

NSF/ JISC Workshop on Data-Driven Science and Data-Driven Scholarship

Discussion Group on Individual Users

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Increasingly, information seekers go online before—or instead of—searching for information in print or other formats. The recent rapid expansion of e-commerce is a good example. In the early years, e-commerce was inhibited by a dearth of products and difficulties with navigation, ordering, making payments, and other problems. Now the tipping point has been reached. It is easier for consumers to search online, where they can find and order almost anything with a mouse click, than it is to drive to different stores looking for items that might not be there or might not be suitable. Online vendors have also made it easy to navigate their sites, inspect merchandise through high-quality images, and return mistakes easily with pre-paid shipping.

The tipping point for change in scholarly research will come when researchers can easily access vast quantities of relevant information online and can use readily available tools to download, organize, manage and manipulate content from a variety of sources. In the process, they will no doubt discover obscure information, make connections between discrete bits of information from disparate sources, answer questions that had not previously been asked, and ultimately pose new questions. This would reverse the traditional research process that progresses from questions to identification of research sources to analysis of the material. In the humanities, for example, historians traditionally develop research projects with a fair pre-existing knowledge of where they will find relevant collections, based on bibliographic searches and formal and informal queries conducted through colleagues and libraries. They allocate time to visit each significant repository and sift through those collections most likely to yield the richest results. There is generally not time to visit lesser repositories, examine smaller collections, search resources on special media formats such as maps, photographs, or films, or examine information sources of which the potential relevance is tangential or unknown. At most, visual resources are searched as a final step before publication of a book or article to identify images for use as illustrations.

But it is likely that researchers will soon be able to locate vast quantities of online content that is thematically linked regardless of repository or format. With access to a wealth of online materials, researchers can search simultaneously across published and unpublished sources; regular and special collections; library, archival, and museum holdings; and information that falls outside the boundaries of cultural heritage institutions, such as government databases and wiki-pedias. They may be tempted to depart from a main topic to pursue geospatial, biographical, economic, or even environmental data that might not be directly relevant to their main line of inquiry. These kinds of serendipitous detours could be a new kind of browsing and could change research methods, increase interdisciplinary collaborations, and produce new scholarship that synthesizes knowledge across the traditional disciplines, changes the questions, and creates new constructs of knowledge.

What are the barriers to a ubiquitous online information environment in which researchers can engage in the entire scholarly process from inquiry to publication?

The reason for low participation of humanities scholars in the digital environment may not be resistance to change so much as insufficient likelihood of a good return on investment of their time. Perhaps the focus now needs to shift from efforts to expand the number of early adopters in the scholarly community to concentration on making the online knowledge environment pervasive and a good return on investment for scholars, as it already has become for students and the general public. The slow development of institutional repositories and alternatives to traditional publication mechanisms suggest that some intermediate steps need to be taken before these new modes are widely adopted (apart from questions about how scholarship in the digital environment will be recognized by the academy). These intermediate steps may not be exciting, but they are still necessary.

There are still insufficient funds for digitization, and there is a danger, in light of the Google mass digitization project, that potential funders such as the federal government will assume the private sector will quickly step up and finance the whole thing. The content universe will likely be overbalanced with books in the public domain, at the expense of special collections materials and assets that remain under copyright or have unclear copyright status.

The cost of storing very large quantities of data remains a problem. It was recently reported that one of the original "Google" libraries was considering storing its files received back from Google in compressed formats because the cost of storing uncompressed files was so high (reportedly \$200,000 annually, compared with \$60,000 for compressed formats).

One of the greatest remaining needs is the development of trusted repositories for long-term preservation of digital assets of many types and from many sources. Yet a recent survey of institutional repositories in institutions of higher education in North America found there is no consensus even on what institutional repositories are for, and that their development is quite slow. While survey respondents identified preservation as a key function, repositories are not yet providing significant preservation services [see <http://www.clir.org/pubs/abstract/pub140abst.html>]. Most respondents envisioned repositories as resources to which faculty would contribute, but they did not plan to deposit digitized library collections or other institutional assets in them, even though the respondents were librarians. Only slightly more than 10% of survey respondents actually had operational repositories, and most of these were very small—half contained less than 1,000 documents and only a few had more than 5,000. Perhaps the idea of institutional repositories is too narrowly conceived at the present time and not well enough integrated into other functions and services.

It would be useful to approach the preservation problem from a larger perspective. How can the preservation needs of public holders of digital assets in all forms be accomplished most economically and effectively? Funding of a few large-scale, multi-institutional and multi-purpose repositories for preservation of digital content, from digitized library and museum resources to scholarly research to scientific data, in both dark and light archives, would create economies of scale as well as models for practice. Such repositories could serve many institutions by accepting content from feeder repositories and would help to ensure development of and adherence to policies and standards for interoperability, preservation and re-use.

Good discovery metadata is needed to enable linkages between collections and data. The debate continues about automatically generated vs. human-created metadata;

probably both are needed, at least for some collections. Collections identified for permanent preservation will be worthy of curation through high-quality metadata.

Finally, individual users need tools to easily manage, organize, manipulate and present digital content. A 2005 NSF-funded summit on digital tools for the humanities recommended, as the highest priority to advance scholarly collaboration, the development of a clearinghouse for peer review of domain-specific tools currently available to scholars [see <http://www.iath.virginia.edu/dtsummit/>]. The report noted that many such tools have already been developed but are not widely known to potential users.

Priorities:

--substantially increase the conversion of analog resources in all formats to digital, with appropriate metadata to support discovery, management, preservation and use.

--develop and support trusted digital repositories, building on collaborative relationships among institutions with related needs; a recent NSF-funded workshop on "The Role of Academic Libraries in the Digital Data Universe" recommended that NSF facilitate the establishment of a sustainable institutional framework for long-term data stewardship [see <http://www.arl.org/pp/access/nsfworkshop.shtml>].

