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Archon: Facilitating Global Access to Collections in Small Archives

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ABSTRACT

A significant portion of the world's historical papers and records are preserved not by large centralized government repositories, but isolated in modest humble academic and municipal archives and special collections libraries. These repositories often find it difficult to provide electronic access to their collections information. Archon is a collections management tool that was developed by the University of Illinois to help augment such access for these unique repositories. Archon is an easy, web-based application created specifically for describing archival materials and providing access to digital objects. It includes collection management features most commonly used by archives and special collections libraries and supports all relevant descriptive standards that ensure effective interoperability with other information access systems and resources. Archon can play a significant role in larger efforts to augment access to special collections within local contexts used to supplement regional and international projects. The University of Illinois is seeking to engage a broad user community in defining and implementing innovative extensions to its existing application to better serve archives and special collections libraries and their users.

Today's Challenges to Access

A significant portion of the world's historical papers and records are preserved not by large centralized government repositories, but by humble academic and municipal archives and special collections libraries. Many of these repositories lack the resources to provide effective on-line access to their unique

collections or to participate in grant-supported information access alliances (e.g., RLG Archival Resources database). As a result, a great wealth of knowledge, including scientific and technological papers, cultural and artistic documents, business and administrative records, and historical and literary manuscripts remain undiscovered and unused by scholars as well as the general public.

Librarians and archivists have argued for decades that historic preservation without a provision for public access renders meaningless the purpose of archives and special collections, which is the advancement of new knowledge derived from the past's documentary evidence. In the North American context, Judith M. Panitch revealed in her 2001 report to the ARL Research Collections Committee that 15 percent of printed volumes, 27 percent of manuscripts, and 35 and 37 percent of video and audio recordings remain hidden, unprocessed and inaccessible in a sample of 99 large special collections units in research universities.¹ These figures stagger the imagination. They also suggest higher statistical projections exist among the vast network of smaller and less-funded archives and special collections repositories. Christopher Prom's latest publication confirms this situation among small university archives in the United States which have statistically larger backlogs of unprocessed materials and few materials archival collections described online.²

A positive outcome from Panitch's findings has been an infusion of grant resources,³ processing and cataloging initiatives,⁴ and open source software⁵ developed to enhance libraries' and archives' collections processing initiatives and descriptive practices. In the United States news media also has helped bring greater public visibility to America's hidden historical treasures, and the challenges that archives continually face each day (e.g., National Public Radio's story, *'America Eats': A Hidden Archive from the 1930s*, which aired on April 21, 2008).⁶ In addition many academic libraries and archives, which had in the past exhibited unique documents and artifacts from their collections for those researchers who frequented their repositories, now market these exhibitions as opportunities for the general public to discover new treasures that once lay hidden among their archival holdings (e.g., University of Chicago Special Collections Library's, *Discover Hidden Archives Treasures: An Exhibition in the Special Collections Research Center Alcoves Gallery, March 28, 2008 – June 14, 2008*).⁷

The benefit of this heightened awareness of the world's hidden archives and special collections emphasizes a deeper reality articulated in 2001 by Elená Danielson, director of Stanford University's Hoover Library and Archives. She stated, "Though archives are open to anyone who wants to use them, whether affiliated with Stanford University or not, many students do not know what archives have to offer."⁸ Many of the students at Stanford reported feeling intimidated because the terminology and principles used by archivists and manuscript curators to describe and access historical documents (e.g., provenance, original order, and informational and evidential value) differ significantly from traditional book libraries. To compound this situation traditions strategies used by archives in the past are alien to these "millennial" students who are accustomed to new on-line technologies that provide "seamless" access to information as part of their daily lives. Stanford's solution to improving their students' and general public's understanding of their archives' holdings, like many other institutions across the United States, has been to actively push themselves to make their collections more physically and intellectually accessible using new on-line technologies and services while still retaining the essential principles of accepted archives descriptive practice.

New on-line and database technologies are offering archivists and librarians many innovative ways to provide world-wide access to their historical collections. However these technological advances are not necessarily improving access to the hidden collections of smaller repositories that do not have the necessary financial resources and knowledge of on-line technologies to take full advantage of these new access tools. In addition archives and libraries in many developing countries lack reliable electricity and

communications infrastructures to support these new technologies. This only exacerbates further the challenges that these international repositories face to improve access to their general collections as well as their archives and special book collections. As a result many of these small repositories continue to rely on locally developed desktop databases. Unfortunately these technologies restrict access to collections information and often inhibit the exchange of information across different repositories because of incompatible data structures and descriptive practices.

