A Journal of Rare Books, Manuscripts, and Cultural Heritage* 5(2): 106-113. Available at www.ala.org/ala/mgrps/divs/acrl/publications/rbm/backissuesvol5no2/mandel.pdf

Mugie, Hade. May 2008. Survey of Archives Management Software. ICA-AtoM Project/Dutch Archiefschool.

Office of Government Commerce. 2002. Open Source Software: Guidance on Implementing UK Government Policy. Available at http://www.ogc.gov.uk/documents/Open_Source_Software.pdf.

OSOR.EU. May 2008. EU: European Commission to increase its use of Open Source. Available at: http://www.osor.eu/news/eu-european-commission-to-increase-its-use-of-open.

Panitch, Judith M. 2001. Special Collections in ARL Libraries: Results of the 1998 Survey Sponsored by the ARL Research Collections Committee. Washington, D.C.: Association of Research Libraries. Available at http://www.arl.org/rtl/speccoll/spcollres/.

Perkes, Elizabeth. 2008. Creating Container Lists Using Excel and Word Merge Options. Available at http://archives.state.ut.us/containerlist/containerlist.html.

Prom, Christopher. 2007. Optimum Access? A Survey of Processing in College and University Archives. Draft of chapter that later appeared in Christopher J. Prom and Ellen D. Swain, eds., College and University Archives: Readings in Theory and Practice. Chicago: Society of American Archivists, 2008. Draft available at http://web.library.uiuc.edu/ahx/workpap/ChapterEight-Prom.pdf.

Prom, Christopher J., and Thomas G. Habing. 2002. Using the Open Archives Initiative protocols with EAD. In Proceedings of the 2nd Joint Conference on Digital Libraries, 171-180. New York: Association for Computing Machinery.

Prom, Christopher J., Christopher A. Rishel, Scott W. Schwartz, and Kyle J. Fox. 2007. A Unified Platform for Archival Description and Access. In Proceedings of the 7th ACM/IEEE-CS Joint Conference on Digital Libraries, 157-166. Vancouver, BC, Canada: Association for Computing Machinery. Available at http://portal.acm.org/citation.cfm?doid=1255175.1255205.

Shreyer, Alice. 2007. University of Chicago Explores Library-Faculty Partnerships in Uncovering Hidden Collections. *ARL: A Bimonthly Report* 251 (April). Available at http://www.arl.org/resources/pubs/br/br251.shtml.

Smart, Christina. July 5, 2005. Choosing Open Source Solutions. JISC e-Learning Focus. Available at http://www.elearning.ac.uk/features/oss.

Smith-Yoshimura, Karen, and Diane Cellentani. November 27, 2007. RLG Programs Descriptive Metadata Practices Survey Results: Data Supplement. Dublin, Ohio, OCLC Programs and Research. Available at http://www.oclc.org/programs/publications/reports/2007-04.pdf.

Steele, Victoria. 2008. Exposing Hidden Collections: The UCLA Experience. *C&RL News* 69(6). Available at http://www.ala.org/ala/mgrps/divs/acrl/publications/crlnews/2008/jun/hiddencollections.cfm.

Stefko, Katherine. 2007. Can You Get AT without IT? Implementing the Toolkit at a Small College Repository. Presented at panel, "Where are We 'AT'? A Status Report on the Archivists Toolkit." SAA Annual Meeting 2007, Chicago, Ill., Aug. 28-Sept. 1, 2007. Available at http://smartech.gatech.edu/handle/1853/16509.

Stevens, Amanda. July 11, 2008. Midterm Report on Software Review and Recommendations Project. Council of Nova Scotia Archives.

Tabb, Winston. Fall 2004. Wherefore Are These Things Hid?: A Report of a Survey Undertaken by the ARL Special Collections Task Force. *RBM: A Journal of Rare Books, Manuscripts, and Cultural Heritage* 5(2): 123-126. Available at http://staging.ala.org/ala/mgrps/divs/acrl/acrlpubs/rbm/backissuesvol5no2/tabb.pdf.

TASI. 2007.TASI—Choosing a System for Managing Your Image Collection. Available at http://www.tasi.ac.uk/advice/delivering/choose-ims.html.

University of California, Berkeley. 2005. Berkeley Web Template CGI Script. Available at http://sunsite3.berkeley.edu/ead/tools/template/.

Utah State Archives. 2002. Encoded Archival Description Project. Available at http://historyresearch.utah.gov/inventories/ead.htm.

Ven, K., J. Verelst, and H. Mannaert. 2008. Should You Adopt Open Source Software? Software IEEE 25(3): 54-59.

Whitlock, Natalie. March 1, 2001. The Security Implications of Open Source Software. IBM Developer Works. Available at http://www.ibm.com/developerworks/linux/library/l-oss.html.

Wilson, James A. J. 2007 (updated 2 Sept. 2008). Benefits of Open Source Code. Text. Available at http://www.oss-watch.ac.uk/resources/whoneedssource.xml.

Wilson, James A. J. 2006. Open Source Maturity Model. Text. JISC OSS Watch. Available at http://www.oss-watch.ac.uk/resources/osmm.xml.

Wisser, Katherine M. 2005. EAD Tools Survey. http://www.archivists.org/saagroups/ead/EADToolsSurvey.pdf.

Woodson Research Center. February 1, 2008. Wishlist for Archival Management Systems. Fondren Library, Rice University.

Yale University Library. 2003. Report to the Digital Library Federation. Available at http://www.diglib.org/pubs/news04_01/yale.htm.

Appendix 1

The Archival Workflow

Archivists typically follow an established workflow in appraising, acquiring, processing, and preserving archival collections, carefully documenting each step along the way and using checklists and other workflow tools to guide the process. As part of their workflow, archives produce a range of documentation, including paper and electronic forms, lists, spreadsheets, databases, catalog records, finding aids in Microsoft Word or EAD, and Web pages. Below we describe the documentation typically produced in archives, with the recognition that practices vary.

1. **Appraisal**:

Definition: Determining which records should be acquired by the archive and estimating their value as it relates to the goals and mission of the archive.

Documentation produced:

- Appraisal report documenting evaluation of the collection.

2. **Accession**

Definition: Acquiring collections and documenting the transfer of materials through a log book, database, register, or other means.

Documentation produced:

- Accession record: Basic information about the collection, such as date of receipt, accession number, donor information, collection size, and monetary value (if applicable).
- Update to accession register/log: Logbook and/or database with basic information on accession record.
- Deed of gift/transfer record: Documents legal transfer of title.
- Donor form: Donor contact information.

3. **Arrangement**:

Definition: Organizing archival collections in accordance with their original order and provenance.

Documentation produced:

- Processing plan: Documents current condition of collection and proposed arrangement.
- Box/folder form: Describes labels used to be used for the components of a collection.
- Location record: Documents where the collection is housed.
- Shelf list: Describes archive's holdings according to their physical organization; used by archivists in locating materials.

4. **Description**:

Definition: A finding aid that outlines the arrangement of the collection and elucidates its research value. This finding aid enables users to determine what a collection contains, helps archives locate materials, and acts as a record of deposit for donors.

Documentation produced:

- Finding aid: "A description of records that gives the repository physical and intellectual control over the materials and that assists users to gain access to and understand the materials."[43] The finding aid can be delivered in several formats, including a print document, EAD-encoded file, and Web page. The finding aid typically contains information about the collection, including acquisition and processing; provenance; scope, including size, subject, and media; organization and arrangement; and an inventory of the series and folders. Tools for producing finding aids include word processors, spreadsheet programs (particularly in creating the inventory), XML editors, Web forms, and archival management software.
- Container list: A container list may describe the collection on a box level, a folder level, or an item level. A container list is typically part of a finding aid.

5. **Preserve**

Definition: Protecting materials from deterioration by rehousing them, removing contaminants, providing treatments, and other means. Preservation is an ongoing process that typically begins soon after the collection is acquired.

Documentation produced:

- Condition record: Describes condition of collection at time of receipt.
- Conservation/preservation record: Describes steps taken to prevent collection from deteriorating.

6. **Provide access**

Definition: Enabling people to locate information about the collection through catalog records, finding aids, indexes, and other means.

Documentation produced:

- Catalog record: Collection-level record loaded into the library's/archive's catalog, typically in MARC format. Some archives produce catalog forms providing basic information that technical services staff can use in creating the record, such as title of collection, creator(s), subject terms, and description.
- Index: Some archives create indexes to their collections by subject, creator, etc.
- EAD finding aid: EAD is a XML-based standard for encoding finding aids.
- Online exhibit/collection: Increasingly, archives are digitizing collections, adding descriptive metadata, and providing access to them online.

7. Offer reference services

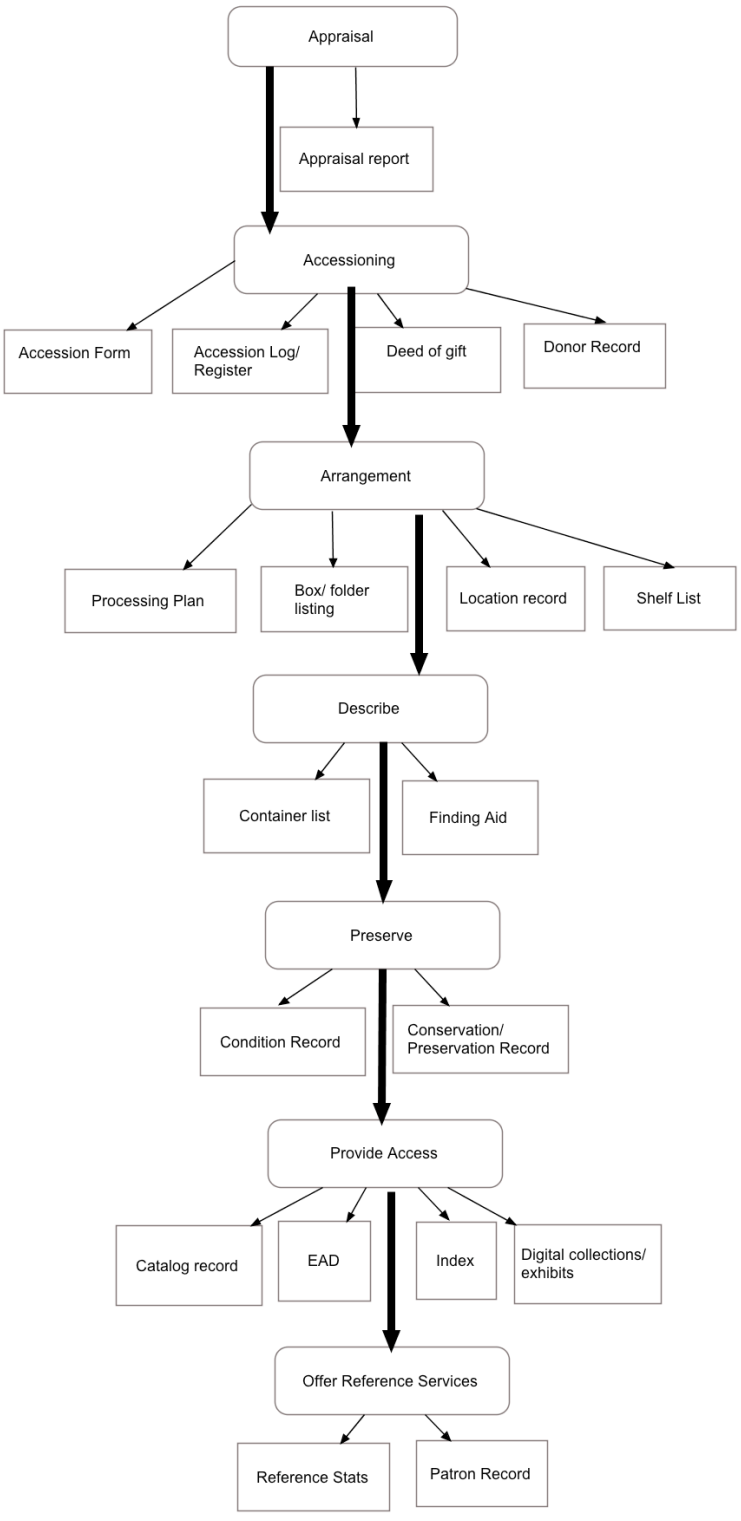
[43] Penn State Archives, http://www.libraries.psu.edu/psul/researchguides/matbytype/archmanu.html

Definition: Assisting patrons in identifying and using collections.

Documentation produced:

- Reference statistics: Information about number and nature of reference queries, including researcher's affiliation, collection used, purpose of visit, etc.
- Patron record: Patron's contact information, research objectives, agreement to abide by archive's policies, etc.

Appendix 1:
Documentation Produced in the Typical Archival Workflow



Appendix 2

Archival Management Systems Features Matrix [Brief]

LEGEND: Y = Yes; N = No; P = Partial; NR= Next Release

Feature	Adlib	AT	Archon	CALM	Cuadra	Eloq.	ICA-AtoM	M2A	CA	Past Perf
Open Source	N	Y	Y	N	N	N	Y	N	Y	N
User Support	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Training	Y	Y	P	Y	Y	Y	Y	Y	Y	Y
System Req.	Win	Win/ Mac/Linux	Web Brower	Win	Win/ Unix	Win	Web Browser	Win	Web Browser	Win
Backup/Restore Utility	N	N	Y	?	P	Y	Y	P	P	Y
Hosting Available?	Y	N	N	Y	Y	Y	NR	Y	N	Y
Demo/ Sandbox Available?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Support for Importing/ Exporting Metadata										
Exports MARC	Y	Y	Y	Y	Y	P	Y	Y	NR	Y
Exports EAD	Y	Y	Y	Y	Y	Y	Y	Y	NR	N
Exports Dublin Core	Y	Y	N?	Y	Y	Y	Y	Y	NR	Y
Exports MODS	P	Y	N	N	N	P	Y	Y	NR	N
Exports METS	P	Y	N	N	N	P	Y	Y	NR	N
Exports MADS	P	N	N	N	N	P	?	Y	NR	N
Batch Exports EAD	P	Y	P	Y	Y	Y	Y	Y	NR	N
Batch Exports MARC	Y	Y	P	Y	Y	N	Y	Y	NR	N
Batch Export Tab Delimited Files	Y	N	N?	Y	Y	Y	Y	Y	NR	N
Imports EAD	Y	Y	Y	Y	Y	Y	Y	Y	NR	N
Imports MARC	Y	Y	Y	Y	Y	Y	Y	Y	NR	Y
Imports Tab Delimited Files/CSV	Y	Y	Y	Y	Y	Y	Y	Y	NR	Y
Imports Digital Image Files	Y	N	Y	Y	N	Y	Y	Y	Y	Y
Import Accession Data	Y	Y	Y	Y	Y	Y	Y	Y	NR	Y
Batch Import EAD	Y	Y	Y	Y	Y	Y	Y	Y	NR	?
Batch Import MARC	Y	N	Y	Y	Y	Y	Y	Y	NR	?
Batch Import CSV	Y	N	Y	Y	Y	Y	Y	Y	NR	Y?
Collection Management Features										
Appraisals	Y	P	N?	Y	Y	P	Y	Y	Y	Y
Accessions	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Create Deeds of Gift	Y	N	N?	Y	Y	Y	Y	Y	Y	Y
Prioritize Processing Order	Y	Y	Y	Y	N	Y	?	Y	N	Y
Track Donors	Y	Y	N?	Y	Y	Y	Y	Y	Y	Y
Project Mgmt.	N	P	N?	N	N	Y	?	P	N	Y
Record Condition	Y	Y	P	Y	Y	Y	?	Y	Y	Y
Manage Locations	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Feature	Adlib	AT	Archon	CALM	Cuadra	Eloq.	ICA-AtoM	M2A	CA	Past Perf
Manage Restricted Materials	Y	Y	Y	Y	Y	Y	?	Y	Y	Y
Manage Rights	Y	Y	P	Y	Y	Y	Y	Y	Y	Y
Manage Loans and Exhibits	Y	N	N	Y	Y	Y	?	Y	P	Y
Deaccessioning	Y	Y	N	Y	Y	Y	Y	Y	Y	Y
Reference Support	Y	N?	P	P	N	P	Y	Y	N	Y
Generate Reports	Y	Y	N?	Y	Y	Y	Y	Y	Y	Y
Track Repository Statistics	Y	Y	N?	Y	Y	Y	Y	Y	NR	N
Resource Description										
Authority Control	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Controlled Vocabulary	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Compliance to Archival Standards	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Data Validation	Y	Y	?	Y	Y	Y	?	Y	Y	P
Templating/ Default Fields	Y	Y	Y	?	Y	Y	Y	Y	Y	Y
Support for Digital Media	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Internationalization	Y	N	Y	Y	P	Y	Y	Y	Y	P
Flexibility of Data Model	Y	Y	Y	Y	Y	Y	Y	Y	Y	P
Item-level Description	Y	P	Y	Y	Y	Y	Y	Y	Y	Y
Reorganize Hierarchies	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Dynamically Generate EAD Finding Aids	Y	Y	Y	Y	Y	Y	Y	Y	NR	N
Publish Finding Aids Online	Y	N	Y	Y	Y	Y	Y	Y	P	Y
Administrative Functions										
User Permissions	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Support for Harvesting/ Syndication	OAI	N	N	OAI	N	P	OAI/ ATOM	Y	NR	N
Customization/ Configuration	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Spell Check	Y	N	N	Y	Y	Y	?	N	NR	Y
Bug Reporting	N	Y	N?	Y	Y	Y	Y	Y	Y	N
Interoperability with Digital Repository Systems	Y	Phase 2	N	Y	P	N	Y	Y	NR	N
User Interface										
Web Publishing	Y	N	Y	Y	Y	Y	Y	Y	Y	Y
Browse	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Search	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Advanced Search	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Customizable	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Built-in Help	Y	Y	Y	Y	Y	Y	Y	Y	P	Y
Link to Images and Other Files	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Easy Data Entry	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Appendix 3

Archival Management Systems Features Matrices [Full]

Note: I prepared the initial version of each archival management system feature matrix. To ensure accuracy and completeness, I then gave the vendors and developers an opportunity to edit the matrix or recommend revisions. All of them did so.