Another challenge to providing access to collections information has involved the instituting of a unified descriptive standard to help promote greater exchange of information across archives and special collections libraries. Over nearly three decades significant steps have been taken by archivists and librarians to standardize their descriptive practices. The first of these was the development of MACHine Readable Cataloging Format for Archives and Manuscripts Control (MARC-AMC) in 1985, which established a uniform bibliographic format for archival materials. This was followed by the development Encoded Archival Description (EAD) in 1997, which initiated a uniform data structure for encoding on-line finding aids to these materials.¹ However, MARC-AMC and its current successor, MARC21, continue to lack the flexibility to efficiently describe the full context and content of archives holdings. In addition, numerous EAD implementation problems continue to stymie efforts by many institutions to improve access to their collections because of cumbersome encoding tools and incompatible encoding strategies that frequently defeat the easy exchange of collections information across repositories. To compound this situation, these tools do not seamlessly publish on-line EAD finding aids without the use of second party software and compatible web hosting services.

Facilitating Collaboration and Global Access

In 2006 the University of Illinois developed Archon, an open-source collections management software program, to meet the descriptive and access needs of small academic and institutional archives and special collections libraries who lacked the resources and expertise to create searchable and browseable websites of their historical documents and papers using ISAD(G)⁹ and DACS¹⁰-compliant standards for description. Archon was formulated as a “plug and play” application with robust interoperability using a single web-based platform that can be easily installed on any web server or on any web hosting service. It utilizes common web-browser input mechanisms and SQL data storage to produce dynamic data output in the form of searchable websites, MARC bibliographic records and EAD (Encoded Archival Description) finding aids. Archon also supports multilingual character sets to display its public and administrative interfaces in languages other than English.

Since its unveiling in August 2006, the University of Illinois has made Archon freely available to all archivists, curators, and special collections librarians. As a result, a large user community of archives and special collections repositories has aligned with the Archon project and is frequently consulted to help the University’s project team to develop new functional specifications and answer questions about Archon. As of March 2008, the application has been installed over 600 times, and is being actively used as a ‘production’ application by over 30 archives and special collections libraries. Archon 2.1 was released April 14, 2008 and contains several significant enhancements to the application’s public and administrative interfaces that were a direct result of the needs of this user community. Over the next year, the Archon project team plans to continue development of new features, including an enhanced digital library and a preservation management component.

¹ For further information on EAD consult the Library of Congress website (<http://www.loc.gov/ead/>).

Archon's Public Access Features

Archon's public interface provides users with the ability to conduct key word searches of descriptions of archival materials, electronic records and digital content held by a repository (see figure 1). Users can also browse materials by title of collection and/or digital object, controlled



Figure 1. Archon navigation bar used by University of Illinois Archives.

subject headings, creator authority records and archival record group illustrated as "Campus Units" in figure 1. Searches can be executed across multiple repositories' collections and digital content when they share a common Archon database. This gives users the ability to narrow searches to specific content found across different collections of documents within a single repository (see figure 2), as well as the capacity to broaden a search from a specific piece of content in order to contextualize it within larger groups of related documents and records (e.g., box-, series- and record-group level). In addition Archon's key word search function provides users not only access to both collection-level records and detailed finding aids, but also highlights the specific term or phrase in these descriptive aids that matched their query. This feature is particularly useful to individuals who need to quickly identify specific content within very large finding aids.

Archon's public interface always displays the most current data about a repository's holdings because all information that is entered into the system is updated automatically when archives' staff edit these records. This feature is valuable to those researchers who need immediate access to a repository's latest acquisitions and additions to existing collections. Users can also easily navigate between archival descriptions and related digital content that share a common subject and creator or archival record group. In addition users have the capacity to view, print and



Figure 2. Search results for John Philip Sousa’s *Stars and Stripes Forever*, using the Sousa Archives and Center for American Music ‘theme’ for public view.

download finding aids for individual collections as well as related digital content. A typical “collection-level” view of the interface is shown in figure 3.

Information about the general repository location of a collection’s content, particularly when these materials are housed in more than archival unit, is available through Archon’s public interface. This helps guide users to the specific institutional unit responsible for providing physical access to users during their research visits. However specific shelf location information is never made available to the general public. Archives and library staff can access more detailed location information through Archon’s administrative interface when requested materials need to be routed from an off-site storage location or unique preservation conditions require special handling (e.g., original photographic negatives preserved in cold or deep-freeze storage).

Archon’s new “research cart” function allows users to identify and request specific content at any container level that they would either like to use during an on-site research visit or have a specific reference inquiry about (see figure 4). This feature, which requires the user to create a researcher account for themselves using Archon’s public interface, also gives individuals the ability to track specific descriptive content that they accessed across multiple sessions over time which ensures they can retrace their search strategies any time they return to a repository’s collections website.

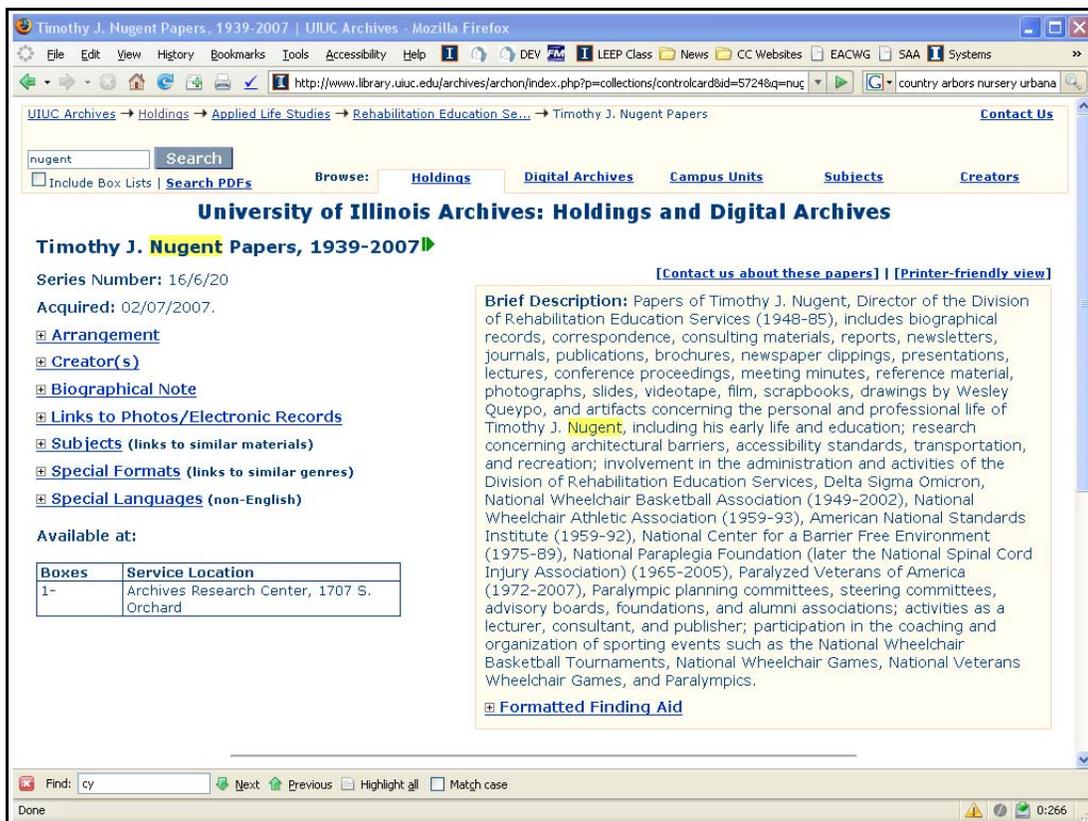


Figure 3. Collection level descriptive record in the University of Illinois Archives for public view.

A research request has been submitted by Ryan Cavis. To contact the researcher about the appointment, please reply directly to this e-mail or email him/her at rcavis2@uiuc.***.

Researcher Information:

Name: Ryan Cavis
 Researcher Type: Student
rcavis2@uiuc.***
 Phone: 615-442-58**

Appointment Details:

Arrival time: 03/28/2008 01:15:00 PM
 Purpose: Historical Research
 Topic of Research: Leonard Smith and E. F. Goldman compositions

12/9/94 Fine and Applied Arts/University Bands – Paul Bierley Papers, 1864-2002. Series 3: American Band History Materials, ca. 1900-2003, Sub-series 2: Leonard B. Smith and the Detroit Concert Band, Box 92, Folder 5: Leonard Smith: Biographical

Figure 4. Research cart list generated as part of an online request for a research appointment.