ADLIB ARCHIVE 6.3.0	
Home Page	http://www.adlibsoft.com/
Developer	Adlib Information Systems (a company based in the Netherlands)
Developer's Description	"Intended specifically for managing collections in archives and records offices, Adlib Archive has been designed and developed by Adlib Information Systems, and is based on many years of experience in the collection management field. Adlib Archive offers comprehensive functionality and interfaces for professional archive management. Standard features include Accessions and accruals, hierarchical catalogue structure to ISAD(G), and authority records to ISAAR(CPF) standards, published document cataloguing, image linking and retrieval capabilities and interfaces to external files, such as Word or Excel documents, Web pages, etc."
License	Commercial
Purchasing Cost	Depends on number of users and database used.
Maintenance Cost	15% of the license per year
User Support	• Web site • Help desk • User manual • User group • Remote assistance support
Training	• Online tutorial • Training courses • Remote access training • On-site training
System Requirements	Adlib application: Windows 2000 or later operating system, 512MB of RAM for Windows 2000 or Windows XP, 1GB of RAM for Windows Vista The Adlib Internet Server module runs on a Windows Server. "If you want to take advantage of ASP and XML technology, you should run Microsoft Internet Information Services (IIS), a component of Windows, on a Windows 2000 or 2003 Server."
Technical Architecture	• Desktop client (Win32) • Database backend (SQL server, Oracle, • or Adlib proprietary database) • ASPX Internet application
Backup/Restore Utility	There is no integrated backup/restore utility. DBMS tools must be used to backup/restore.
Maturity	Adlib archive is in use in at least 50 archives, and the general Adlib software has been in use in more than1.600 institutions, for over 20 years.

Hosting Available?	Yes
Demo/Sandbox Available?	Yes (Windows based)
Sustainability	The Adlib archive software is based on international archival standards, such as ISAD-G and ISAAR. The software implements EAD data exchange, but also has OAI and SRU API's. The product's use of XML makes Adlib Archive a sustainable product.
Example Users	• London Borough of Hillingdon, Central Library • Senate House Library, Special Collections, University of London • International Monetary Fund, Washington D.C. • Archive of the City of Amsterdam, the Netherlands • Bermuda Archives, Bermuda • Center for Documentation and Research, Abu Dhabi
Unique Features	• OAI Support
Support for Importing/Exporting Metadata	
Exports MARC	Yes
Exports EAD	Yes
Exports Dublin Core	Yes
Exports MODS	Optional, by adding XSLT stylesheets
Exports METS	Optional, by adding XSLT stylesheets
Exports MADS	Optional, by adding XSLT stylesheets
Batch Exports EAD	Optional, by adding XSLT stylesheets
Batch Exports MARC	Yes
Batch Export Tab Delimited Files	Yes
Imports EAD	Yes
Imports MARC	Yes
Imports Tab Delimited Files/CSV	Yes
Imports Digital Image Files	Yes
Import Accession Data	Yes
Batch Import EAD	Yes
Batch Import MARC	Yes
Batch Import CSV	Yes
Collection Management Features	
Appraisals	Yes
Accessions	Yes
Create Deeds of Gift	Yes
Prioritize Processing Order	Yes, through the accessions module
Track Donors	Yes
Project Management	No
Record Condition	Yes, with purchase of conservation module
Manage Locations	Yes
Manage Restricted Materials	Yes
Manage Rights	Yes
Manage Loans and Exhibits	Yes

Deaccessioning	Yes
Reference Support	Yes
Generate Reports	Yes
Track Repository Statistics	Yes
Resource Description	
Authority Control	Yes
Controlled Vocabulary	Yes: "Pre-defined thesauri and term lists, e.g., the UNESCO Thesaurus may optionally be pre-loaded into the system."
Compliance to Archival Standards	ISAD-(G), EAD, ISAAR(CPF)
Data Validation	Yes, using the validated fields and field entry templates
Templating/Default Fields	Yes
Support for Digital Media	Yes
Internationalization	Yes: Customization to support multilingual data entry; supports UTF-8. English, Dutch, German, French, Arabic, or Greek user interface. Data can also be stored in multiple languages (multiple language variants for the same field).
Flexibility of Data Model	Yes: Fields can be added, new tables can be added,
Item-level Description	Yes
Reorganize Hierarchies	Yes: "Using Adlib Designer, you can delete or add levels to this drop-down list [of six levels], or change the names of the levels (for instance, if you usually speak of a group or collection instead of a fonds, and of classes and items instead of series and files), and customize the possibilities of your archive hierarchy this way."
Dynamically Generate EAD Finding Aids	Yes
Publish Finding Aids Online	Yes, using Adlib Internet server
Administrative Functions	
User Permissions	Yes: "Adlib Archive allows access rights to be assigned to both individual users and groups of users. This allows control of access to data and to certain functions, such as editing, deletion or output of data."
Support for Harvesting/ Syndication	Yes: OAI support via Adlib OAI Server is available at no charge to Adlib customers.
Customization/ Configuration	Yes: "Fields can be modified, added and removed, or new data structures built from scratch. Forms, menus and reports can likewise be changed, and the Adlib procedural language can be used to develop powerful and sophisticated data validation and manipulation procedures. All Adlib standard systems are delivered with tools so that you can customize the system yourself, or have our consultants do the work for you."
Spell Check	Yes
Bug Reporting	No, but found bugs can be reported using the MyAdlib Web site.

Interoperability with Digital Repository Systems	Yes
User Interface	
Web Publishing	Yes, with purchase of Adlib Internet Server. "The optional Adlib Internet Server module, enables any Adlib database to be searched from a standard Web Browser over an Intranet or the Internet. Support for the Open Archives Initiative (OAI) is included. Adlib Information Systems can also build a customised Web application for your Adlib Internet Server, offering a wide range of possibilities and great flexibility."
Browse	Yes
Search	Yes: "The Search Wizard takes the user step by step through browsing and searching a number of pre-defined indexes, such as: Reference Code, Creator, Subjects and Places, etc. Query by Form: this technique allows simple searching across multiple fields. The Search Language allows searching across all fields in any combination, whether indexed or not. Queries can include Boolean and logical operators, and left or right truncation. Results are returned as sets which may also be combined. Both queries and results may be saved for later re-use."
Advanced Search	Yes
Customizable	Yes, using Adlib Designer
Built-in Help	Yes
Link to Images and Other Files	Yes
Easy Data Entry	Yes
Other Features	?

Archivists' Toolkit 1.5	
Home Page	http://www.archiviststoolkit.org/
Developer	University of California San Diego Libraries, the New York University Libraries, and the Five Colleges, Inc., Libraries. Funded by The Andrew W. Mellon Foundation.
Developer's Description	"The Archivists' Toolkit™, or AT, is the first open source archival data management system to provide broad, integrated support for the management of archives. It is intended for a wide range of archival repositories. The main goals of the AT are to support archival processing and production of access instruments, promote data standardization, promote efficiency, and lower training costs. "Currently, the application supports accessioning and describing archival materials; establishing names and subjects associated with archival materials, including the names of donors; managing locations for the materials; and exporting EAD finding aids, MARCXML records, and METS, MODS and Dublin Core records. Future functionality will be built to support repository user/resource use information, appraisal for archival materials, expressing and managing rights information, and interoperability with user authentication systems."
License	Open source—Educational Community License, v. 1.0
Purchasing Cost	Free
Maintenance Cost	N/A
User Support	• Listserv • User manual • Web site • FAQ • Wiki • Developers are regarded as being responsive to user requests.
Training Available	Yes
System Requirements	PC: * Operating System: Windows XP * Java 5 JRE, or JDK [also supports Java 1.6] * CPU: Pentium 4 2.4GHz+ or AMD 2400xp+ * System Memory (RAM): 512MB * Hard Disk: 100MB free space * Screen: 1024x768 Mac: * Operating System: Mac OS X 10.4.5 (or higher) * Java 5 JRE, or JDK * CPU: G4 1.2Ghz * System Memory (RAM): 512MB * Hard Disk: 100MB free space * Screen: 1024x768 Supported Database Backends:

	* MySQL 5.0 (with the InnoDB storage engine) * MS SQL Server 2005 (or higher) * Oracle 10g
Technical Architecture	• Java desktop client • Based on relational database model. Supported database backends include MySQL 5.0, MS SQL Server 2005 (or higher), and Oracle 10g. • Can work as a stand-alone or networked application.
Backup/Restore Utility	No
Maturity	Current release: Version 1.5. Now in Phase 2; Phase 2 release expected in February 2009. Beta testing of version 1 began in spring 2006.
Hosting Available?	Not currently
Demo/Sandbox available?	Yes: http://archiviststoolkit.org/support/sandbox1.1.shtml
Sustainability	Developed business plan in collaboration with Ithaka.
Example Users	1,062 registered users of Version 1.1; 1,756 registered users of Version 1. Users include Georgia Institute of Technology, Archives and Records Management; Princeton University, Seeley G. Mudd Manuscript Library; and University of California, Riverside, Special Collections & Archives Department.
Unique Strengths	1. Strong support for archival management functions 2. Supports export of METS, MODS, MARC, Dublin Core; batch export 3. Many management reports 4. Rich customization features 5. Robust authority support 6. Merge and transfer feature enables several staff to simultaneously describe different parts of the same resource.
Support for Importing/Exporting Metadata	
Exports MARC	Yes
Exports EAD	Yes
Exports Dublin Core	Yes
Exports MODS	Yes
Exports METS	Yes
Exports MADS	No
Batch Exports EAD	Yes: "From the resource browse screen select two or more resources that you want to export as either EAD files or MARCXML records."
Batch Exports MARC	Yes
Batch Export Tab Delimited Files	No (?)
Imports EAD	Yes, including abstract, biographical/history note, scope and content, publication rights, conditions/restrictions, preferred citation, and name/subjects
Imports MARC	Yes
Imports Tab Delimited Files	Yes: "The Archivists Toolkit allows you to import data from either a tab-delimited file from a table or flat file, or from an XML file structured according to the Accessions XML schema provided with the Toolkit."

Imports Digital Image Files	No
Import Accession Data	Yes
Batch Import EAD	Yes: "Target a directory containing the EAD files to be imported and import all EAD files in the directory."
Batch Import MARC	No
Batch Import CSV	No
Collection Management Features	
Appraisals	No: Has appraisal note.
Accessions	Yes, 40 fields
Create Deeds of Gift	No, but you can link to a deed of gift.
Prioritize Processing Order	Yes
Track Donors	Yes: Create contact info for donor.
Project Management	Sort of: Include "update by/when" on record.
Record Condition	Yes
Manage Locations/ Create Shelf List	Yes: Can batch add locations.
Manage Restricted Materials	Yes: Provides "field for indicating restrictions on the material due to repository policy, donor specifications, legal requirements, etc."
Manage Rights	Yes
Manage Loans and Exhibits	No
Deaccessioning	Yes
Reference Support	No?
Generate Reports	Yes: Reports include accessions, names, subjects, resources, locations, and repository profile
Track Repository Statistics	Yes: "Includes new fields for recording repository statistics, per recommendations of Archival Metrics Project." Fields include services provided, staff size, collection foci, and repository's physical characteristics.
Resource Description	
Authority Control	Yes, name and subject authority
Controlled vocabulary	Yes: Can reference controlled vocabularies as source in name/subject record.
Compliance to Archival Standards	Yes: • International Council on Archives' ISAAR (CPF): International Standard Archival Authority Record for Corporate Bodies, Persons, and Families, 2nd ed. • EAC • AACR2 • DACS
Data Validation	Yes: "If the record does not include required elements or conform to uniqueness requirements, the user is informed that the record is not valid, and provided with information necessary to fix the record."
Templating/Default Fields	Yes: Default values for accessions, deaccessions, locations, subjects, resources, resource components, digital objects, names, and users. Can use look-up (drop-down) values.

Support for Digital Media	Digital Object module supports describing both simple (single files) and complex (multiple files) digital objects. Produces unbound digital object, "one in which the metadata record simply references the digital content file" (e.g., Dublin Core), or bound digital object, one [in] which the metadata and the digital content files are bound together through the use of a digital binder or wrapper" (e.g., METS).
Internationalization	No
Flexibility of Data Model	Relational database model allows greater flexibility with output. Supports multilevel description according to standard archival practice. Drag-and-drop component-rearrangement tool.
Item-level Description	Conditionally
Reorganize Hierarchies	"To reorder component records, simply select the component you wish to move, and drag it up or down in the hierarchy, releasing the mouse button where you wish to place the component."
Dynamically Generate EAD Finding Aids	Yes
Publish Finding Aids Online	No
Administrative Functions	
User Permissions	Yes, five levels of user permission, from beginning data entry staff to superuser
Support for Harvesting/ Syndication of Content	No
Customization/ Configuration	Yes: Can customize field labels, screen/browse view, note fields, search fields, reports, data formats, right-mouse functions, and drag and drop. Can create user-defined fields, e.g., date, Boolean, text, integer.
Spell Check	No
Bug Reporting	Yes
Interoperability with Digital Repository Systems	Planned for Phase 2
User Interface	
Web Publishing	No
Browse	Yes
Search	Yes: Provides search filters. Can search Name, Subject, Accession, and Resource records. Component-level search results
Advanced Search	"For accession and resource records, the Search Editor also provides the ability to retrieve records by searching for related information. This includes names (creators, sources, subjects), subjects, location, or deaccession dates. In addition, you can search for resources containing a specific instance type, for example, digital objects and also for specific text within notes."
Customizable	Yes, see above.
Built-in Help	Yes, customizable; includes definition and examples.
Link to Images & Other Files	Yes

Speed Data Entry	"Rapid Data Entry feature to allow for repeated entry of component records with fewer mouse clicks than one would use during the process of adding individual component records and then adding instances." Customizable.

ARCHON 2.1	
Home Page	http://www.archon.org/
Developer	University of Illinois at Urbana-Champaign Library and University of Illinois Archives, Sousa Archives and Center for American Music
Developer's Description	"Archon is predicated on the notion that a unified, Web-based application is a lynchpin in expanding access to archival descriptive information, digital objects, and electronic records. In this sense, Archon can be thought of as a Content Management System (CMS) that allows archives and manuscript repositories to describe and provide access to the totality of their holdings. Like most content management systems, Archon requires only a set of very common, free technologies (a Web server running PHP 5.0 or higher and a database server, such as MySQL). "It automatically publishes archival descriptive information and digital archival objects to a user-friendly Website. With Archon, there is no need to encode a finding aid, input a catalog record, or program a stylesheet. Archon's powerful scripts will automatically make everything in the system searchable and browsable on your repository's Website! "Archon will simplify your workflow and save you time. Once you've input or edited information using some simple Web forms, Archon automatically uploads the files, publishes the Website, and generates EAD and MARC records."
License	Illinois Open Source License
Purchasing Cost	Free
Maintenance Cost	Free
User Support	• Listserv • User forums • Web site • Responsive developers • User manual
Training	Proposal for Archon workshop submitted to SAA
System Requirements	User: • A recent Web browser on any platform Admin: • Blank MySQL or Microsoft SQL Server database • A Web server (of any type) running PHP 5.0 or higher.
Technical Architecture	Web-based platform built using PHP 5.0 and SQL database as back end
Backup/Restore Utility	"Export the entire database for backup purposes, and restore data from a backup files or using a user-defined SQL script."
Maturity	Archon 1.0 released August 2006. Archon 2.1 released April 2008, Archon 2.2 to be released July 2008 [Update?]
Hosting Available?	No, but plans to study potential for hosted Web services.

Demo/Sandbox Available?	Yes, http://www.archon.org/sandbox.php
Sustainability	Currently supported by University of Illinois at Urbana-Champaign. Won a Mellon Award for Technology Collaboration. Will develop sustainability plan.
Example Users	"A substantial user community has emerged; the software has been downloaded 900 times, installed or upgraded over 600 times, and at least 30 'production' applications currently running or planned." William & Mary, Purdue, Southern Illinois at Carbondale, Florida Center for Automation, San Diego State, University of Iowa, Wheaton, Bethel College, Missouri Historical Society
Unique Strengths	1. Makes it easy for archives to publish finding aids online 2. Optimized for Google so content is easy to discover 3. Ease of data entry 4. Digital library module supports linking digital files to finding aids 5. Low development overhead/cost 6. Facilitates access to and reuse of archival information and digital objects 7. Encourages efficient descriptive practices
Support for Importing/Exporting Metadata	
Exports MARC	Yes
Exports EAD	Yes
Exports Dublin Core	No?
Exports MODS	No
Exports METS	No
Exports MADS	No
Batch Exports EAD	Batch exporters planned for the next post 2.2 release
Batch Exports MARC	No?
Batch Export Tab Delimited Files	No?
Imports EAD	Yes
Imports MARC	Yes, including batch import
Imports Tab Delimited Files/ CSV	Yes, CSV
Imports Digital Image Files	Yes?
Import Accession Data	Batch import data from MARC, EAD (XML), or CSV format
Batch Import EAD	Yes
Batch Import MARC	Yes
Batch Import CSV	Yes
Collection Management Features	
Appraisals	No?
Accessions	Yes: • "Enter basic information for recently received materials." • "Link accessions to one or more existing collections or record groups." • "Transfer basic accession records into collections records for

	further editing." • "List unprocessed materials in an 'accessions manager'."
Create Deeds of Gift	No?
Prioritize Processing Order	Yes
Track Donors	No?
Project Management	No?
Record Condition	An AV Preservation Assessment module is expected in June 2009.
Manage Locations	Yes: "Track room, range, section, and shelf locations for each collection."
Manage Restricted Materials	Yes
Manage Rights	Not really, although there is a rights field.
Manage Loans and Exhibits	No
Deaccessioning	No
Reference Support	Not really, but Archon allows archives to "manage information related to researcher accounts and appointments established by researchers. "Users can register accounts, place collections, series, folders and items into a virtual cart, email the list to the archives, and establish appointment times. The menus in this area allow the Archon administrator to view and edit information related to researcher accounts, carts, and logins."
Generate Reports	No?
Track Repository Statistics	No?
Resource Description	
Authority Control	Yes: • "Develop creator authorities and controlled subject lists, and link them to collections and digital objects." • "Create and edit creator and subject authority records, which may be linked to classifications, collections, or digital objects. Changes made to authority records will automatically propagate to associated collections or digital objects."
Controlled Vocabulary	Yes
Compliance to Archival Standards	EAD, MARC, DACS
Data Validation	?
Templating/Default Fields	Yes: "Templates control the particular data elements that appear on a particular page. They are not intended to control display properties such as layout, colors and fonts."
Support for Digital Media	Yes: "Upload digital objects/electronic records or link archival descriptions to external URLs."
Internationalization	Yes: Currently offers Spanish and English interfaces; French and Italian being considered.
Flexibility of Data Model	• "Define "repository-level" information such as address, contact information, and overall arrangement scheme."