Archon's Collections Management Features

Archon's administrative interface can be accessed and used as easily as its public interface by a repository's staff. Once a staff member has successfully logged into Archon's administrative interface, a series of "pencil icons" will appear next to the various data elements of Archon's public display (see figure 5). Clicking on these symbols provides immediate access to editable

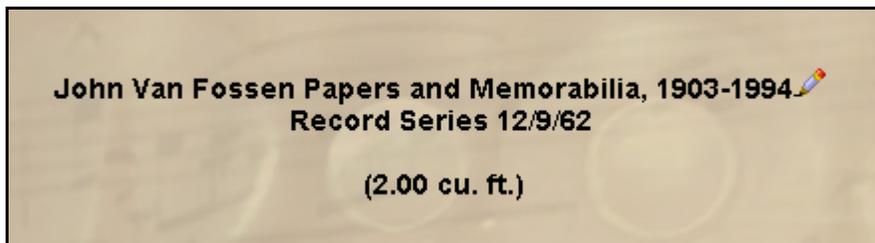


Figure 5. Edit icon (pencil symbol) used to log into the administrative interface for the John Van Fossen collection-level record from the public interface.

content for that specific record or finding aid in the administrative interface. This enables staff to easily navigate between Archon's public and administrative interfaces using a single browser window. The dual interface helps simplify work flows for the creation and editing of on-line finding aids by archives and library staff.

Administrative access to top-level descriptive information for a specific collection is provided through Archon's collections manager (see figure 6) and more detailed content fields (e.g., location and creator information, box and folder inventories, and controlled authority terms) are linked directly from this manager. The level of administrative access and editorial permissions granted to a staff member by a repository's Archon administrator is controlled by Archon's "User" and "User Group" managers, and may vary depending on a staff member's specific service responsibilities within a repository. For example, one individual's level of access could include only read and write access while another may have read, write and delete access to collection information contained in Archon.

In the event a staff member is unsure what to type into a particular field, they can click on the "question mark" icon that appears next to the field entry box to open an explanatory window describing what information should be entered into that field and the related DACS descriptive rule. This feature is particularly useful for non-professional staff (e.g., graduate assistants and volunteers) who may be responsible for entering specific types of collection-, series-, and item-level information into Archon for their repository. Currently the administrative interface and all of the explanatory field descriptions are available in English and Spanish, and will become available in other international languages as translations become available. Efforts are currently underway for the creation of a French language interface by the end of Summer 2008.

Collection Manager: John Van Fossen Papers and Memorabilia (ID: 5556)	
Content Manager	
Collection Information	
Title:	<input type="text" value="John Van Fossen Papers and Memorabilia"/> ?
Enable Web Output:	<input checked="" type="radio"/> Yes <input type="radio"/> No ?
Main Repository:	<input type="text" value="The Sousa Archives and Center for American Music"/> ?
Collection Classification:	<input type="text" value="12 Fine Arts and Applied Arts"/> ? <input type="text" value="9 University Bands"/> ?
Collection Identifier:	<input type="text" value="62"/> ?
Sort Title:	<input type="text" value="Van Fossen, John"/> ?
First/Last Year:	<input type="text" value="1903"/> - <input type="text" value="1994"/> ?
Inclusive Dates:	<input type="text" value="1903-1994"/> ?
Predominant Dates:	<input type="text"/> ?
Type of Materials:	<input type="text" value="Personal Papers"/> ?
Extent:	<input type="text" value="2.00"/> <input type="text" value="cu. ft."/> ?
Finding Aid Author:	<input type="text" value="Adriana Cuervo"/> ?
Template:	<input type="text" value="System Default (uarchives)"/> ?
+ Location Information ? + Creator Information ? + Collection Description ? + Subjects ? + Genres ? + Languages ? + Restrictions ?	

Figure 6. Collection-level record as seen through the Collections Manager Interface for John Van Fossen Papers and Memorabilia

Archon's new accession manager enables staff to enter preliminary descriptive information about new acquisitions and additions to existing archival collections. This feature not only gives staff the ability to track the general scope, amount and type of materials for these accretions but also provides staff with a tool to assign a priority level for the processing (i.e., the arrangement and description) of these new materials (see figure 7). This initial description also can be built on to develop fuller collection-level records and finding aids once this information is transferred to the collections manager module. However information that is entered into the accession manager is available for viewing only through Archon's administrative interface and will not be displayed through the public interface until this data has been transitioned into the Archon's collections manager. This ensures some level of physical and intellectual control for new acquisitions before making the materials available to the public. The display of location information for processed and unprocessed archival materials through the administrative interface provides staff with detailed room, range and shelf locations for specific physical amounts (i.e., linear or cubic feet) and number of boxes of archival materials. This feature is useful to staff for managing their processing projects and physical storage space.

Accessions Manager

(Add New)
 AALS section publications
 Charles P.A. Lonergan Scrapbook
 Pi Tau Sigma, Mechanical and Industrial Engineering
 Campus and Student Activity Slides
 jerry hirsch papers
 Family Housing Division
 IUB additions
Rhetoric Essays
 ASIST Student Chapter Records
 Beryl Love Bristow Papers
 ATO Wynn Smiley- letters, files, day planners
 Frank W. Chase Scrapbook
 ATO Chapter Files ('03-'04)
 Craig Poffenberger Papers
 Hillel Foundation addition
 Executive Memoranda and publications

Create Collection Record **Delete**

Enable Web Output: Yes No

Accession Date: 1 / 1 / 2007

Title: Rhetoric Essays

Identifier: 15/7/833

Inclusive Dates: 2000-01, c2006

Received Extent: 0.2 (Select One) ▼

Unprocessed Extent: 0 (Select One) ▼

Material Type: Official Records ▼

Processing Priority: Low Priority ▼

[Collections/Classifications Information](#)

[Location Information](#)

[Creator Information](#)

[Donor Information](#)

[Accession Description](#)

Update

Figure 7. Accessions Manager.

Archon makes it easy to develop and apply creator authorities and controlled subject lists. If a staff member needs to apply a term to collection or digital content, he/she need only open the “subject” module of the collections manager and begin typing any portion of a term into the entry box. Archon filters the term against the existing list of terms until the appropriate one is displayed. Once the term is displayed it can be easily linked to the appropriate collection or digital content with a simple click on the term and then clicking on the update button.

If no authority term exists within the controlled vocabulary list that is provided with the Archon application when it is installed, a new Library of Congress (LC) or local heading term can be constructed using Archon’s subject manager and loaded to that repository’s controlled vocabulary list using the update button (see figure 8).

Creator Manager

Baker, William Melville (1823-1873)
 Balachandran, Madhavarao (1938-2000)
 Balcom, Henry C.
 Balderson, Ted A.
 Balduf, Walter Valentine (1889-1969)
 Baldwin, Thomas Whitfield (1890-)
 Balinsky, Boris I. (1905-)
 Ballroom Dance Club
 Bane, Lita (1887-1957)
 Bank of Bloomington
Banks, Edwin M. (1926-1985)
Baptist Student Foundation
 Barber, Harry H.
 Bardeen, John (1908-1991)
 Barksdale, Richard K. (1915-1993)
 Barnes, Clifton E.
 Barr, Andrew
 Barrett, James T. (1927-)
 Bartow, Edward (1870-1958)

Delete

Name: ?
 Dates: ?
 LCNAF Compliant: Yes No ?
 LCNAF-Compliant Dates: ?
 Creator Type: ?
 Parent Body: ?
 Related Creators: ?

Fuller Form of Name: ?
 Name Variants: ?

Biographical/Historical Note: ?

Sources for Biography or History: ?

Figure 8. Creator (Authority) Manager

The subject manager enables the staff member to identify new terms as either LC or local heading. Once this has been done, the new term can then be linked to either the collection record or digital object. All subject, genre, and creator headings are displayed as LC or local headings in the MARC bibliographic records for these collections. If a repository uses other authority control thesauri (e.g., AAT or Australian Authority Terms) for their controlled vocabulary, these can be added to their Archon data set and the subject source can be marked in the subject manager. In addition when new subject headings are added to a repository's specific version of Archon they are retained when the system is upgraded to a later release of the software.

Archon's "Content Manager" gives staff members the ability to produce series-, box-, folder-, and item-level content descriptions of archival materials as easily as creating word processing documents. Once these descriptions have been entered into Archon, they are automatically displayed through its public interface as finding aids and other access tools correctly encoded as EAD, HTML and MARC files.

The Collection and Content managers do not require staff to have extensive knowledge and experience with complicated EAD encoding strategies and MARC cataloging protocols. In addition, changes and deletions to collection information contained in Archon are done in real time and made immediately available through the public interface. If a repository wishes to restrict public access to this information until a collection is fully arranged and described, their staff can do this by disabling the "web-enable" function at the top of the collection manager window. This will disable all public display and search functions for this collection until the web-enable feature is implemented by an administrative member.