	• "Define record groups or other classifications." • Archon's data model can accommodate any organizational hierarchy.
Item-level Description	Yes: "Describe the series, subseries, files, items, etc. within each collection."
Reorganize Hierarchies	Yes: User can transfer levels to another point in hierarchy.
Dynamically Generate EAD Finding Aids	Yes
Publish Finding Aids Online	Yes
Administrative Functions	
User Permissions	Yes: • "Add, edit, or delete user accounts, allowing or denying people access to the staff interface." • Different levels of permission depending on user type
Support for Harvesting/ Syndication	No
Customization/ Configuration	Yes: • "Create new output templates to show the data in any way you choose (two such templates are included with the current Archon Distribution packet)." • "My Preferences: Change password, select administrative interface language, and set display order for the user's staff 'homepage'." • "Phrase Manager: Set and change staff interface labels, error messages, and help texts."
Spell Check	No
Bug Reporting	?
Interoperability with Digital Repository Systems	Not yet, but plans to Increase interoperability with other systems using OAI and SWORD technologies.
User Interface	
Web Publishing	"Archon automatically publishes a Website containing collection-level descriptions, full finding aids, and linked digital objects. Regardless of which browser you use to create and edit records, Archon's end-user output can be viewed with any Web browser." End-users can: • "View, download, and use digital objects/electronic records." • Easily navigate from digital objects to archival descriptions and vice versa." • Jump easily between collections and digital objects sharing the same subject, creator, or archival record group." Archon plans "to investigate the addition of a 'user annotation' feature so that archival end-users can submit comments regarding archival collections and/or individual digital objects."

Browse	Yes: Users can "browse materials by collection title, digital object title, controlled subject heading, creator authority record, or archival record group." • "Provides hyperlinks to other collections and digital objects that are related by provenance, subject, or creator." • "Unlike the traditional archival finding aid, which spreads "collection-level" descriptive information over several pages, Archon provides links to all essential information "above the fold" in the Web-browser, so that users do not need to scroll to find essential information."
Search	Yes: • "Search queries can be entered against either collection-level records or the full content of finding aids (including box and folder lists)." • "Simultaneously search descriptions of archival materials, electronic records, and digital objects." • "View, print, and search finding aids for individual collections."
Advanced Search	Yes: Phrase-based searching, can exclude terms. Search filter so that user does not have to scroll to find information.
Customizable	Yes: Nontechnical staff can modify Archon's themes and customize the interface if they know a little HTML and PHP. Archon plans to "undertake usability studies and develop new administrative and end-user themes."
Built-in Help	Yes: "Use an integrated help system by clicking the help buttons."
Link to Images and Other Files	Yes: "The digital library [module] is used to link to external digital objects and to directly upload digital objects and electronic records into the system. Linked or uploaded objects can be associated with individual collections or any subordinate parts of a collection (e.g., series, items, files) that have been entered. Hyperlinks between the digital object and the associated collection automatically appear in the public Website."
Easy Data Entry	Yes: "Edit descriptive information directly from an enhanced public interface by clicking the edit icon: Archon pencil image." When a user begins typing a controlled-subject term, Archon filters a list of potential terms, allowing the user to select the appropriate one.

CALM FOR ARCHIVES	
Home Page	http://www.ds.co.uk
Developer	DS is a member of the Axiell Library Group, based in the United Kingdom.
Developer's Description	"Calm is the leading Archives management system in the UK. DS has worked for many years with specialists to develop our Calm products: comprehensive and integrated systems suited to diverse organizational needs. Calm makes it easy to manage data across the heritage sector. All relevant standards are supported seamlessly within one system. Development in partnership with customers ensures that Calm reflects current and changing professional standards. DS is committed to providing mechanisms that allow customers to work with others in similar and cross-sectoral areas."
License	Commercial
Purchasing Cost	Depends on number of staff clients and modules purchased.
Maintenance Cost	25% of software license cost. This includes free updates and upgrades to all purchased modules.
User Support	• Help desk • User group listserv • Online manual
Training	Yes, customized to user requirements.
System Requirements	Server specification: Windows 2000, 2003, 2008 Server Standard Edition .Net 2.0 + IIS 6 or higher (for CalmView Web module) + TCP/IP networking RAM – 2Gb HDD – 1.5Mb per 1000 text records + space required for other media files RAID and backup to suit customer standards Calm will run in a VM Server environment. Client specification: 2000 Pro, XP pro, Vista Business or Ultimate RAM – 512Mb minimum HDD - 10Mb Display currently 800x600 but will increase to 1024x768 minimum for next release.
Technical Architecture	Client/server application, runs as a Windows Service. Uses a proprietary database. CalmView public access module based on .NET/APSX.
Backup/Restore Utility	Backup to fit local customer standards. Restore based on restoring database files from last backup.
Maturity	Calm products have been available for 12 years, with over 300 installations across the United Kingdom and Europe.
Hosting Available?	Yes
Demo/Sandbox Available?	Yes

Sustainability	"Calm has a very large and active user community, and development is based on a user consensus approach. Calm conforms to current approved international standards, including ISAD(G), ISAAR, EAD and OAI. It is our policy to conform to standards once they are ratified. "There is an optional ESCROW agreement available."
Example Users	U.K.: National Archives of Scotland Wellcome Library London School of Economics and Political Science The British Postal Museum and Archive Hampshire Record Office The National Gallery Royal Botanic Gardens, Kew Shakespeare Birthplace Trust Transport for London Other: National Archive of Portugal, Lisbon Shell Family Archives Centre, the Netherlands
Unique Features	"Calm is a modular system designed to provide a full range of Collection Management functions, including: • Accessions/Loans In • Depositor/Owner/Lender • Catalogue • Authority Files • Conservation • Enquiries • Productions/Loans Out/Movement Control • Condition Check • User Management Unique features include: • Dynamic collection hierarchy display through 'tree view' • Date parser for searching nonspecific dates • Flexible staff client GUI [What is GUI?] • Support for "messy" data schemas • Archives and Museums standards integrated into one application without compromise. • Can be translated into other languages (including database commands)"
Support for Importing/Exporting Metadata	
Exports MARC	Yes, can be mapped
Exports EAD	Yes
Exports Dublin Core	Yes, can be mapped
Exports MODS	No
Exports METS	No
Exports MADS	No
Batch Exports EAD	Yes
Batch Exports MARC	Yes

Batch Export Tab Delimited Files	Yes
Imports EAD	Yes
Imports MARC	Yes
Imports Tab Delimited Files/CSV	Yes
Imports Digital Image Files	Yes: Further integration in next release with implementation of new digital repository module.
Import Accession Data	Yes
Batch Import EAD	Yes
Batch Import MARC	Yes
Batch Import CSV	Yes
Collection Management Features	
Appraisals	Yes
Accessions	Yes
Create Deeds of Gift	Yes
Prioritize Processing Order	Yes
Track Donors	Yes
Project Management	No
Record Condition/ Conservation	Yes
Manage Locations	Yes: Has a locations database for stock check and collections management.
Manage Restricted Materials	Yes
Manage Rights	Yes
Manage Loans and Exhibits	Yes
Deaccessioning	Yes
Reference Support	Yes: Provides support for reference requests.
Generate Reports	Yes
Track Repository Statistics	Yes
Resource Description	
Authority Control	Yes, for names, places, periods, events, subjects, and class.
Controlled Vocabulary	Yes: Provides for both single and polyhierarchical subject thesaurus options and provision of the UNESCO or UKAT thesaurus if required by customer.
Compliance to Archival Standards	Yes: Supports EAD and ISAD (G) and is compliant with ISAAR (CPF) and NCA name authority guidelines.
Data Validation	Yes: Calm has a sophisticated date parser allowing storage and searching across a variety of date ranges; e.g., a search for "spring 1916" will retrieve record with date April 1916 or circa [?] 1915 or Easter 1916.
Templating/Default Fields	Yes: Has extensive field and template customization options.
Support for Digital Media	Yes: Links to electronic data sources, including images, audio, and video.
Internationalization	Yes: Backend database Unicode aware, and the interface is translatable.
Flexibility of Data	Calm has a flexible database structure, fully supporting relational

Model	and hierarchical relationships.
Item-level Description	Yes
Supports Hierarchical Cataloging	Yes: Flexible and dynamic tree structure for managing collection hierarchy. Hierarchy levels are not hard coded, which allows customers flexibility to define their own collection structures.
Dynamically Generate EAD Finding Aids	Yes
Publish Finding Aids Online	Yes, using CalmView public access module
Administrative Functions	
User Permissions	Yes
Support for Harvesting/ Syndication	Yes: OAI repository and harvester module available.
Customization/ Configuration	Yes: Record relationships can be viewed through a unique graphical tree browser. Fields are repeatable (unless functionally undesirable) and can contain up to 64,000 characters of searchable text per field; record templates can be modified, but also, unusually, individual records of the same type can have fields added or removed. A standard utility called DS Admin allows the system administrator to vary record types, field labels, authority fields, picklists, and many other functions, without jeopardizing a common upgrade path. All field properties (width, position, label, font, picklist, mandatory, serial number, bib1/MARC/XML attributes, etc.) are user defined using DS Admin.
Spell Check	Yes, provided as standard
Bug Reporting	Yes, through support channels and resolved through standard service-level agreements
Interoperability with Digital Repository Systems	Yes, with external systems through API, XML broker, or exposed URL. Integrated digital repository module available with next release.
User Interface	
Web Publishing	Yes: CalmView is the new public access module for Calm, and allows any data and/or images stored in a Calm database to be searched locally or remotely (intranet or Internet) through a Web browser. It is fully parameterized and allows local configuration to control search options (e.g., keyword, Google style simple search, wildcard), screen displays, visible/hidden fields, search filters, data security, access to images and electronic documents, links to other URLs, hierarchical browsing, bookmarking, image watermarking, plus "showcase/image gallery/what's new" features.
Browse	Yes
Search	Calm is a structured full-text retrieval system and has search features including any text, field specific, wildcard, proximity, keyword, date parser, Boolean, widen/narrow/exclude, and/or/not, synonym, etc. All fields or combinations of fields may be searched unless functionally undesirable. All words are indexed automatically unless set as a stopword. All fields are indexed automatically unless set as unindexed by the administrator.
Advanced Search	Yes, customizable, support for intelligent date searching, synonym, wild card, etc.

Customizable	Yes: CalmView has "out-of-the-box" theming/skinning. Calm application has flexible DS Admin module.
Built-in Help	Yes
Link to Images and Other Files	Yes
Easy Data Entry	Yes: Many of the databases have relational features, so it is possible to move seamlessly across databases using the database tabs and access any associated records. Calm has a dynamic, customizable user interface with a context- sensitive button strip to help workflow operations.
Other Features	• "Calm is able to concurrently support field and record definitions from multiple standards. Record templates classified according to local requirements mean that archival records conform to international archival standards including ISAD(G), MAD, ISAAR(CPF) and NCA rules, the UK SPECTRUM standard is used as a guide for collection management of museum records, while standard AACR2-compatible bibliographic structures are used for library materials." • "Calm is designed to support the concept of hierarchical collection management, typically used in the field of archives management, but equally relevant in all areas of heritage collection management. Records may be created at any level, including collection and item. The hierarchical structure supports the concept of blank nodes, i.e., item-level records may be created initially, and collection-level records added at a later date. Calm catalogue fields are mapped to unqualified Dublin Core elements within the database definitions, and these can be used as a basis for data import, export and searching.? • "Calm has a sophisticated date parser allowing storage and searching across a variety of date ranges. It also permits exact matches on dates, e.g., date ends with 1910. The date formats were agreed by our users, e.g., an AD circa date is 10 years either side, and DS can consider other date formats if requested, provided they can be calculated by the underlying program." • "Manages digital assets using ImageView and records metadata relating to digital images in the optional Images database."

CUADRA STAR	
Home Page	http://www.cuadra.com (home page) http://www.cuadra.com/products/archives.html (description of STAR/Archives)
Developer	Cuadra Associates, Inc.
Developer's Description	"STAR/Archives supports the management of archival collections of all types. In describing your collection, you can choose an appropriate level within the full hierarchical model—collections, series, containers, and items. "With STAR/Archives you can manage the accessioning process, track donors and generate deeds of gift; describe and maintain multiple archival collections, including collections with digitized materials; reorganize the hierarchies as required; provide Web-based access to your collections; search within or across collections; link images and other electronic files; and manage your inventory. "You can also dispense with the labor-intensive process of creating finding aids by using a text editor or an SGML/XML authoring tool. STAR/Archives dynamically creates EAD finding aids as XML files whenever you need them. STAR/Archives provides support for many standards, including ISAD (g), DACS, Dublin Core, and EAD."
License	Commercial Two options are available: a perpetual license and a subscription to the hosted service
Purchasing Cost	The price depends on whether STAR/Archives is hosted by the company or on the institution's own servers, as well as the number of simultaneous users supported and several other variables. Training, data conversion, maintenance, and peripherals also entail separate costs. Cost estimates are provided on request.
Maintenance Cost	Software maintenance is included in the subscription cost of the hosted solution. For the perpetual license, the first year of software maintenance is free.
User Support	• Available 12 hours a day, Monday–Friday • Users can contact support by phone, e-mail, or fax. • Web site • Teleconferencing • Web conference • Reputed to provide good customer service.

Training	Yes: Generally delivered via teleconference; however, on-site training is also available. For teleconferenced training: 12 hours initial training, 6 hours follow-up training. For onsite training: 3 days on site. System management training is in addition.
System Requirements	Varies by the operating system of the server. The following server operating systems are supported: Windows 2000/2003; Unix; Linux. Users responsible for creating records and managing the application need PCs that run under Windows 2000, Windows 2003, Windows XP, or Vista.
Technical Architecture	1. Windows client for managing collections 2. Web-based public search interface
Backup/Restore Utility	STAR relies on standard backup procedures that are included with operating systems and commercial third-party backup software.
Maturity	STAR itself was first released in 1982. Organizations have been using STAR to manage archival collections since 1983. STAR/Archives was released in 2003.
Hosting Available?	Yes
Demo/Sandbox Available?	Yes, by request
Sustainability	Maintained by company
Example Users	Available on request
Unique Strengths	1. Institutions without much technical support can have Cuadra host their data 2. Provides browser-based public search interface 3. Rich archival management features 4. Flexibility
Support for Importing/Exporting Metadata[44]	
Exports MARC	Yes
Exports EAD	Yes: Finding aids are generated in EAD as XML files (one user reported problems with EAD export).
Exports Dublin Core	Yes
Exports MODS	No
Exports METS	No
Exports MADS	No
Batch Exports EAD	Yes: EAD files for a repository can be exported as a batch.
Batch Exports MARC	Yes
Batch Export Tab Delimited Files	Yes
Imports EAD	Yes, with support from the company
Imports MARC	Yes, with support from the company
Imports Tab Delimited Files/ CSV	Yes: Customers that have perpetual licenses can use STAR's toolkit to filter and import such data. For others, and for most new customers, Cuadra staff can import such data on the user's behalf.

[44] In addition to exporting data in formats that have been predefined, STAR includes tools for exporting data in tagged format and then filtering it into other formats. STAR also includes tools for filtering and importing data from many industry standard formats (e.g., delimited, fixed-column position, tagged, MARC) This part of STAR's functionality is available to all customers that have purchased STAR under a perpetual license and to those that subscribe to the premium level of service for the hosted service.

Imports Digital Image Files	Digital image files are linked to item-level records, not imported. Cuadra links the files to the item-level records as part of legacy data conversion projects. From then on, users themselves link the files as they enter item-level records.
Import Accession Data	Yes: Customers that have perpetual licenses can use STAR's toolkit to filter and import such data. For others, and for most new customers, Cuadra staff can import these data on the user's behalf.
Batch Import EAD	Yes, with support from company
Batch Import MARC	Yes, with support from company
Batch Import CSV	Yes: Customers that have perpetual licenses can use STAR's toolkit to filter and import such data. For others, Cuadra staff can import these data on the users behalf
Collection Management Features	
Appraisals	Yes
Accessions	Yes
Create Deeds of Gift	Yes
Prioritize Processing Order	No
Track Donors	Yes
Project Management	No
Record Condition	Yes: Includes fields for recording condition as well as conservation.
Manage Locations	Yes
Manage Restricted Materials	Yes: "Control who can see records as well as the associated images and files."
Manage Rights	Yes: "Records reproduction and other ownership rights and logs rights granted to others."
Manage Loans and Exhibits	Yes, loans. Support for exhibit management is planned.
Deaccessioning	Yes
Reference Support	No
Generate Reports	Yes, customizable report function
Track Repository Statistics	While the application does not yet meet the standards that are being developed by the University of Michigan, several statistical reports are included in STAR/Archives.
Resource Description	
Authority Control	Yes
Controlled Vocabulary	Yes
Compliance to Archival Standards	ISAD(G), EAD, Dublin Core, DACS
Data Validation	Yes
Templating/Default Fields	Yes
Support for Digital Media	Yes
Internationalization	Partial: supports translation of user interfaces
Flexibility of Data Model	Yes
Item-level Description	Yes
Reorganize Hierarchies	Yes: "Reorganize hierarchies as required."