For repositories that have many large "legacy" finding aids that are not easily imported or keyed into the content manager, Archon provides staff with the ability to link collection-level records to external digital files, such as PDF documents, by entering a URL into the appropriate field of the content manager. In these cases, a collection-level MARC record and EAD file are still dynamically produced by the system ensuring that an institution can share general descriptive data about their collections with other institutions.

Recent enhancements to Archon's digital library module enable staff to upload and link digital image, video and audio files to archival finding aids. These digital files can be stored directly in the Archon database or in other database systems, such as DSpace, running on other servers inside and outside of an institution's archival repository. Digital objects also can be associated to specific archival finding aids at the box, folder or item level through a common provenance, subject and/or creator. In addition multiple pieces of digital content can be associated to a single collection or item within a collection. The process for linking digital and descriptive content is done through the digital library manager, and is as simple to use as Archon's subject and creator managers.

While the current version of the digital library manager requires staff to load content and content descriptions in two separate steps, a future planned enhancement to this manager in the summer of 2008 will allow administrative staff to accomplish both steps using a single update function. This improvement will help simplify the workflow for adding content to the digital library and save time for archives staff. In addition queries of Archon's enhanced digital library will render results pages containing thumbnail images and minimal descriptive information for all digital content matching that query. These thumbnail images will enable users to quickly identify the digital content that they are seeking, and provide access to associated higher resolution images and expanded descriptive information as well as have access to a downloadable file.

Archon's administrative interface also supports batch import of collection information from and into a variety of different data formats that are typically used by archives, museums and libraries (e.g., static database, spread sheet, word processing, HTML and EAD/XML). Archon can export data in these formats as well, so there is minimal risk if an institution decides to migrate away from Archon in the future. The MARC records, EAD-, and HTML-formatted finding aids, and digital content files that are dynamically generated by Archon can be uploaded as individual documents into any automated stand-alone system an institution chooses to use.

Archon Administrative Features

The installation of Archon requires only a blank MySQL or Microsoft SQL Server database and any web server running PHP 5.0 or higher. An automated installer is provided with the downloadable application and requires minimal information about a repository's database and web servers to complete the installation (e.g., identification of the database server type and server address, web server address, and login IDs and passwords). Prior to installation the executable file will confirm your server configurations based on the initial information provided by the Archon administrator. Once installed, Archon system administrators can define general repository information (i.e., addresses and contacts) and specific types of record groups or other classification and arrangement schema that will be utilized by their institutional repository.

Administrators can easily tailor Archon's public interface to match their archives' or library's existing website design by modifying its themes and output templates. However repositories can also choose to use the default themes and templates that are supplied with each Archon installation. Archon administrators also have the ability to create, edit and delete user accounts depending on the specific needs and responsibilities of their repository's staff. In addition administrators can batch import data from existing MARC, EAD (XML) and comma-separated-values (CSV) files directly into Archon (see figure 8) as well as export data in these formats from Archon into other systems. This feature is particularly helpful when a repository has extensive collections of legacy files that they wish to use to populate the Archon database.