Dynamically Generate EAD Finding Aids	Yes
Publish Finding Aids Online	Yes
Administrative Functions	
User Permissions	Yes
Support for Harvesting/ Syndication	No
Customization/ Configuration	Yes
Spell Check	Yes
Bug Reporting	Yes: Customers are encouraged to report problems to Customer Support. Problems are addressed as they are discovered or reported, and the customers affected by any particular problem are provided with either a fix or a workaround.
Interoperability with Digital Repository Systems	STAR includes APIs that allow other software programs to communicate with STAR.
User Interface	
Web Publishing	Yes: Web-based public interface that allows for searching within and across collections.
Browse	Yes
Search	Yes: "Search within or across collections"
Advanced Search	Yes
Customizable	Yes: "Advanced searching allows the use of explicit Boolean operators, set combinations, date-ranging, and field selection." In addition, both the look and the functionality of the Web module can be customized in many different ways.
Built-in Help	Yes
Link to Images and Other Files	Yes
Easy Data Entry	Yes
Other Features	• "Manage your inventory." • "Track items in circulation." • Includes a Web-based public access module that allows for searching both on and across collections. "Smart" hypertext search links, galleries of electronic files, and a "dual" finding aid report that allows the hierarchy for a given collection to be used as a navigation aid are all part of the public access module. • Many capabilities are provided to help archivists enter data easily and quickly. For instance, data can be entered in the Accessions module and then copied into the Cataloging module. • Legacy data conversion services are available.

ELOQUENT ARCHIVES	
Home Page	http://www.eloquent-systems.com/products/archives.shtml
Developer	Eloquent Systems Inc
Developer's Description	"Eloquent Archives is an integrated application including all the functions for archival description, accessioning/de-accessioning, controlling vocabulary, custodial management, research requests, tracking, and other workflow management. "Eloquent Archives software can easily be configured for any size or type of institution. Existing customers include state/provincial and local government, major corporations, and small heritage institutions. "Eloquent Archives complies with international standards such as ISAD(G), RAD, EAD, DACS, and ISAAR. The software supports hierarchical structures and multi-dimensional linking of data elements. Researchers can easily navigate through the database to find what they need."
License	Commercial or SaaS
Purchasing Cost	$4,000 to $35,000, depending on modules used and size of holdings. SaaS: No purchase; annual fee $2,700 to $9,500.
Maintenance Cost	15% of list price (not required with SaaS)
User Support	Unlimited hotline support with annual maintenance fee
Training	Just-in-time with WebEx remote service
System Requirements	Any MS Windows Server for software; any Internet browser for all client and admin functions
Technical Architecture	Entirely Web-based
Backup/Restore Utility	Yes: "Easy recovery of deleted data."
Maturity	Smooth progression from DOS, Windows, and Web over 20 years
Hosting Available?	Yes
Demo/Sandbox Available?	Yes
Sustainability	The software will run forever if you do not make significant changes to the server system software. Data can be exported at any time. Annual support fees are highly advisable, but not mandatory.
Example Users	• Lawrence Livermore National Laboratory • New Mexico State Records Centre and Archives [Public Database] • University of New Brunswick • Virginia Union University [Public Database] • California State Archives [Public Database] • Emporia State University [Public Database] • AVID Center [Public Database] [HTML Tree Index] • City of Toronto Archives [Public Database]
Unique Features	• Track researchers and usage of collections • Supports online research requests • Google Map interface for search results • No coding required for HTML/EAD output • Exported data delivered as automatic e-mail attachment

	automatically to user • Very modular for flexible pricing and configuration • Expands to include library, museum, and records management applications.
Support for Importing/Exporting Metadata	
Exports MARC	No, but exported EAD can be run through free publicly available EAD-to-MARC conversion software.
Exports EAD	Yes
Exports Dublin Core	Yes
Exports MODS	P – Eloquent XML Export Utility can be configured the DTD for MODS.
Exports METS	P – Eloquent XML Export Utility can be configured the DTD for METS.
Exports MADS	P – Eloquent XML Export Utility can be configured the DTD for MADS.
Batch Exports EAD	Yes
Batch Exports MARC	P – Export to EAD and use third-party utility to convert to MARC
Batch Export Tab Delimited Files	Yes
Imports EAD	Yes
Imports MARC	Yes: For library component of product; from there, integrated with archives or migrated to descriptive record structure.
Imports Tab Delimited Files/CSV	Yes
Imports Digital Image Files	Yes: Attaches all formats of digital content to metadata.
Import Accession Data	Yes
Batch Import EAD	Yes
Batch Import MARC	Yes: For library component of product; from there, integrated with archives or migrated to descriptive record structure.
Batch Import CSV	Yes
Collection Management Features	
Appraisals	Can be custom tailored for minimal charge.
Accessions	Yes
Create Deeds of Gift	Yes
Prioritize Processing Order	Yes, can be tailored.
Track Donors	Yes
Project Management	Yes: • "Monitor the status of accessions." • "Track archivists responsible for the accession."
Record Condition	Yes: "Track accessioning, location management, preservation and treatment."
Manage Locations	Yes
Manage Restricted Materials	Yes: "Record access restrictions."
Manage Rights	Configurable user groups and users ranging through public, staff, and administrator.
Manage Loans and Exhibits	Yes
Deaccessioning	Yes
Reference Support	Partial: "Manage reading room research activities."

Generate Reports	Yes: "Generate reports in HTML, PDF, XML or ASCII."
Track Repository Statistics	Partial: • "Log all use of materials." • "Log all research requests." • Log size (linear and cubic measure) in detail and summary totals by various selection criteria.
Resource Description	
Authority Control	Yes, compliant with ISAAR(CPF)
Controlled Vocabulary	Yes, support for building thesauri
Compliance to Archival Standards	Yes: "Invoke DACS, ISAD(G) and RAD standards, or custom versions."
Data Validation	Yes, on specific fields
Templating/Default Fields	Yes, and copy of entire existing record for minor modification into a new record.
Support for Digital Media	Yes: "Include any form of digital content such as documents, images, and multimedia."
Internationalization	Yes: "Support concurrent users in the language of their choice."
Flexibility of Data Model	Yes, with WebGENCAT database component all components of the application can be modified or enhanced. Or, a new application can be built from scratch.
Item-level Description	Yes
Reorganize Hierarchies	Yes: Supports any number of levels; user-definable names for levels; flexible structures within various branches of a tree.
Dynamically Generate EAD Finding Aids	Yes
Publish Finding Aids Online	Yes
Administrative Functions	
User Permissions	Yes: "Restrict access to sensitive data through privacy and security controls."
Support for Harvesting/ Syndication	Can export EAD for import into another system; EAD contains links for dynamic access to source database; can link out to other databases for related data. Eloquent's Branch Module supports building a union catalog for consortia of smaller institutions.
Customization/ Configuration	Yes: "Create additional fields, entry screens, and reports with development tools."
Spell Check	Yes: Available with some browsers; can be added to all other browsers; uses the browser vocabulary/dictionary.
Bug Reporting	Yes, covered with annual maintenance fee.
Interoperability with Digital Repository Systems	No, but appropriate interface can be easily tailored for most digital repositories.
User Interface	
Web Publishing	Yes
Browse	Yes
Search	Yes
Advanced Search	• Can save searches. • "Precision searches with authorized terms and Boolean logic." • "Searching the database plots the locations on Google™ Maps. Clicking points on the map presents detail and images from your database."
Customizable	Yes: "Full control over look and feel of Web pages."

Built-in Help	Yes: "Context-sensitive online help."
Link to Images and Other Files	Yes
Easy Data Entry	Yes, through Web forms
Other Features	• "Print barcodes and labels in PDF format." • "Record research requests." • "Highlight entered search terms in PDFs when they are returned as search results." • "Generate entire Websites on the fly using your archival descriptions."

ICA-AToM 1.2[45]	
Home Page	http://ica-atom.org/
Developer	Project Partners: • The International Council on Archives (ICA) • Artefactual Systems Inc. • The Dutch Archiefschool Research Institute • Alouette Canada Project Funders: • United Arab Emirates Center for Documentation and Research • Dutch Archiefschool Research Institute • French Archives Directorate • UNESCO Information For All Programme • World Bank Library and Archives of Development
Developer's Description	"ICA-AtoM is Web-based archival description software that is based on International Council on Archives (ICA) standards. 'AtoM' is an acronym for 'Access to Memory'. ICA-AtoM is multi-lingual and supports multi-repository collections."
License	GPL v2 license
Purchasing Cost	Free
Maintenance Cost	Free
User Support	• User mailing list • Wiki • Forums • Manual • Help function
Training	"Yes, including train-the-trainers package"
System Requirements	• Web server (e.g., Apache or IIS) • Database (e.g., MySQL, SQL Server, Postgres) • Web browser for archivist/end-user
Technical Architecture	"ICA-AtoM comprises: • HTML pages served to a Web browser from a Web server. Apache is used in development but ICA-AtoM is also compatible with IIS. • A database on a database server. MySQL is used in development, but ICA-AtoM uses a database abstraction layer and is therefore also compatible with Postgres, SQLite, SQLServer, Oracle, etc. • PHP5 software code that manage requests and responses between the Web clients, the application logic and the application content stored in the database. • The Symfony Web framework that organizes the component parts using object-orientation and best practice Web design

[45] ICA-AToM 1.2 is under development and is projected to be released in September 2009.

	patterns. • The Qubit open information management toolkit, developed by the ICA-AtoM project and customized to make the ICA-AtoM application [fully Web-based]."
Backup/Restore Utility	Yes: Will be included in 1.2.
Maturity	Currently under development; projected to be available in summer 2009. ICA-AToM 1.0 was released for beta testing in July, 2008
Hosting Available?	Yes: "The core developers (Artefactual Systems) will offer hosting and other service providers will be encouraged to provide hosting services."
Demo/Sandbox Available?	Yes: A demo CD is available for download at http://ica-atom.org/democd. An online demo copy is available at http://ica-atom.org/demo. This will give anyone a login password and allow you to play with the software. In addition, the software will be available for download with a Web application installer. In addition, the software code is available for checkout at http://ica-atom.org/code.html.
Sustainability	ICA-AToM is pursuing a multifaceted approach to sustainability, including grant support, membership, and training workshops. They have put forward a business model: "The ICA-AtoM software will always be publicly available as free and open source software. In order to raise funds to achieve the project's objectives and values, the ICA-AtoM Project will establish a business model that includes the following components: 1. applying for grants and subsidies; 2. charging fees for delivering ICA-AtoM–related training workshops; 3. creating a purely voluntary institutional membership model, based on fees or contributions in kind, to pool the resources of those institutions that are using ICA-AtoM; 4. charging a commission for brokering ICA-AtoM technical services between recommended third-party contractors and institutions seeking assistance with ICA-AtoM installation, hosting, customization, new feature development, etc." A "bounty" model is also being considered.
Example Users	Dutch Archiefschool Research Institute
Unique Features	• "Supports single or multi-repository implementations." • "Follows accessibility best practices." • "Provides multi-lingual interfaces and content translation features." • Will support harvesting and syndication through OAI and ATOM. • Will interface with digital repositories.
Support for Importing/Exporting Metadata	
Exports MARC	Yes
Exports EAD	Yes
Exports Dublin Core	Yes

Exports MODS	Yes
Exports METS	Yes
Exports MADS	?
Batch Exports EAD	Yes
Batch Exports MARC	Yes
Batch Export Tab Delimited Files	Yes
Imports EAD	Yes
Imports MARC	Yes
Imports Tab Delimited Files/CSV	Yes
Imports Digital Image Files	Yes
Import Accession Data	?
Batch Import EAD	Yes
Batch Import MARC	MARC XML
Batch Import YML	Yes
Batch Import CSV	Yes
Collection Management Features	
Appraisals	Yes
Accessions	Yes
Create Deeds of Gift	Yes
Prioritize Processing Order	?
Track Donors	Yes
Project Management	?
Record Condition	?
Manage Locations	Yes
Manage Restricted Materials	?
Manage Rights	Yes
Manage Loans and Exhibits	?
Deaccessioning	?
Reference Support	Yes, retrieval and reproduction requests
Generate Reports	Yes
Track Repository Statistics	Yes
Resource Description	
Authority Control	Yes
Controlled Vocabulary	Yes: "Controlled vocabularies (functions, subjects, places) used throughout the system (e.g., as access points or in drop-down value lists). Organized into separate taxonomies."
Compliance to Archival Standards	Yes: "ICA-AtoM is built around the International Council on Archives' (ICA) descriptive standards: • General International Standard Archival Description (ISAD-G) - 2nd edition, 1999. • International Standard Archival Authority Record (Corporate bodies, Persons, Families) (ISAAR [CPF[) - 2nd edition, 2003.

	• International Standard For Describing Institutions with Archival Holdings (ISDIAH) - 1st edition, March 2008. Future iterations of ICA-AtoM will support: • International Standard For Describing Functions (ISDF) - 1st edition, May 2007." • Digital object metadata is based on METS.
Data Validation	?
Templating/Default Fields	Yes: Admin can create templates.
Support for Digital Media	Yes: "Upload and display of digital media. Interface to digital media repositories."
Internationalization	Yes: "All screen elements (buttons, links, fields, labels) and database contents can be translated into multiple languages. The current version of ICA-AtoM (v1.0 beta) supports the following languages: * Dutch * English * French * Portuguese * Spanish" • UTF-8 character support • Will support "all languages using left-to-right, right-to-left and up-to-down scripts."
Flexibility of Data Model	Yes, custom user-fields, crosswalks to other standard
Item-level Description	Yes
Support for Hierarchical Description	Yes, multilevel description
Dynamically Generate EAD Finding Aids	Yes
Publish finding aids online	Yes
Administrative Functions	
User Permissions	Yes: Roles include "Researcher, Contributor, Editor, Translator and Administrator."
Support for Harvesting/ Syndication	Yes, via OAI and IETF Atom Publishing Protocol (APP)
Customization/ Configuration	Yes, custom menus; application configuration settings
Spell Check	?
Bug Reporting	Online bug/issue tracking database available to public
Interoperability with Digital Repository Systems/Multi-institution Support	"ICA-AtoM can be used by a single institution for its own descriptions or it can be set up as a multi-repository "union list" accepting descriptions from any number of contributing institutions." Interfaces with digital media repositories.

User Interface	
Web Publishing	Fully Web based: "All user interactions with the system (create, view, search, update, and delete information) take place through the user's Web browser. Users access HTML pages on the Web server; clicking a button or link triggers a PHP script that sends a command to the database (create, read, update, delete) and returns the output as HTML back to the user's browser."
Browse	Yes
Search	Yes: Zend Search Lucene search engine
Advanced Search	Yes
Customizable	Yes, theming/skinning
Built-in Help	Yes
Link to Images and Other Files	Yes
Easy Data Entry	Yes
Other Features	

MINISIS M2A	
Home Page	http://www.MINISISinc.com/index.php?page=M2A
Developer	MINISIS Inc (Canadian based, with five regional offices)
Developer's Description	"The M2A Application was developed in conjunction with the Archives of Ontario, as there was no existing archival management application that fit their specific needs. …The core feature of the M2A application is the Archives Descriptive Database (ADD). The ADD has five primary linked databases: accessions, descriptions, lists, name authorities, plus a database that provides linkages between the authorities and descriptive components. In addition, there are multiple interfaces available. For instance, the system can support a senior descriptive officer profile that can review/edit or note required changes of all new records in M2A (before they become permanent records in the system). Whereas another profile exists to allow archivists to edit and update only the records they created. This type of 'profiling' provides even greater flexibility for a client. "The M2A was designed to allow clients to document their collections in two primary classifications: government records at a series-level description; or private records at a collection= level description. The M2A system supports the comprehensive documentation for any archival record with nine principal levels. The software is easy to adapt, can satisfy all requirements for archival and other management needs from accessioning to description to vital statistics."
License	Commercial
Purchasing Cost	Depends on number of users, country GDP, number of applications purchased M2A is sold as a complete system whether all the modules are required or not. Some features can be blocked to reduce costs. Those features can then be engaged as the institution requires or has the resources to do so. MINISIS M2A can be expensive, but M2A Web, which is geared toward smaller archives, provides an inexpensive hosted solution for online creation and publishing of archival information.
Maintenance Cost	MINISIS has a technical support and maintenance (TSM) Program that is optional and renewable on a yearly basis. Three levels of support are offered. All include access to technical support and free access to all updates of the software. Each one is different; the higher the level of support, the more services included. For instance, VIP includes on-site support at the client site for 10 days per year along with 1 hour response times guaranteed, whereas basic level support means only access to live telephone resources from Monday to Friday only, 7 a.m. to 7 p.m. The levels are: • 15% (BASIC TSM fee) • 19% (PREMIUM TSM fee) • 25% (VIP TSM fee).

	This includes software updates and services for technical support. There are no further ongoing costs, and even the TSM is optional not required.
User Support	• Help desk and, depending on the level of TSM (see above), ability to define your contact within MINISIS Inc to ensure you have resources familiar with you and your application. • Access to documentation/knowledgebase • User groups (regional and international) • Chat/remote desktop/Net meetings • Manuals • Site visits
Training	Yes
System Requirements	• Windows NT or later on server • XP2 or better on clients • IIS MINISIS recommends updates based on Microsoft's indication of support.
Technical Architecture	Stand-alone client-server. or "thin"/Web client architecture is supported, along with ASP/hosted solutions.
Backup/Restore Utility	Use the default backup utilities on your current server.
Maturity	The first release of the ADD, M2A's first incarnation, was developed in 1999. M2A is now into its fourth official release version.
Hosting Available?	Yes
Demo/Sandbox Available?	Yes: You can download an old copy (1 to 2 years old) off the Web site. There is also a link to M2A Online, the ASP version from the same page. Numerous clients have put the MINISIS Web Interface (MWI) on top of their M2A to allow for an OPAC for the public and researches.
Sustainability	MINISIS Inc has over 33 years of technological progression behind with over $45 million invested in it since the early 1970s. It is protected with over $4 million of E&O insurance and has a following of 1,000s of MINISIS users across 63 countries. The first client to use MINISIS for archives was in 1977, and the last client to implement MINISIS was yesterday. The user community growing continuously.
Example Users	Province of Ontario Archives, Province of Manitoba, Saskatchewan Archives Board, the City of Ottawa, City of London (U.K.), State of Alaska, the Historic New Orleans Collection Manuscripts Division, Rhode Island Historical Society, Historic New England, Ford Motor Company, and Center for Creative Photography. See the www.MINISISinc.com Web site for demonstrations.

Unique Features	• Multihierarchical display and manipulation of branches across levels and record groups
	• Customizable
	• Covers all aspects of Archival Automation including:
	  o Accessions
	  o Space Audit/Mgt.
	  o Appraisals
	  o Processing
	  o Description

	○ Authorities ○ Client Registration ○ Order/Tracking/Request processes ○ Reproduction management/DAMS ○ Conservation/Treatment ○ Enquiries/Repository Mgt. ○ Vital Statistics ○ Media management from image, text, video and audio and compliance with z39.87 ○ Many reports including automatic creation of Finding Aids, linking/display of media files, and EAD and MARC Import and Export.
Support for Importing/Exporting Metadata	
Exports MARC	Yes
Exports EAD	Yes: "MINISIS also ensured that the application is EAD compliant for data transfer."
Exports Dublin Core	Yes
Exports MODS	Yes
Exports METS	Yes
Exports MADS	Yes: Many American clients have the XML map.
Batch Exports EAD	Yes
Batch Exports MARC	Yes
Batch Export Tab Delimited Files	Yes.
Imports EAD	Yes
Imports MARC	Yes
Imports Tab Delimited Files/CSV	Yes
Imports Digital Image Files	Yes
Import Accession Data	Yes
Batch Import EAD	Yes
Batch Import MARC	Yes
Batch Import CSV	Yes
Collection Management Features	
Appraisals	Yes
Accessions	Yes
Create Deeds of Gift	Yes
Prioritize Processing Order	Yes
Track Donors	Yes
Project Management	MINISIS provides an event handler tool that can be implemented to direct project activities if that is desired.
Record Condition	Yes
Manage Locations	Yes
Manage Restricted Materials	Yes
Manage Rights	Yes
Manage Loans and Exhibits	Yes
Deaccessioning	Yes
Reference Support	Yes: "Connectivity to other modules such as client registration,

	reproduction ordering and tracking and enquiries management."
Generate Reports	Yes: Two report generators are included in the MINISIS toolkit to allow both technical and nontechnical personnel to build reports.
Track Repository Statistics	Yes
Resource Description	
Authority Control	Yes
Controlled vocabulary	Yes: Clients can determine and set any vocabulary for fields, validation tables, and authorities at their will.
Compliance to Archival Standards	Yes: "ISAD(G), RAD, and EAD compliant"
Data Validation	Yes
Templating Default Fields	Yes
Support for Digital Media	Yes: "Images database; Multimedia management, including digital images, maps, photographs videos with supporting text,"
Internationalization	Yes: UTF-8 support; supports translation of user interface; support for Latin-based languages, Chinese, and Arabic
Flexibility of Data Model	Yes: "For instance, M2A has been designed to allow flexibility in the level of description that is applied. The Archives of Ontario employs the 'series' as the highest level of arrangement for government records. Whereas for private or non-government records like that in New Orleans or Rhode Island or our European clients–they engage the fonds or collection level as the highest level of arrangement. Key to this flexible approach is that M2A enables the user to decide the most appropriate level of classification to be applied. The M2A and MINISIS toolkit encourage the user to adapt the application to meet their specific needs." The entire system can be modified to fit and add any features, functions, and processes required.
Item-level Description	Yes
Support for Hierarchical Description	Yes: "In-built hierarchical structures to handle multilevel description"
Dynamically Generate EAD Finding Aids	Yes
Publish Finding Aids Online	Yes
Administrative Functions	
User Permissions	Yes, user profiles
Support for Harvesting/ Syndication	Yes, OAI
Customization/ Configuration	Yes: "100% customization of the application through the use of the SMA toolkit"
Spell Check	No
Bug Reporting	Yes
Interoperability with Digital Repository Systems	Yes: Depends on the product, but most products can be linked via ODBC, XML, or similar protocols and tools.
User Interface	
Web Publishing	Yes
Browse	Yes

Search	Yes, Web-enabled searching over all databases, including federated searching
Advanced Search	Yes
Customizable	Yes
Built-in Help	Yes
Link to Images and Other Files	Yes
Easy Data Entry	Yes
Other Features	Yes: In addition to the modules listed earlier, MINISIS comes with a complete SMA toolkit that allows for changing everything from indexing to screens to reports, for instance. Also, the complete Web interface (called "MINISIS Web Interface," or MWI for short), allows users to set up and share/restrict data or types of interfaces via the M2A. Also, MINISIS provides a product called "MINT" which integrates archival, museum, and library applications into one, allowing for total management of most materials kept in these organizations through one interface.

COLLECTIVEACCESS	
Home Page	http://www.collectiveaccess.org/
Developer	Whirl-i-Gig, along with partner institutions
Developer's Description	Formerly called OpenCollection, CollectiveAccess is "a full-featured collections management and online access application for museums, archives and digital collections. It is designed to handle large, heterogeneous collections that have complex cataloguing requirements and require support for a variety of metadata standards and media formats. Unlike most other collections management applications, CollectiveAccess is completely Web-based. All cataloging, search and administrative functions are accessed using common Web-browser software, untying users from specific operating systems and making cataloguing by distributed teams and online access to collections information simple, efficient and inexpensive."
License	GNU General Public License (GPL) version 2
Purchasing Cost	Free
Maintenance Cost	Free
User Support	• FAQ • Web site • Forum • Mailing list • CollectiveAccess *User's Guide* and *System Administrator's Guide* are being prepared • TRAC/development wiki
Training	Available from developers. Cost is based upon location and desired scope of training.
System Requirements	• User: Any operating system that can run a modern Web browser (including Mac OS X, Windows 2000/2003/XP, Linux, BSD*, and Solaris) is supported. Does not require a live Internet connection. "It can just as easily be run on an internal-access-only network as on a public one. In fact, the majority of users we are aware of run CollectiveAccess on internal networks without Internet access. A few users have even taken this one step further and run CollectiveAccess on their laptops in a "network of one" single-user configuration." • Server: "The CollectiveAccess server software should run on any Unix-like operating system as well as Windows 2003 Server and Windows XP. This covers all commonly deployed operating systems. CollectiveAccess is tested on several distributions of Linux (Debian, Red Hat Enterprise Linux, SuSE), Windows 2003, Windows XP and Mac OS X 10.4."
Technical Architecture	Written in PHP and MySQL
Backup/Restore Utility	Backup and restore is possible using free tools bundled with MySQL.
Maturity	Work on what became CollectiveAccess began in 2003. The first public release, version 0.50, was made available in March of 2007. Version 0.54 released on May 31, 2008.

Hosting Available?	No CollectiveAccess-specific hosting services are available at this time. A commercial vendor in Belgium is considering such a service for debut in 2009. However, CollectiveAccess has been designed for compatibility with low-cost Internet service providers such as 1and1 Internet, Pair Networks, HostMySite.com.
Demo/Sandbox Available?	Yes
Sustainability	Project is supported by a diverse group of museums, historical societies, archives, and corporate archives in the United States and Europe.
Example Users	Royal Museum for Central Africa, Tervuren, Belgium; Berkeley Natural History Museums, University of California, Berkeley; Coney Island History Project; Durst Organization; Parrish Art Museum
Unique Features	• Customizable • Flexible data model accommodates many different types of collections and supports different data standards and controlled vocabularies. • Robust support for multimedia, including images, audio, video, and text. Built-in tool for zooming and panning images. When you upload audio files, they are automatically converted to MP3. Provides simple support for time-based cataloging. • Web based, which facilitates distributed cataloging and enables administrative users to do enter metadata and search collections online
Support for Importing/Exporting Metadata	
Exports MARC	Not yet, but due with next release
Exports EAD	Not yet, but due with next release
Exports Dublin Core	Not yet, but due with next release
Exports MODS	Not yet, but MODS import and export planned for upcoming release
Exports METS	Not yet, but METS import and export planned for upcoming release
Exports MADS	Not yet, but MADS import and export planned for upcoming release
Batch Exports EAD	Not yet, but due with next release
Batch Exports MARC	Not yet, but due with next release
Batch Export Tab Delimited Files	Not yet, but due with next release
Imports EAD	Not yet, but due with next release
Imports MARC	Not yet, but due with next release
Imports Tab Delimited Files/CSV	Not yet, but due with next release
Imports Digital Image Files	Yes: "Batch upload of media files. The 'File Space' is a holding area for media files to be added to object records. Using a Web-browser-based user interface media may be uploaded to the File Space in large batches (as ZIP, Tar-Gzip, or GZip encoded archives) for subsequent cataloguing. In most cases, this is considerably faster than uploading media file-by-file."
Import Accession Data	Not yet, but due with next release
Batch Import EAD	Not yet, but due with next release
Batch Import MARC	Not yet, but due with next release
Batch Import CSV	Not yet, but due with next release

Collection Management Features	
Appraisals	Yes, appraisal documentation
Accessions	Yes: "Tools for managing accession numbering, tracking of object donor information and lot-level cataloguing for use by collection registrars are included." The "lots" facility provides these functions; it is also possible to configure OC to create unique accession numbers according to a pattern and to enforce standards for accession numbers. See http://trac.CollectiveAccess.org/wiki/IDNumbers and http://trac.CollectiveAccess.org/wiki/MultipartIDNumber.
Create Deeds of Gift	Yes: "Printable form letters for registrarial functions" are planned for September 15, 2008 release.
Prioritize Processing Order	No
Track Donors	Yes
Project Management	There are no formal project management features, although this is something that has been discussed for 2009. There are quite a lot of de facto project management features in there already in the form of tagging of items.
Record Condition	Yes, custodial notes
Manage Locations	Yes: "Managing a hierarchy of storage locations and recording current and previous locations of objects."
Manage Restricted Materials	Yes
Manage Rights	Yes: "Recording acquisition of use rights and licensing of use rights for objects."
Manage Loans and Exhibits	Partial: Can record loans in note field, but fuller support planned for future release.
Deaccessioning	Yes, deaccessioning field
Reference Support	The system does not currently track how many times a record has been viewed. It may be added in a future release however; it is not difficult to do.
Generate Reports	Yes: "The search engine's support for Boolean combination, exclusion, wildcards and field-level limiting makes it possible to pose very specific queries suitable for reporting. The result of any search in CollectiveAccess may be downloaded as a tab-delimited file suitable for import into Microsoft Excel or similar applications for reporting purposes. The list of report fields and their output order may be customized." An improved version is coming in v0.6.
Track Repository Statistics	A project participant, Seth van Hooland, is working on the creating of metadata quality assessment tools for integration into CollectiveAccess as part of his Ph.D. work. Some these tools, at least, will be integrated into CollectiveAccess this fall.
Resource Description	
Authority Control	"CollectiveAccess has a full set of tools for managing and cataloguing with the following types of authority lists: • Entities authority. An authority list for individual people, groups, and corporations. • Place name authority. A hierarchical authority list for geographic place names. Supports an unlimited number of independent place hierarchies, enabling side-by-side usage of

	established authorities such as the Getty TGN and self-built authorities for local areas. • Occurrences authority. A flexible authority for 'things' that are not entities or geographic place names. The occurrences authority is a sort of "construction kit" for non-hierarchical authorities. You may define any number of occurrence types with each type manifesting itself in the system as a distinct authority. This allows the creation of any number of very specific authority lists. Typical applications of occurrences are to support authorities for film productions, expeditions, exhibitions, and events such as wars, storms, elections, etc., but any flat authority list can be implemented using occurrences. • Collections authority. An authority list of collections into which catalogued objects are organized. Each collection can have contextual information that may be displayed to end-users. For some users this may be used to model significant historical collection structures; for others it may prove to be a useful organizational tool."
Controlled Vocabulary	"An unlimited number of hierarchical controlled vocabularies may be loaded into the system and used side-by-side for cataloguing. Management tools allow selected users to edit existing vocabularies or create new ones from scratch. "A tool is included to import Getty Art and Architecture Thesaurus (AAT) data files into CollectiveAccess. It should be possible to load other thesauri into CollectiveAccess without modification to the core system."
Compliance to Archival Standards	Flexible, configurable data model; can set up to support particular standards by creating object- and authority-level attributes. These attributes can map to specific elements of various standards.
Data Validation	Yes: "Configurable id/accession numbering for lots, objects and authorities. CollectiveAccess may be configured to enforce standards and/or auto-generate unique identifiers for lots, objects, and authority records. Identifiers may be composed of multiple parts, each with its own specification and requirements." You can also set pattern matching for attributes and length and value boundary checks for text and number numbers respectively. Dates are always validated with invalid dates rejected. Uploaded media is also validated with unrecognized or invalid formats rejected.
Templating/Default Fields	Yes: "Object 'templates' give you the ability to use an existing object record as the basis of new records."
Support for Digital Media	Yes: "CollectiveAccess understands and can process, convert and display digital media files in many formats, including: • Imagery: JPEG, JPEG-2000, GIF, PNG, TIFF, PSD (Photoshop), BMP, Tilepic • Multi-page documents: PDF, PS (Postscript), Microsoft Word • Video: QuickTime, RealMedia, WindowsMedia, FLV (Flash), MPEG-2, MPEG-4 • Audio: MP3, AIFF, WAV • Multimedia: SWF (Flash), QuickTime VR"

	"CollectiveAccess is capable of converting non-Web-viewable formats such as TIFF into Web-friendly formats (JPEG for example) at various sizes. The original format can be retained and made accessible for download. For small files, conversion and resizing may be done in near real-time. For larger files, which can take a considerable amount of time to process, conversion tasks can be queued for later processing on a designated media-processing server. Whatever the uploaded file size, cataloguers are never forced to wait for long while media files are processed. "Support for individual media types is implemented using a modular plug-in architecture which makes it possible to add support for new media formats without requiring modifications to the core CollectiveAccess system. "Video files are automatically converted to Flash Video format for playback with CollectiveAccess's built-in video player. The originally uploaded video file is retained as well and can be played back if the user's browser supports the format. Similarly, uploaded audio files are converted to MP3 format for playback with CollectiveAccess's built-in audio player, with original files retained."
Internationalization	"Internationalized user interface with translations into German and Dutch" planned for September 15, 2008.
Flexibility of Data Model	Yes
Item-level Description	Yes, well suited for item-level description. Interface for describing objects include previews of media files.
Reorganize Hierarchies	Yes?: "Objects may be arranged into hierarchies using "is-a-part-of" relationships. The search engine supports traversal of these hierarchies. CollectiveAccess also supports hierarchical place authorities and vocabularies."
Dynamically Generate EAD Finding Aids	Not yet
Publish Finding Aids Online	No: Seems to be focused more on museum objects (and lots) rather than archival collections. However, it looks like EAD can be mapped to existing fields and hierarchies. (A finding-aid interface can be developed rather easily and is the subject of a just-started project with Northeast Historic Films, a regional film archive in Maine [http://www.oldfilm.org]. They are using PBCore as their metadata scheme and to format their finding aids; CollectiveAccess is supporting them in developing a finding aid presentation interface for their Web site
Administrative Functions	
User Permissions	Yes
Support for Harvesting/ Syndication	OAI-PMH support planned for September 15, 2008, release
Customization/ Configuration	"In addition to the standard set of CollectiveAccess fields representing concepts applicable to anything that can be catalogued—things like "accession number"—sets of custom fields (also known as "attributes") may be defined. These sets can (and usually should) map to established metadata standards such as Dublin Core, Darwin Core, VRA Core 3.0, CDWA Lite, et al.

	Attributes may be type-specific: they can be defined such that they are only available for specific types of catalogued items (e.g., photographs, video tapes, films). They may also be repeating, and it is possible to impose controls upon input formats. "Virtually all configuration and administration of an CollectiveAccess installation is performed using a convenient Web-based user interface."
Spell Check	Not yet. Will happen in v0.7 release.
Bug Reporting	Bugs can be reported at http://trac.CollectiveAccess.org.
Interoperability with Digital Repository Systems	Planned integration with Fedora in 2009.
User Interface	
Web Publishing	Yes: "A full-featured, search-only (no cataloguing or editing tools), Web-based user interface, intended for public use. This interface provides access to the same search engine used in the cataloguing interface, but honors display restrictions set by cataloguers and includes additional presentation options for results, including map, slide show, and timeline-based display modes" A demo is available here: http://demo.CollectiveAccess.org/ocaccess.
Browse	Yes
Search	Yes: "Flexible search engine. The built-in search engine supports full-text searching over all fields in database, field-limited searches, wildcards, stemming, Boolean combinations, exclusion (Boolean "NOT" operator), phrase searches, synonomy and more. Both simple Google-like and advanced search interfaces are offered. "Search results may be viewed in several formats: as a list, as a series of thumbnails, as a mosaic (many small icon-like square thumbnails on a single page) and, if found objects are associated with georeferenced place name authority items, as a map."
Advanced Search	Yes, see above
Customizable	Yes: "The public access module is designed to be easily personalized by those with basic Web development skills, and to provide a useful platform for more experienced developers seeking to create a highly customized user experience." You can also create your own customized front-end, like this one: http://artists.parrishart.org
Built-in Help	Partial: User manual is being written.
Link to Images and Other Files	Yes
Easy Data Entry	Yes, quick-add feature for adding new authority records while cataloging
Other Features	• "Automatic extraction of metadata from uploaded media files. Metadata embedded in uploaded media files in EXIF, IPTC, IRB and XMP formats is extracted and stored in the database where it can be accessed for search or display." • "Built-in Web-based high resolution "pan-and-zoom" image viewer. Images may be viewed at any resolution with continuous pan and zoom using CollectiveAccess's built-in

	Tilepic viewer." • "Mapping. Any number of point or path georeferences may be associated with entries in the place authority. The CollectiveAccess search interface can use this authority information to plot the locations of found objects using Google Maps. Georeferences may be entered by hand or through the upload of KML/KMZ format files exported from Google Earth or compatible software." • "Time-based cataloging. Tools for time-based cataloguing—cataloguing of arbitrary segments of time-based media such as video and audio—allow a cataloguer to create and catalogue "clips" from an object using the same descriptive methods that are employed for any other type of object." • "Labels may be printed for objects on pre-made label forms. Supported forms and labels are customizable and may include barcodes and images." • "CollectiveAccess can generate a preview of what cataloguing applied to an object will look like on a printable sheet or in a public interface. The preview can also serve as a useful summary of object information and a convenient means to launch searches for similar objects." • "Support for user comments and user tagging" planned for 9/15/2008 release."