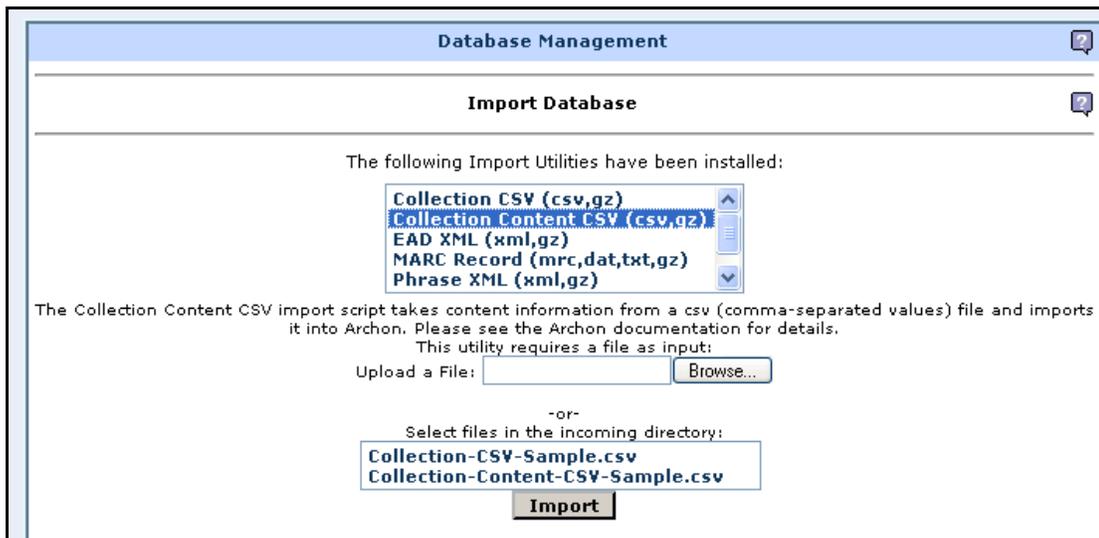


Figure 8. Import function in Archon's database manager.

The interface for creating, editing and accessing descriptive records uses any standard web browser with java script enabled, and has been tested on both PCs and Macs running Internet Explorer 6.0 and higher, Firefox 2 and Opera 8 and higher. Archon will also work with other browsers and operating systems. While all of the code is open for local customization and/or additions, the base code is maintained solely by the University of Illinois.

Archon's "Application Programming Interface" (API) uses an object-oriented data model and a database abstraction layer to insulate developers from all but the most complex functions. All programming is

completed within the context of the Archon API. Specific functions and methods including database retrievals and storage are derived from within an “Archon” object and its sub-objects, functions and methods. This programming strategy provides developers with the ability to easily modify and develop new Archon programming modules. A complete description of Archon’s technical platform is available at <http://www.library.uiuc.edu/archives/workpap/ChapterEight-Prom.pdf>.

Conclusion

As the published literature of the world becomes more and more accessible, it is important that the international library community focus its attention on the critical issues of providing global access to special collections. It is important to keep in mind that many unique and valuable resources in large and small archives alike remain undescribed and inaccessible to the world in an online environment.

The University of Illinois hopes that its Archon application can help many archives improve public access to their historical collections, and that the international user community will grow and assist us in our further development of this collections management tool. As members of the larger archives and special collections community we should not expect that this or any other automated tool can wholly solve all of the problems associated with providing access to diverse special collections. Political, cultural, financial, and technological factors must be considered together in order to determine the best possible way to meet users’ needs in the new information environment that has emerged and engulfed today’s special collections and archival materials. Nevertheless, Archon and tools like it provide one building block for a new approach to describing and providing access to the unique parts of our collective cultural heritage that remain hidden and inaccessible. We are very grateful to have had this opportunity to explain the potential uses of the University of Illinois’ Archon application for improving collections management and access for all archives and special collections.

REFERENCES

¹ Judith M. Panitch, *Special Collections in ARL Libraries: Results of the 1998 Survey Sponsored by the ARL Research Collections Committee* (Washington, D.C.: ARL, 2001).

² Christopher J. Prom, “Optimum Access? Processing in College and University Archives,” *College and University Archives: Readings in Theory and Practice*, eds. Christopher J. Prom and Ellen D. Swain (Chicago: Society of American Archivists Press, 2008) Draft available at <http://www.library.uiuc.edu/archives/workpap/ChapterEight-Prom.pdf>

³ The Andrew W. Mellon Foundation and Council on Library Information Resources grant, *Cataloging Hidden Special Collections and Archives: Building a New Research Environment* <http://www.clir.org/activities/details/hiddencollections.html>.

⁴ MIT’s *Dspace* repository project, <http://dspace.org> and United Kingdom’s *Project SHERPA* to preserve scholar output of university faculty, <http://www.sherpa.ac.uk>.

⁵ Access to Memory (AtoM) software based on International Council on Archives standards that is multi-lingual and supports multi-repository collections description, <http://www.ica-atom.org/>.

⁶ <http://www.npr.org/templates/story/story.php?storyId=4176589>.

⁷ <http://www.lib.uchicago.edu/e/spcl/curex.html>.

⁸ Amelia DelaPaz, “Hoover Archives a hidden resource,” *The Stanford Daily*, May 24, 2002.

⁹ General International Standard for Archival Description (http://www.ica.org/biblio/cds/isad_g_2e.pdf).

¹⁰ *Describing Archives: A Content Standard* (Chicago: Society of American Archivists, 2004). (<http://www.archivists.org/catalog/pubDetail.asp?objectID=1279>)