PAST PERFECT 4	
Home Page	http://www.museumsoftware.com/
Developer	PastPerfect Software, Inc, (U.S. company)
Developer's Description	"PastPerfect sets the standard for collection management software. It is affordable, flexible and easy to use for both small organizations, and large collections." "PastPerfect conforms to the latest standards for cataloging archive, library, historic object, art object, natural history, archaeology, and photograph collections. It encompasses every aspect of collection and membership management. Automate accessions, cataloging, loans in, loans out, exhibits, condition reporting, and repatriation. Use Research and Reports for full access to your data. "PastPerfect now has over 6,200 clients."
License	Commercial
Purchasing Cost	• $870 for PastPerfect Basic Program Version 4.0 (full price) • Prices for add-on features such as Digital Imaging/Multi-Media, Network Upgrades, Barcode Printing, Virtual Exhibit, PastPerfect-Online, etc. available at http://www.museumsoftware.com/. • AASLH institutional members receive a 20% discount.
Maintenance Cost	There are no required annual fees with PastPerfect. Recommended annual support contracts range from $330-$720. AASLH institutional members receive a 20% discount. Without an annual support contract, clients pay $85 per incident.
User Support	• User's guide • FAQs, video tech tips, field descriptions, and other free downloads available at Web site • Free e-mail newsletter has tips on using PastPerfect • Technical and software operations support teams (help desk)
Training	Yes • PastPerfect software offers online training for collections management. The introductory rate is $59/person. • Three-day regional training sessions cover collections management, reports, Virtual Exhibit and contacts management. The cost is $119 per person per day. • On-site training is available for $750 per day plus travel expenses. A 2-day minimum is required.
System Requirements	Minimum hardware: Windows XP, Vista, Server 2003 operating systems, 1 GHz processor, 512 MB RAM for XP, 2 GB RAM for Vista, 1024x768 resolution color monitor, CD-ROM drive, laser, or inkjet printer Preferred hardware: Intel Pentium 4, 2 GHz+ processor, 2 GB RAM for XP, 3 GB RAM for Vista, 19" color monitor, CD/DVD recordable drive, high-speed Internet access

Technical Architecture	PastPerfect Version 4.0 is based in Microsoft Visual FoxPro 8. It is a relational database. With a network upgrade, users may install the program on multiple networked computers that share a dataset.
Backup/Restore utility	Yes
Maturity	Past Perfect Version 4.0 was released in October 2004..
Hosting Available?	PastPerfect is not Web based. The PastPerfect-Online Upgrade enables PastPerfect users to select the PastPerfect catalog records, images, and data fields they want to publish, and PastPerfect-Online will build a fully searchable, collections-based Web site. Features include Google search indexing, visitor search statistics, visitor feedback forms, and design customization tools.
Demo/Sandbox Available?	Yes, available as a free download from our Website.
Sustainability	Large client base. Support for old versions of software.
Example Users	6,200 museum clients. See http://www.museumsoftware.com/client_list.htm.
Unique Features	PastPerfect encompasses both collections and contacts management. It is an affordable and comprehensive software package that is easy to install, maintain, and use.
Support for Importing/Exporting Metadata	
Exports MARC	ezMARC Upgrade provides a customizable data map to import MARC records into PastPerfect catalogs.
Exports EAD	No, but is being considered for a future version.
Exports Dublin Core	Yes, Dublin Core XML
Exports MODS	No. PastPerfect enables user to export PastPerfect fields to XML.
Exports METS	No
Exports MADS	No
Batch Exports EAD	No
Batch Exports MARC	?
Batch Export Tab Delimited Files	?
Imports EAD	Not directly
Imports MARC	ezMARC Upgrade (see above)
Imports Tab Delimited Files/CSV	Yes
Imports Digital Image Files	The Multi-Media Upgrade enables users to attach digital images and link multimedia files to records.
Import Accession Data	PastPerfect users may import Accession, Objects, Archives, Photos, Library, and Contacts data from Excel, ASCII, dBase, and FoxPro. Conversions team can help transfer data from other sources.
Batch Import EAD	?
Batch Import MARC	?
Batch Import CSV	Yes?
Collection Management Features	
Appraisals	Yes
Accessions	Yes
Create Deeds of Gift	Yes
Prioritize Processing Order	Status field
Track Donors	Yes

Project Management	Yes: To-do list.
Record Condition	Yes
Manage Locations	Yes
Manage Restricted Materials	Yes
Manage Rights	Yes
Manage Loans and Exhibits	Yes
Deaccessioning	Yes
Reference Support	With new version of PastPerfect online, can see Web stats.
Generate Reports	Yes
Track Repository Statistics	No
Resource Description	
Authority Control	Yes
Controlled Vocabulary	Lexicon—The Revised Nomenclature for Museum Cataloging (Chenhall's Nomenclature) Authority files
Compliance to Archival Standards	Yes: "Fields conform to international standard ISAD(G). "
Data Validation	Partial: for authority control, numeric fields, etc.
Templating/Default Fields	Users can add records using "Fill with current data" or with default data.
Support for Digital Media	Can purchase Multi-Media/Digital Imaging Upgrade, "which has been enhanced to include not only digital imaging, but multi-media capabilities that allow you to attach and display audio, video, MS Word documents, Excel spreadsheets, PDFs, and URL Web links to each catalog record."
Internationalization	Dates formats may be set in General Information. UK clients can set PP for currency and other terminology changes.
Flexibility of Data Model	Partial: 22 custom fields in each catalog. Can use different authority files for different catalogs (Archives, Photos, Objects, Library).
Item-level Description	Yes
Support for Hierarchical Description	Yes, multilevel linking in Archives
Dynamically Generate EAD Finding Aids	No
Publish Finding Aids Online	Users can create a finding aid report that may be created in HTML (as with all reports). Reports may be "printed" to MS Word, PDF, and Plain Text as well as to a printer.
Administrative Functions	
User Permissions	Yes
Support for Harvesting/ Syndication	No
Customization/ Configuration	A number of functions are customizable, including all reports, browse screens, function keys. There are 22 custom fields per catalog.
Spell Check	Yes
Bug Reporting	Not built-in, but generally users e-mail or call with problems.

Interoperability with Digital Repository Systems	No
User Interface	
Web Publishing	With Virtual Exhibit, PastPerfect users may create keyword-searchable HTML Web pages that highlight collections through virtual exhibits. http://www.museumsoftware.com/virtual_exhibit.htm. Using PastPerfect-Online, PastPerfect users may create a searchable online catalog from PastPerfect records. http://www.museumsoftware.com/pponline.htm To see examples of PastPerfect-Online sites, go to www.pastperfect-online.com.
Browse	Yes
Search	Yes, PastPerfect enables users to search by indexed fields or any field in each catalog. Users can also search all four catalogs by keywords, common fields, people, search terms, or the lexicon. Yes: "Fully searchable container list for each record."
Advanced Search	Yes: Search by any of the fields.
Customizable	There are 22 user-defined fields in each catalog. Browse screens, function keys, all reports, etc., are customizable.
Built-in Help	Yes: There is a help button that explains each field.
Link to Images and Other Files	Yes, with purchase of Digital Imaging Module
Easy Data Entry	Yes
Other Features	• Provides customized screens for different types of materials (maps, photos, etc.). • Provides support for fundraising, contacts, and the generation of letters. • Over 300 built-in reports and a Report Maker feature.

Appendix 4

Notes from Interviews with Archivists about Archon, Archivists' Toolkit, Cuadra STAR/Archives, Eloquent, and CollectiveAccess

Archivists' Toolkit Summary

To understand how archivists use Archivists' Toolkit (AT), I conducted phone interviews with five archivists between May and July 2008. To encourage honesty, I promised anonymity to the interviewees. I tried to capture the interviewees' remarks as accurately as possible, but I paraphrased and/or condensed some comments.

Reasons for Selecting AT

- "The initial attraction is that we have a lot of tools in place for archival description and collection management, but they're separate, distinct tools—data silos. We had the accessioning database separated from EAD database, along with a separate ILS, a separate database for A/V and photos, etc. The different databases were not integrated for end- users, just for the workflow point of view. People needed to learn various tools. It was difficult to reuse data because exporting demanded trying to cram it into whatever format the database was using."
- "We didn't have a budget to purchase anything. We probably could have designed our own database, but we couldn't have designed it to do everything that AT does. We could have customized things to meet past practice, but also decided to move away from old practices. We don't want to be too flexible any more. Also, it was appealing that we could have input into development process as beta testers."
- "Our interest in AT is a function of where we've been with managing descriptive information and collection information—the information was all over the place. Some descriptive information resides in the card catalog, the library OPAC, and paper finding aids, and some in combinations. Accessions information until recently was done in paper form only, which made it difficult from a reference standpoint to locate that information quickly. We built a small database in InMagic around 1998. Location information is still managed in an Access database. All of that information was all over the place and still pretty much is. We had to look in all those places and had to keep those systems up. What I liked about AT was it was free, I knew some of the people involved in building it and trusted their judgment, and I felt like they built it with a lot of input from archival community, which has its pros and cons—it slows down development time, but hopefully it meets as many needs of community as possible. With the latest upgrade, they've added new stuff. Based on AT's recent survey, they're pushing at areas that we would like to see added to it. But we're still struggling to fill in data for features they already have. Looking at it and seeing it demonstrated, it looked easy to use. And it is, particularly if you are familiar with archival terminology and descriptive fields. I liked the thought that we would be able to link our accessions information to our descriptive information. I liked that we could output easily to EAD. Our old system involved a lot of manual work. Now we can quickly spit out EAD or MARC. I haven't done much with the print version of output yet but I think they are making improvements to that. That's another feature that's nice on the descriptive end."

- "This is the first thing I've seen since AIMS (?) in the mid-1990s that links accessions to collections and allows you to search accessions easily for stuff that's unprocessed. One of the features in upcoming releases is the user tracking as well. Once we fully implement AT, we'll be able to eliminate other resources, especially InMagic, which probably won't be supported on future operating systems. I think it will reduce descriptive overhead for archives."
- "We had been looking for a management tool that would help us do some of the basic functions of an archive, such as managing our accessions, having a name authority and subject, and having some way of integrating finding aids into one tool. We've really been testing AT ever since learning about it. We've implemented parts of it fully, especially the accessions module. We are looking at or getting to point of implementing the authority module fully. We are still hesitating on the resource module, the place where we would import legacy EAD documents and create new EAD documents right in AT, export them, run them through our stylesheet—we're still testing that. We're hesitating because our legacy EAD documents are so diverse and weird. We have tested importing legacy docs and have seen what they come out like. AT is doing a lot better now with importing with 1.1, so we're looking at going ahead and importing them. We need a stylesheet that works with exported AT finding aids and we haven't quite that got yet. One of the things that we are considering is importing MARC records instead of the whole EAD, which would not only get around importing issues but also give us all the benefit of having our resource module linked up to accessions. There's a way in AT to link accessions to resources backwards and forwards—there's so much advantageous for us to have those resources in there that maybe a simple MARC record would be plenty for us to get subjects imported."
- "There weren't a lot of archival management tools out there—we were looking more at database formats that were more or less homegrown. When I did research in 2005, I researched database structures in EAD and how things worked for people. I found a lot of different archives that had homegrown structures and found out about their limitations—we didn't adopt any of those. We did hear about Archon and considered that along with AT, but at the time it didn't seem to have as many possibilities as AT had for us. It didn't at that time have a way of managing accessions—it was more a finding aid creation tool for small archives. And now it's expanded a little. What concerned us a little about Archon is that it didn't have ongoing grant support. We saw enough people adopting AT and felt that it had the solidity of ongoing grant support."
- "Previously we were using Access. There was no real way to get EAD out of Access, and we wanted to get finding aids on the Web. We were pretty pleased with what AT offered, especially EAD export. We have to abide by the Online Archive of California's guidelines, so we needed to make some modifications to what AT exports to conform."
- "We're using AT as a collections management systems—we're not using the ability to produce finding aids. Within AT you have a resource record and component record [for multilevel descriptions]—a couple of different levels. We're using it at the highest level to manage accessions and information about local collections."

Ease of Use

- "As someone who has taught an AT workshop twice, I can say that people pick it up pretty quickly. It does the basic things people need, and it's easy to use for archivists who know what they need to do with archival description. Someone who wasn't trained as an archivist had some problems with it; it's set up with the assumption that you are an archivist."
- "We've been using the Resource module selectively. A few people have used it for finding aids because there have been special circumstances, such as needing to work off site, and it would have been difficult to set up our institutional macros and template. It

worked out pretty well—we could help them get stuff online by exporting data from the Toolkit."

- "Archon and AT offer a good alternative to hand encoding. We couldn't have trained [staff with a lack of technical expertise] in a reasonable timeframe to produce what they did with the Toolkit."
- "That's a hard question. It's not too difficult to use if you just need someone to input data into it. It's pretty simple to get students to point to input data. But there needs to be someone in the department with a more thorough understanding of the program and how things work. Some things will need to be adjusted after the stuff is input; otherwise, you will run into databases that are not very standardized. The learning curve for all of the features of AT is pretty steep—it took me a month or two to get comfortable with it. Even now, I'm learning new things, such as digital object description or linking internally. I've trained staff and two interns how to input into it. They get information into AT, then I change things. Much stems from the hierarchical structure. It's intuitive but confusing when setting things up. I have issues where they try to add a file to a box. In AT it's not clear if a file is in box or equal to box. I have issues with structure and how AT displays it. As for training, I did a one-time 2-hour session for staff. Some picked it up quickly and jumped in; others took more time to get comfortable with inputting stuff into AT."
- "We have a lot of students working with data entry. It's always a question of how much to give them. In my mind, the bigger question is how much organization of a collection can a student do. The students I've used are mostly undergrads doing data entry for legacy finding aids. They've been able to pick up on that. Most of them are fairly computer literate—the bigger issue is not boring them and making sure they pay attention to detail. What level of description you can train students to handle?"
- "Seeing a tool like AT makes me wish I were starting an archives from scratch. Getting all of the old data into AT or any system is a challenge. We're doing it piecemeal. Right now our main use is on the resources end—descriptive information, particularly for manuscripts at the collection level so that we can output to EAD and MARC. We're fairly far behind with descriptive information, so that's our big focus for this year. The plan is to get our accessions process in place at the beginning of next year. The trick is mapping our fields in our old database into the new database. With the new version of AT, they've got user-defined fields that will accept some of our oddball information—purchase price, appraisal value, in-house estimate of gift value, etc. But there are some data issues that are not straightforward that don't map well, such as hard returns in descriptive fields, which cut the data off so that it doesn't come across cleanly. There will be a fair amount of data cleanup to do to get it in there. Once the legacy data is in there, I don't foresee any challenges to staff learning to use the system, either to in put or search data. I understand that getting accessions information is a challenge for everyone. It's a little bit of a challenge with the descriptive information. It was stuff that was cataloged by many people over many eras using many different standards, or none at all. Cleaning it up will take time—but there are no significant challenges from the system itself. It seems to do everything we want it to do."

Installation and Maintenance

- "Installation depends on how you set it up. We have the back end—My SQL—set up on a server so various people can connect to it. Getting it set up in a networked environment took coordination from IT staff. Once that happened, it was smooth. We installed it on laptops during testing, and that's been fairly quick."
- "Installation was pretty easy. We have a small systems department. One of our systems persons installed it. We just upgraded it, and that was like installing any piece of software. I don't know what would happen now that we have user defined

fields—what information would be lost with an upgrade. So far installing it has been a piece of cake."
- "Our systems department did the installation. On the listserv you see people with issues with My SQL. Our systems staff didn't have any problems with the installation. We haven't had any problems with the database. IT staff have moved it around a lot [onto different hardware], and it's been pretty seamless."

Ease of Customization

- "There are built-in customization features. You can change labels of different fields, provide instructions or guidelines, etc. We have added look-up lists to add specific data and options."
- "In order to customize local use, you don't need a programmer, just a set of guidelines to say, 'On this screen, fill out these fields.' For CLIR, it will be important for each repository to do the intellectual work up front of giving grad students good guidelines about how to formulate data. A lot of data is not in controlled vocabularies; there is a lot more loosey-goosey notes stuff. You don't want to leave grad students up to own devices to put what they want where."

User Community

- "There's a great AT users' group listserv that is quite active where people ask and answer questions. We report bugs through the bug reporting system. We've found the developers to be extremely responsive to our concerns ever since the beta testing period. We're very pleased with that; there's a really good network of users built up."
- "The big thing about AT that will be interesting is that it will be leap of faith for institutions because it isn't clear what the sustainability trajectory will be for it. We're hoping and betting that it's not just going to go away because we're moving a lot of data into it."
- "My experience with the user support has been excellent. The listserv seems very active, and people don't seem afraid to ask questions. You get a variety of people from AT responding to it. They seem to respond quickly, and they all seem to be on the same page. There's not a lot of confusing dialogues. They seem to be able to handle both complex technical questions and simple questions. The manual that they created works well for me. The bug list that they put out is both helpful and confusing. They have a quickie style of documenting all of these problems. If you spend a few minutes, you can see that a problem has come up before. That sort of transparency about what the bugs are and how they are addressing them is a helpful feature. They have been active about doing presentations both at national and regional level. Without a huge budget, they've managed to do a lot of communication with interested users."

Weaknesses

- Potential problems with upgrading to new version of AT after making customizations
- AT may be challenging for less technical staff to use. As one archivist commented, "AT is great project. I evaluated it and didn't think that it would be as easy for archivists I know with limited technical skills to get it running and use it. It was a little too technical and required too much IT expertise to get the most mileage out of it."
- Lacks a public Web interface that would enable the public to search collections.
- May not work with existing workflows: "We do use the resource module for some stuff here, but our general workflow predates the Toolkit."
- "There are still some bugs. It's still not perfect, so some data may not be saved properly."

- "There's nothing about it that has driven me crazy. The stuff that drives me crazy is that we have so much catching up to do and so few staff. AT is a significant improvement as a tool that helps us to get stuff done. I would like to see it link to user information. User tracking in AT would be good for part of our collections, but it's not a holistic solution to knowing what people are using and where we should put our resources. But we have so much catching up to do that we're not ready to implement that any time soon anyway."
- "In terms of resource description, I like it a good amount. The complaint I hear from my staff I disagree with. People say that it's too clunky, it has too many fields, and you have to separate data into fields—to me, that's good. People have gotten used to working in a Word document, without structured data. AT imposes restrictions, so it's more of a mind-set of getting people used to thinking in a different way about what they're doing in describing archival material."
- "Some more collection management tools would be nice, like doing stuff with processing priorities, ranking research value, current status of processing, level of description. There's currently no way to track that within AT."
- "It's hard for multiple people to work on describing one resource at the same time. They're working on that in the next release: to merge different resource descriptions. If you are working on a huge collection with several boxes, it would be good to have people working on same collection at same time."
- "The exporting of EAD for AT is good; the exporting of MARC is pretty good, but not quite as granular as needs to be. It would be nice to have something that mapped to Encoded Archival Context for name records."
- "There were a few minor buggy issues we had with the first version, particularly with dragging things around, but those seem to be gone now. There are a few issues with this version where it seems to time out and lose data. Someone was working on collection, had the resource window open for half an hour, and lost the data. The Save functionality could be better so that you could save and still remain in the window. Now we save a lot."
- "I'd like the ability to rank collections, track processing priorities, states of collections, preservation, level of arrangement and description."
- "In general, I think the connection between the accessioning and resource modules could be a little stronger."
- "The problem with the import of legacy EAD is probably our biggest hurdle."
- "There are lots of places to put information in and you want to fill in every blank. You have to stop yourself from doing that and make sure that you're entering what you need to and what's necessary to create complete, valid documents that are DACS compatible."
- "The big challenge with AT is that it leaves a lot of options open to the user. You have to make choices, and there are lots of different notes available to you. What a grad student would need is for someone to say, 'This is what we want to do'—that is, there should be guidelines locally to say how you work with his. You wouldn't want to build the constraints into the software."

Strengths

- "The accessioning module is better than anything out there or that we could develop on own. We implemented the accessioning module first, and it's pretty much what we're using now."
- "The promise of having a single database for collection management. You do the accession record, push a button, convert to a resource record, and export as EAD and MARC. It's not quite there yet, but it's moving in that direction."
- "I actually like the fact that it is a database where people are forced to separate different data elements—it helps standardize data and produce finding aids quickly."
- "AT makes it quicker to produce finding aids."

- "I haven't found anything better, particularly for the price. It's a noble effort by members of our profession to fill a gap. It seems that they've gone about it the right way. Of the free products out there, they've got a good shot at keeping it going, particularly with the amount of implementations of it out there."
- "For collection management, I like the ability to produce reports about size of collections, different types, etc."
- "We're very pleased with the accessions module and have been using some of the user-defined fields for our special needs. For example, we have needed a place where we could record material types in each accession, broad material types, whether visual, papers, digital items, etc. We have used one of the user-defined fields to enter that information. That will provide for us a way to use AT more as a processing planning tool. There's a way to note whether each accession is high, medium, or low priority; we're entering that information, so we can go through and find all the high-priority processing accessions in our collections and plan our processing from that. We're hopeful that once we get that information entered into AT we can more fully use it as a processing/planning tool. Marking various material types will help people who are in charge of different media types—paper, digital, visual, etc. We can find all of those collections that belong to us and that way we can use the accessions records. Our legacy accessions database didn't have a way to transfer locations directly into AT locations area, so we have to manually go in and enter all of the locations that we have noted, but once we have done that we can use it as a locations guide, so it's going to be, and is already, an excellent tool for us. When you consider that we had very rudimentary accessions database in 2004, we've come a long way."
- "AT would be helpful for processing hidden collections. Right now we are cleaning up our accessions database. As we're putting locations into locations guides, I'm finding some high-priority, 'hidden' collections."
- "AT has a business plan; there is a plan for ongoing operations that encourages us. And for us, personally, we have IT support that is really good. Should AT not become sustainable in future, we have ways in which we can seek IT support to sustain it on an ongoing basis ourselves. Sustainability is not as much a concern for us as it might be for smaller archives. But AT is looking at that and managing it pretty well for an open source tool."
- "We're finally getting a place to put name and subject authority files and are really glad that we're finally getting a complete accessions database. All that information is linked—names are linked up with accessions and resources. It's a great tool."
- "It's going to be a great way to plan processing. It's one thing that has made our archives move forward with all of our management for our archives."
- "I think AT works really well. We had been thinking about using it to play around with producing METS digital objects. We're in the process of doing mass digitization of archival collections—digitizing stuff at folder level and linking METS objects to finding aids and are figuring out how to create METS objects. The Toolkit is one of the things on the table. They're supposed to be working on new functionality. Now you have to build whole resource description from the collection to folder level before you can build a digital object, but you will be able to build a METS object that isn't connected to anything at folder level."
- "Not many tools are easy to use by people not trained in XML. If libraries have to train everyone who is working with collections to use XML, it will be challenging to roll out. In an XML editor, you don't get a nice tree view; you have to do special things to produce that view. They are building AT so that you have metadata and visual screen that shows you where you are in the structure. In workshops, most archivists felt confident at end of 2 days in their ability to implement the tool. We need tools that work more like word processors and visually let you see where information is."

- "Ease of creating our resource descriptions. EAD export has worked fairly well for us. It seems pretty intuitive to use. It's cut down a lot of work for us in getting things into EAD or MARC."
- "Down the road, I'm looking forward to having accessions and collection information interacting more."

Archon Summary

To understand how archivists use Archon, I conducted phone interviews with five archivists between May and June of 2008. To encourage honesty, I promised anonymity to the interviewees. I tried to capture the interviewees' remarks as accurately as possible, but I paraphrased and/or condensed some comments.

Reasons for Selecting Archon

- The greater efficiency of using Archon as an EAD authoring platform: people creating finding aids no longer have to do it by hand and learn the EAD elements.
- It is not as complicated as other systems.
- Data is in standard formats that can be migrated into other systems should the need arise.
- "We needed some sort of database that we could deliver to researchers for searching our collections. We wanted to have something that could go on the Web. Archon is free and pretty easy to implement without much IT intervention. … It gave us a quick and easy way to put collections on online, let patrons search them, and see everything we had, instead of having to search finding aids individually."
- "We needed something easy to implement for Web delivery of finding aids."
- "It's open source. People at our library are passionate about open source. They are unhappy about contracts for our OPAC. Open source leaves us options if the user community is not active to continue the development ourselves."
- "The interface is easy to use, which is important since students would be doing a lot of the data entry."
- "There is a built-in Web interface that is an attractive, easy to use, out-of- the-box solution. We didn't have to fight over what the system would be. Our systems people could do it, but this is out-of-the-box and we can just slap on our logo. All four archivists agreed on this."
- "I have more confidence in the sustainability of Archon. The University of Illinois developed Archon, they're using it, they'll keep supporting it for the long term, even if they didn't have external funding."
- "This was an ideal tool for us because we had so little that was automated. We wanted to get information into the system quickly, using student labor. Students were just inputting stuff into intuitive fields. They didn't have to know EAD and DACS."
- "An archivist here focused on EAD selected Archon. She felt that EAD is such complex work that she had to do everything herself. If we used Archon, which is simpler for someone without a lot of training to get started in, it would free her from having to tag everything herself. The result has been mixed. I don't know if it's really saved us time or not."

Ease of Use

- "Data entry is quite simple to learn."
- "Archon is pretty teachable. No software is intuitive, but the training doesn't take too long. "
- "Some institutions provide students and paraprofessionals with a cheat sheet that shows them what data to input where."
- "Archon is easy for nonarchivists to use—we quickly train students to use it. Like any other data entry, it can be tedious. With finding aids, the main difficulty is keeping track of where you are in the finding aid."
- "Archon would be a good choice if you're a small institution without any Web finding aids, and you have students and volunteers. The great thing about Archon is that

anyone can do it with 30 minutes of training. Scanning techs can cut and paste from Word into Archon. I might need to make sure that the intellectual structure is right, but it basically is easy to produce and go straight to Web. You can make changes really easy—with EAD, you have to change the file and re-upload."

Installation and Maintenance

- Installation of Archon is straightforward, but you may have difficulty upgrading it if you have customized your local installation.
- "We did an upgrade 3 weeks ago and it was done in 15 minutes. There were a couple of hiccups, but it was smooth overall. Earlier problems were to be expected with a 1.0 release, and we could work around them."

Ease of Customization

- You can enter local information easily.
- If you want to change the layout of your Archon site (e.g.. move around the standard elements on the Web page), you need to work with a programmer or Web designer.
- With the current version, you can do a lot of customization through a CSS stylesheet.
- One institution reported that the staff programmer didn't like the installer code and decided to do the upgrade manually, since they had customized Archon.
- "Graphically we've customized it—all the same information is there, but the fonts look different. Our customizations worked with the upgrade."
- Examples of customizations: Purdue, William and Mary

Weaknesses

- Archon may be best suited for institutions that don't have significant legacy EAD finding aids to import. Several archivists reported that they had trouble importing complex finding aids into Archon or that they were aware of this being a problem for other institutions. They were grateful that Archon staff attempted to help solve these problems, but ultimately one archive will have to manually redo several big finding aids.
- You can't enter formatting (such as italics) into Archon. "Archon is not Microsoft Word yet, since there is no easy way to format."
- Archon could provide better support for inputting special characters/ Unicode.
- Archon doesn't yet support structuring bibliography lists.
- "It would be nice if you could take a box list and drag and drop it into Archon."
- "If all your finding aids are set up in the same way, they can be easily imported into Archon, but I know of no archive with that data. "
- "It's not yet possible to have different collections in Archon that have different 'brands'—e.g., unique look and feel, search functions."
- "There are potential usability problems with the default layout of finding aids. Users may not know that they need to expand collapsed fields."
- "You can't control the presentation of data as much as you can with a custom Web site. If you want to do anything fancy with the interface, you would need a programmer."
- "It would be nice if you could plug standard authority lists into Archon, or run a search of the LC authorities page and feed the results into Archon."
- "Although Archon recently went open source, it is currently being developed by a single institution. If they abandon Archon, then the user community will suffer. However, the developers use Archon and have a vested interest in seeing it succeed."
- "Archon is easy to customize, since it is based on CSS, PHP, and MySQL. However, it can be difficult to understand where each page is generated and what changes when you make a change."

- "Import/export tools in Archon seem to work well if you are moving data from one instance to another, but not piecemeal, one collection at a time. "
- "Archon doesn't support outputting content of collections in format optimized for printing."
- "I don't think there's enough guidance for users yet. I'd like to see expanded manuals for people trying to improve workflow and exporting to EAD/MARC. Right now, each place is separately trying to figure out how to change what it's doing to fit into new system."
- Archon can improve its reports features, such as "report of accessions in last month, collections in one storage area. I hope that Archon will build that soon."
- "Our technical guy has said the PHP code isn't very clean, but he's not a PHP guy. Another tech person seems to be dealing with it fine. The Archon folks are working on cleaning up code."
- "I want to see some features become more robust. The accessions module is not as complex as would be helpful for university archives people. You need to be able to deal with annual deposits, accession number, date, etc. Archivists' Toolkit does much better from most accounts with accessions."
- "There are little features that we want, such as the ability to hide parts of a finding aid for restricted materials. Right now you can have material either online or off, but it would be nice to hide part of a finding aid."
- "We've not yet used the digital library manager—we've heard that it needs to be more robust. I know someone who is using it and is happy with it. We have issues with loading our existing database."
- "Our main problem is importing existing EAD records. Archon is less forgiving than EAD; it's like a database. If you tag EAD and it validates, you're good to go, but Archon just won't accept some stuff, such as IDs with characters (rather than a box/folder structure.) We haven't been able to import three of our most important complex finding aids. We're going to have to cut and paste these finding aids in. When you're copying and pasting, there's room for error. If it was just a mechanical import, I'd be more confident. We weren't anticipating how to do that kind of work. The Archon people tried to help us but weren't able to."
- "The Archon user interface is OK. The frustration with it is that you can only enter things a line at a time. If you've got a long finding aid, or if you've got something where things repeat, you have to cut and paste line by line, which is tedious. There must be some way to import it in larger chunks. My staff say they find it frustrating that you can't see whole finding aid from the back end—in EAD, you can scroll up and down through whole finding aid, but with Archon you have to drill down through series, subseries, box, etc.—that's all you can see."

User Community

- One archivist characterized the user support as "really good." She typically e-mails the developers whenever she has a question, and they respond with enthusiasm. Archon has had a succession of strong grad students who have provided user support. Other archivists echoed the statement that the Archon developers are eager to help.
- Archon does have a listserv, but it often centered on people who are just adopting Archon and lack technical support at their home institutions.
- Fairly active listserv, with a few questions each week.
- "The developers are incredibly helpful. There was an instance early on when I posted a question to Archon listserv. … In later release they added [the requested feature.] They have very responsive developers."
- "When I have a question, I have a really good response to it. I know some of the people involved; I have extra-strong ties with those folks. I e-mail a friend who is using it with questions. In talking to other folks who are looking at it, people have their eyes open

about it, the good, the bad, and the continual development. I've found other users responsive to needs."
- "It's good. It's basically three guys at UIUC. They respond quickly to e-mails, but it's not like a big commercial project; they want input for ways to improve Archon. I had a phone meeting with them on some problems."

Strengths

- Responsiveness of developers. An early adopter commented that everything she had complained about was fixed in later releases of the software.
- Flexibility in working with different kinds of data. Archon takes any kind of media—sound, images, even a link to something else.
- Makes capturing archival data more efficient. With the new accessions module, archivists can enter data into the system once and use it to generate multiple outputs. One archivist who hasn't used the accessions module yet is excited that it will enable the archive to import standard data from an Access database and manage that data more efficiently.
- Through the digital library module, archives can provide access to digitized versions of the objects described in finding aids, which researchers have really liked.
- Web-publishing capabilities: All the data entered into Archon is immediately available online. As you enter data, it's accessible to people live unless you ask that it not be made publicly viewable. At one archive, students enter data, but only the director of special collection can make it publicly viewable, giving things a final check and clicking a button to publish them.
- Tools such as Archon and Archivist Toolkit may lower the bar for participating in EAD by enabling people to enter data into forms rather than having to know EAD coding. Archivists are embracing EAD over MARC because of the richness of the data.
- Can create a draft MARC record that catalogers can then polish
- Good authority control. As Archon has matured, the ability to deal with importing authority data and controlled vocabulary is coming along very well, which pleases librarians. Archon may offer EAC support once the standard is fully developed.
- Makes information more widely available. For instance, Google indexes Archon contents. One archive reported increased interest in its collections from people around the world after it implemented Archon. Archon can make hidden collections more visible.
- Easy to navigate. Everything is accessible in one stream; Archon feels like a Web page. When you're in the Admin module, there are mouse-over menus in the interface.
- Simple interface. Uses simple, easy-to-understand language. Archon is not archivist-centric, even though it is very useful for standardizing archival finding aids. It guides lay users through archival arrangement
- "Users seem to like Archon—but we haven't done user testing. After showing folks Archon in the reading room, we haven't gotten negative feedback."
- "We're pleased with its flexibility and power. We like how you can search at the top level, highlight results, and search within finding aids."
- "The ability to export to MARC and EAD is exciting for us. We have minimal cataloging support for MARC. To hit a button and have the majority of the work done is exciting. Especially for EAD—we don't have the staff to do markup of finding aids."
- "I like how you can customize Archon—it's easy to change the look of it. There are a lot of things you can do if you have some programming support. We've been using students to support customizations."
- "When I show it to people, we always talk about the out-of-box Web presence—it's a really big deal to small institutions."
- "The browsability of it is great."

- "Everyone in the department can use it. With EAD, people who were using it had to go to 2 days of training. For people who aren't working with it every day, it's hard to remember how everything works. Archon is a lot simpler; I'm going to train our photo tech on Archon, then go in and set up series and subseries. I expect it will take 30 minutes to show him what to do."
- "Archon publishes directly to Web. You don't have to deal with the systems department or replace each file when there needs to be a change."
- "Archon just added an archival management feature in its latest version. We haven't used it yet (accessioning, etc.), since people weren't sure if they wanted our collection management records to be all Web based, but I think it's something we should try."
- "Archivists tend to like it."

Overall Assessment

- "Archon is excellent for 'from-now-on' or fresh creation of finding aids, but it's a hassle to use with already-created finding aids."
- "Archon is the closest to a tool that allows you to only enter data once and have it come out in different forms you need."
- "Archon is new and evolving. They're taking feedback."

Archon's Response to User Feedback

In response to user comments, Archon Project Manager Chris Prom indicated that some seem to be geared toward earlier versions of the software. Regarding the difficulty importing EAD files, Prom explained, "Since Archon has more restrictive data requirements than those of EAD, it will be impossible to write a single script to import every EAD instance. However, the current import script for EAD (PHP) could be customized by IT staff to handle difficult cases." Version 2.2 provides better support for formatting data, and Archon has supported Unicode since version 2.0. For those who want to create separate skins or themes for different collections, Prom says that "the capability to do this is in the API, but it has not yet been implemented in the administrative interface. … A script to import authority lists from an Excel file" is planned, although "the link to the LC is more complicated." Responding to the notion that the Archon code is a little messy, Prom notes that "we cleaned it up considerably, and have heard comments that version 2.0 is very well structured." Prom also advises that improvements to the accession manager and digital library public interface are coming with Version 2.2.

Cuadra STAR/Archives Summary

To understand how archivists use Cuadra STAR Archives, I conducted phone interviews with three archivists between May and June 2008. To encourage honesty, I promised anonymity to the interviewees. I tried to capture the interviewees' remarks as accurately as possible, but I paraphrased and/or condensed some comments.

Reasons for Selecting Cuadra

- "When I was at SAA, I saw Archivists' Toolkit and Archon presentations. I got excited about them—I'm a one-man shop with one assistant, a paraprofessional. I started to look into it [Archon?], but when we tried to install it, our IT group refused. They don't support it and wouldn't let us put anything on our computers that they couldn't support. Then we went to the librarian here in charge of computers; when he saw that it ran on MySQL, he said no. So I started looking at other options. I'm not very tech savvy. We looked at ContentDM, but it was really for digital collections, less about managing administrative tasks and putting up finding aids. I liked Archon because it allows you to enter once and generate multiple reports. When we met with Cuadra STAR, we saw a demo; the electronic- resources librarian understood everything, and I understood everything on archives side. We both liked the service and liked it from the user side of things. It's pricier than freeware, but they worked with us to find the appropriate price based on how many users can use it at one time. Since we're small, we didn't need many licenses."
- "We have lots of different types of materials—book, archival collections, history, A/V, etc. Our regular library system didn't handle photos or archives well, but Cuadra has different modules to address these areas. Right now we are using MARC for library cataloging. We also have Star Archive & Star Images. We are just starting to use Star Archive for finding aids; we have a few in an earlier version of Cuadra software called Finding Aids. We're also using Star Archives for a digital journals project."
- "I was not in on choosing it—but I think it was a choice based on flexibility. There were the most options available with Cuadra. The customer service was very good. They were helpful."

Installation and Maintenance

- "We run it on our own server. It has worked very well, and we have successfully gone through upgrades. The Cuadra folks put out nice instructions for updating. If there is a problem, they can help us right away."

Ease of Customization

- "Depending on what you want to do, the system is customizable. Originally it's a database system, but they have made specialized modules to address different types of customers, such as information management for business users. You can customize it, modify data entry screens, Web searches, etc.—but there is a steep learning curve if you want to do that in house. I can do a lot of conversions and modifications in house. If you want certain changes, you can always have Cuadra do it."
- "We hope to host our own server in three years so that we have complete control of the Web interface. Right now, we contract with Cuadra Star to make changes to Web interface. If we installed it, we could use our own staff to make changes—it would allow us the freedom to have changes made in house. We've focused more on content and haven't really put much effort into customizing the Web interface. It took a little while to refine how information would be stored or would display. We weren't sure at the

beginning what to ask for because we weren't sure what the data would look like. We have started to do some customization. It hasn't been difficult, but it's a little slow—we submit a proposal, get a quote, get it paid for, and then it is changed."

User Community/Support

- "They provide excellent support—it's very timely. When I had a question, the tech called me up, did a WebEx, and showed me what I needed."
- "There are help boxes next to different fields. One thing is sort of lacking—I'm a book person, and I would like a book, a user manual, a quick down- and-dirty how to. There is a book, but I didn't find it helpful."
- "Cuadra is not a big company— it's not like you call an 800 number. We can call to talk directly to someone who is familiar with our needs."
- "They have been responsive to problems. There have been very few problems with the server, and never for more than 24 hours in the almost three years I've been working with them."
- "Overall, it's good. I think that the manuals and guides that they distribute are not very good. But they are very quick to respond and are happy to sit with you and help you through something. However, I wish they had more customer service reps with detailed technical knowledge. It would be nice to have closer access to tech support rather than sales. We funnel through one person. I'm the one person who speaks with the one person at Cuadra; they don't want every person at an institution calling them."

Weaknesses

- "Cuadra/STAR is very specific, and I don't have my finding aids in stand-alone files. I was just talking with OCLC about ArchivesGrid, but to participate I would have to export each finding aid as an XML file. I can't get the export function to work. Some of the functions in Cuadra/STAR don't really work yet. Sometimes it is limiting to be so contained within that one data management software. I can print out a finding aid, but I can't do much else. If I have a patron and want to send them a container list, I can't make an independent file. Ideally, I could select a collection, export the finding aid into an autonomous file of some type such as EAD or HTML, and distribute it independently of software."
- "There are a couple of pages where when you explode hierarchy out, you have to touch every single folder."
- "The person who set up my archives didn't always do the hierarchy right, so I have to figure out how to put stuff into the hierarchy."
- "I had to get used to how it looks."
- "I don't like the Web display very much. I wish that I could play around with it some. I can't do that troubleshooting because we don't have that freedom with them hosting our installation."

Strengths

- "They provide support—they take care of issues and host everything on their server. The data is backed up at their location, not here, which is good in terms of hurricane preparedness."
- "Since we got it, we'll spend a few weeks intensely working with it, then spend time away from it. It's not hard to come back to."
- "I love how you can search keywords in a Google way"
- "You can cut and paste an entire legacy finding aid."
- "If I have the time, I could take a small collection, scan everything, and put it on the finding aid. I could look at everything associated with the finding aid."

- "Cuadra/STAR was designed I think by archivists. The terminology and hierarchy are familiar—scope/content, biographical/historical note—all the elements that you would put into finding aid template is there for EAD."
- "They'll take your legacy finding aids and put them in for you."
- "I have only generated one EAD file. It was an easy, one-step process, but I don't know what to do with it once I have it."
- "I use the accessioning function, which is fabulous and has so many different things to use. We don't use all of the features. Let's say you have a collection that people like to cite from and you need to give permission—you can add in every time something is cited and where. You could log donations, provide contact info for the donor and his daughter, and then switch her to the main contact if he dies. The sky is the limit; there so many pieces we haven't used. If you move the record from accession to processed, you can move things over easily. You can even wait to make it live and flag it for release. They've thought of a lot."
- "You can maintain and enhance levels of description, from collection to item. You can set up and maintain repository data, do inventory control, manage circulation and loans, and maintain name authorities and the administrative interface. You can set accessions, review, and delete records. Inside the collection-level descriptions, there are all kinds of stuff. Once you figure it out, it is pretty easy. You can manage finding aids; you can flag records as ready to release and generate EAD. You can also generate MARC, I think. When you go into accessions, you can flag all kinds of things. It's easy to search and pull up a record. You have an accession component, transfer settings, acquisition methods, value attached, donor, etc. You can put in all of the contact info, a credit line, and a brief description at accession level—everything that you might need. Once you actually do the top-level collection record, you can input basic information, such as collection level, display dates, arrangement and description, extent for finding aid, scope/content, top-level finding aid information, location, bibliographic summary, creator, etc. You can put in the authority level, history, retention, whether you expect accruals, date range, assigned location. You can assign it to a shelf. There is additional descriptive data—media, required technology (?), subjects, condition, acquisition source and ownership data, rights permission, access, reproduction rights, all kinds of stuff—as much or as little as you want to put in. You can get something up quick and could actually put in item level records in later. You can put in photos."
- "You can search by keyword or browse collections. When you pull up the result, you get a hierarchy on left with series level, and on right you see EAD."
- "I like the support. You know who you're talking to."
- "It's customizable to meet your needs—a system out of the box probably doesn't meet needs that well."
- "I think it really gives me the framework for description—all I have to have is the data. I don't have to worry about formatting or identifying my data because the software gives you so many options to fill in. With Cuadra Star, it's very flexible, you have a lot of options, and you can customize how you present your information because there are so many options. "
- "Cuadra is flexible in accommodating different types of media. That was its main selling point. We deal with many types of materials and it allowed us the freedom to describe to those materials. We have a staff interface, and a Web session for the public. There's a link on our Web site to our public catalog—we can mount files of any type to records, so we can upload pdfs of docs, jpgs, maps, and we can also do MP3, wav for oral history, etc. Cuadra Star is appealing because you can upload files straight to the catalog and you don't have to have a finding aid—it's all linked together."

Overall Assessment

- "I'm happy that we ended up with Cuadra because I can get support when I need it—they e-mail you back almost immediately. There are no stupid questions to them; they provide very good support. The search interface is almost like a Google search. Especially as a small shop without much support, Cuadra is a good choice."

- "In general, I really like the system—it works well and is reliable and easy for day-to-day."

Eloquent Archive Summary

To understand how archivists use Eloquent Archive, I conducted phone interviews with 4 archivists between May and July of 2008. To encourage complete honesty, I promised anonymity to the interviewees. I tried to capture the interviewees' remarks as accurately as possible, but I paraphrased and/or condensed some comments.

Reasons for Selecting Eloquent

- "We selected Eloquent back in 2000 when they were using GenCAT, a DOS based system. It's reasonably tailorable. We can make it work for our particular needs rather than changing our practices to fit a system. It has worked well. At beginning, none of the information was in an electronic format, so we had to do a lot of data entry. It moved from DOS system to Web-based system a couple of years ago—they did all of the migration for us."
- "I used Eloquent many years ago on another project and liked it at that time. When I got the chance to buy software 10 or so years later, I looked at other companies and once again Eloquent was the one I chose. It was the one most likely to do the job. One selling point: the data conversion from our old system (Filemaker) to the new one was less expensive with Eloquent than with other vendors. They delivered the converted data on time and with good results. We also chose Eloquent because it is Web based. I can log on anywhere at our facility."
- "We already had an Eloquent system in place, so they were very familiar with our data and data structure. That familiarity facilitated a great deal of things."
- "GenCat was chosen as the archival descriptive database back in 1996. We used GenCat until 3 years ago when it was experiencing difficulties, such as corrupted data. We weren't happy with some of the support we were getting from Eloquent. We did a review of different software available at that time; we looked at MINISIS. We also looked at ContentDM as means of holding of descriptive data, but our IT people said it might be useful for description, but not for other purposes because it wasn't relational. Because we weren't totally happy with the other options, we liked WebGenCat better than anything else at the time. We're happy with some bits, but not so happy with others. We're using 3 modules: library, archives, and records management. The records manager has not been happy with that module and may look to something like Documentum. We're happy with the library component that we're using with theses; it's flexible, shows the records extremely well, and is easy to tailor. We didn't purchase the part that would allow us to tailor the archives module, so we depend on Eloquent to do customizations. We've found that the library component is superior to DSpace. For the archives module, it has real possibilities that we have not realized."

Ease of Use

- "It would be easy to use if you train grad students to do it—especially if you have Eloquent do the work for you."
- "When we first installed it, we had a clerical person who had a difficult time understanding the hierarchical structure and the language because she didn't have an archives background. I think that paraprofessionals and grad students would be OK, but the system does presume that you know archives somewhat."

Ease of Installation

- "It was easy to install; it took less than an hour. As for maintenance, there has been basically none. The only problem we have is that from time to time the system hangs and we have to

restart it. We can't figure out what causes it. It hasn't been a big enough problem yet that we've invested time in solving it."
- "They've been very supportive throughout the entire process, from migration to installation—they worked with us very closely and slowed down to my speed. All in all, I don't think it was that difficult. The timelines we initially set were probably not as realistic as they should have been. They were very willing to work with us. All in all, it was a smooth transition."

Ease of Customization

- "One other archivists and I are the administrators and so we can do the tailoring for ourselves. We create our screens so that they fit archival standards and what our users are used to."
- "We have done some customizing. We did purchase the architect component so that we can do some stuff here. When we use it, we usually have their support on the phone with us. They've been very helpful in terms of walking us through various changes. When we used Eloquent's DOS system, we had tweaked our system so much that when any upgrades came, we couldn't do the upgrades any more. This time around, we went with the system based on what they had, and they were able to implement all of the stuff we had changed. It went pretty smoothly."

User Community/Support

- "There are no training manuals, so we need to figure out what they've called things and how the scripts run. We're learning how to do things."
- "User support is really responsive to questions. The main drawback is that they do not have a manual—often there isn't anything in the help notes."
- "The service aspect is weak."
- "I had an assistant who did the most of the interactions with Eloquent, and in general we found it to be good. It sometimes takes a couple of hours or a day to get a response, but on the whole user support has been very good."
- "User support has been excellent. They respond almost immediately. They offer to walk you through something. They'll provide detailed instructions via e-mail or the telephone. We're looking at the same thing as the changes are happening. Their customer service up to this point has been really great."

Weaknesses

- "We have to do communication with the company by phone or pay someone to come here. It would be nice if we had an in-house system so we would have someone to fix problems here."
- "We have had big problems working with Eloquent in getting what we needed adjusted to suit our needs."
- "The behind-the-scenes things like creating your own report or importing and exporting can be somewhat difficult. We do have the Architect's module, but that sort of work is still difficult to do."
- "We're unhappy with basic reports. It seems that there is basic information that any archival institution would need when doing a search, such as an accession number. Some reports don't have the basic information you need. For instance, the collection lacks a file number, which is basic information that any repository would need. When we ask them to make changes, it just doesn't happen for a long time. … There's been a lot of frustration."
- "We've been trying to get them to export metadata for one of our collections so that we could put it into ContentDM. In the old version of GenCat, you could import and export

data easily. We've been trying to get this data out of Eloquent for about a year. We can't do that in the Web version and having trouble getting a response from them."
- "There is no written documentation. Some of the architectural stuff is difficult to do. They really could use documentation."
- "There's not really a weakness that comes to mind. When we typically have a problem, we either e-mail or telephone the help desk and they're ready to help us. You always find quirks when you start something, and they expedite everything and tell you how to do it. Merv Richter, president of Eloquent, was involved through all of the steps, ensuring that his staff was there to help us. They pretty much held our hands through the entire process."

Strengths

- "We use it for all of our workflow—receiving, accession, creating descriptive records, tracking researchers, appraisal, authority control, retention schedules, etc."
- "You can create EAD with the system, but we haven't done that yet. Supposedly you can push a button and automatically generate it."
- "Comparatively they are cheaper, at least when we were initially looking around."
- "It's tailorable. We're not stuck with an out of the box model—that's our high point. We envision sticking with them for next several years, since the system fits everything we wanted to."
- "I think the product itself has a lot of potential. I liked GenCat, I like Web GenCat OK. There are hotlinks to subjects and authors."
- "What's nice about the system is that it would be easy to export—every field is delineated and it's straightforward where the data lives."
- "It's very easy to use and does exactly what you would want in an archival system. An archival system is really quite difficult in its organization. We had tried to design our own, but to have all of those problems thought out in advance is very useful, since Eloquent includes features we didn't even imagine we needed."
- "I like being able to make changes and immediately post them to the Internet. I like the immediacy of it. If someone discovers a typo, we can immediately make the change and post it. We can digitize something and immediately attach that file to its description. I know a lot of folks use Content DM, but Eloquent allows us to attach images immediately to descriptive record. Everything is in a single system. We can link any descriptive item to a digital image, PDF, mov file or whatever, and have it displayed on the Web immediately. Reference requests have more than doubled as a result, which is something we're struggling with now because we're short staffed. It's definitely improved our Web presence."
- "Right now Eloquent is doing what we need it to do. They met me where I was at and they really slowed down the process so that I could get on board. They worked with us closely from the data mapping to migrating the data to implementing the software. Merv Richter himself came down to do the training. We walked through all of the screens and all of the configurations. That made for a well-rounded experience from beginning."

Eloquent's Response to User Feedback

In response to user comments, Eloquent's president, Merv Richter, gave the following (slightly edited) response:

Some of the negative comments may have come from customers migrating from the old DOS version of the Eloquent GENCAT product. Applications built with it were usually custom-built, so when moving to the Web-based packaged application, some of the personalization was lost.

Also, some chose not to purchase the WebGENCAT Toolkit for the new product, so they had to pay for custom tailoring to their new application. The package product would not accommodate the old data structure.

Customer service is available by calling the hotline. Those calls are usually resolved by the person answering the phone. Voice messages are responded to in less than two hours.

The Eloquent Archives application is delivered with utilities to export data in a number of formats including ASCII tab-delimited and Excel. Eloquent consultants can configure a custom export to gather all related data out of the database and string the data fields out in any sequence the customer requests. The customer then uses the powerful search tools to select the desired records and send them to the custom export utility. The entire project usually does not exceed three to eight hours of the consultant's time after the customer approves the format.

CollectiveAccess Summary

To understand how archivists and museum specialists use CollectiveAccess (CA; formerly known as OpenCollection, or OC), I conducted a phone interviews with two users between May and June 2008. To encourage honesty, I promised anonymity to the interviewees. I tried to capture the interviewees' remarks as accurately as possible, but I paraphrased and/or condensed some comments.

Reasons for Selecting CollectiveAccess

- "We are using it for a couple of things. The features that were most appealing were the complexity of relationships that you could catalog between individuals. The project we've used it to execute is mainly a database that combines collection objects, artists and story, and locations. It has a built in georeference capability that is easy to use. We had planned to use more traditional collection management software for our project, but when that didn't work we turned to OC."
- "A lot of the other software that was looked at was too expensive. OpenCollection is free, a big factor in why they chose it."

Ease of Use

- "It's much easier than traditional collection management systems that I've worked with."
- "It would be easy for someone who isn't a trained archivist to use. As long as there is a protocol written for someone who is entering the data, it's pretty straightforward. The only thing that might take more explaining is the taxonomy that you create. The data is pretty easy."

Ease of Customization

- "If you have someone who can write code, you can do all sorts of things. Even I can change the names of fields, check boxes, etc. You can make it do what you need to do."
- "It's very flexible and customizable. Any time you need to add a classification, it makes it really easy; it has an easy interface."

Weaknesses

- "There isn't a lot of documentation—no help manuals."
- "The only weakness is that you don't get a help desk. You can e-mail OpenCollection and they get back to you."
- "Sometimes there are certain things on the interface I find a little bit clunky, but I've given a lot of feedback, and changes are made quickly. Whenever I find something that is awkward, I'll e-mail Support. Since it is so customizable, they can change it. I haven't really used other archival software, but I know that it has been very easy."

User Community/Support

- "I've found that the support has been very helpful. It's been really easy to access people."

Strengths

- "I'm not someone with a lot of experience with these systems, but I like the ability to link objects to people to places to events to exhibitions. You can use it to tell stories and show relationships between things. The end product lets people navigate through those relationships."

- "It's visually very strong—there are a lot of visualization options."
- "It's online and customizable—you don't need to download anything. Any changes that I make can be see instantly by anyone else working on the project."
- "There are cool tools within the software. For digital photos, you can magnify photos at a high resolution so you can catalog it at a level that is really detailed. There are details in old photos that you can't see through a magnifying glass, but the zoom tool on the photo interface is really powerful. The same goes for oral histories. … All of the audio files are digital, so you can catalog separate pieces of a whole oral history and jump to that part. The level of cataloging lets you get to minute detail. It's really easy to use."
- "Authority control is pretty good. You can connect to any sort of authority. We're connected to the Getty Art and Architecture Thesaurus, and it's pretty good. If you can't find something or if it doesn't fit, you can create your own authority. In that way, it's nice because it's customizable. It's flexible."