--develop tools that are adaptable and interoperable across collections; promote awareness, evaluation and promotion of existing tools for discovering, managing, manipulating, and presenting digital content.

--promote collaborative projects to engage scholars in digital projects within and across disciplines and to work with library, museum and archives professionals to kick-start advances in digital research, scholarship and education. Projects could include, for example, new critical editions of texts, wiki-style reference tools, and projects to highlight institutional strengths in particular areas of collection and scholarship.

--substantially increase the number of information professionals able to create, manage and present digital content; the workshop on "The Role of Academic Libraries in the Digital Data Universe" recommended that NSF should partner with IMLS and graduate schools of library and information science to train information and library professionals to work on data curation as members of research teams [see above]. IMLS currently has a robust grant program to fund educational projects in graduate LIS schools (nearly \$24 million in 2007).

See attached list of relevant IMLS-funded projects as examples of work in progress or recently completed in repository development, metadata and tools.

SELECTED IMLS-FUNDED PROJECTS

MODEL REPOSITORY SYSTEMS DEVELOPMENT AND RESEARCH

Johns Hopkins University's Sheridan Libraries – Baltimore, MD

Year: 2006 Amount: \$184,512

Grant: [National Leadership Grants for Libraries](#) - Research and Demonstration

Johns Hopkins University will establish a collaboration of publishers, libraries, and the National Virtual Observatory (NVO) to give astronomers long-term, reliable access to useful data. Incorporating the Web services of the NVO into a digital library framework, this project will provide methods for long-term digital archiving of content that can be used in publishing research in astronomy. The system created by Johns Hopkins and its partners--the University of Washington and the University of Edinburgh--, based on the open-source Fedora digital repository system, will serve as a model for the preservation and use of high-volume data in other fields.

Massachusetts Institute of Technology Libraries – Cambridge, MA

Year: 2006 Amount: \$724,415

Grant: [National Leadership Grants for Libraries](#) - Research and Demonstration

Using designs of architect Frank Gehry as a test bed, MIT will research Computer-Aided Design (CAD) architectural documents and create preservation strategies to stem the loss of this critical cultural material. The researchers will examine the role of digital preservation archives, such as the open-source DSpace digital repository system, to provide solutions to this problem. Results will be shared with other institutions.

University of California Humanities Research Institute (UCHRI) – Irvine, CA

Year: 2006 Amount: \$249,999

Grant: [National Leadership Grants for Libraries](#) - Building Digital Resources

The University of California Humanities Research Institute (UCHRI), in collaboration with the San Diego Supercomputer Center, will preserve, analyze, and make publicly accessible online documents relating to the practice of "redlining" neighborhoods in the 1930s and 1940s in eight California cities. ("Redlining" refers to the practice of flagging minority neighborhoods as undesirable for home loans.) UCHRI's Humanities, Arts, and Social-Sciences grid will allow a central catalog to manage the preservation metadata for each city's electronic file of neighborhoods. This important historical data will be accessible from any personal computer. The project will have the added benefit of demonstrating the use of grid-based repositories for humanities-related data

University of Rochester's River Campus Libraries – Rochester, NY

Year: 2006 Amount: \$323,804

Grant: [National Leadership Grants for Libraries](#) - Research and Demonstration

The River Campus Libraries of the University of Rochester will develop tools for writing dissertations in the university's institutional repository. Researchers will examine how doctoral students currently produce their dissertations and will use the knowledge gained to create a single location for the full spectrum of research, writing, and archiving activities. Integrating a number of library functions and services, this tool will make institutional repositories more usable and will increase the amount of valuable scholarship they contain.

Indiana University – Bloomington, IN

Year: 2005 Amount: \$768,747

Grant: [National Leadership Grants for Libraries](#) - Building Digital Resources

Over the past several decades, information technology has become an essential part of how music libraries deliver services and collections to music students and faculty. Yet, even with technological advances, music students and faculty have not been able to transform routine listening assignments that traditionally involve studying a printed score while listening to a recording. Over the past four years Indiana University (IU) has developed an experimental digital music library system known as Variations2. Building on IU's past experience in creating the original Variations, one of the world's first digital music library systems, Variations2 provides a complete environment in which students and faculty can discover, listen to, view, annotate, and interact with music. This project will create Variations3, a turnkey digital music library and learning system that can be easily deployed at a wide range of college and university libraries with minimal technical support and at minimal cost to the institutions.

University of Maine – Orono, ME

Year: 2005 Amount: \$249,689

Grant: [National Leadership Grants for Libraries](#) - Research and Demonstration

The University of Maine's Fogler Library, in partnership with the Department of Spatial Information Science and Engineering, will research the requirements for an open source Commons of Geographic Data (CGD) System. The CGD System will ultimately provide a means to capture and make available the rich but currently largely invisible geographic information resources generated by local, nonfederal sources. The research will engage users and potential users of such information, including teachers, students, and community organizations, in identifying system requirements and developing design specifications.

Florida International University Libraries – Miami, FL

Year: 2004 Amount: \$239,602

Grant: [National Leadership Grants for Libraries](#) - Research and Demonstration

In this demonstration project, the Florida International University Library Geographic Information System and Remote Sensing Center, Library Latin America and Caribbean Information Center, Environmental Studies Department and Center for Ethnobiology and Natural Products, in partnership with the Docente Escuela Politecnica Nacional of Ecuador, will develop and implement a scalable, highly adaptable, uniform data management framework and geospatial data collection system that will link geospatial data, diversity collections, charts, and other material on the Andean Amazon region in diverse formats.

University of Denver – Littleton, CO

Year: 2004 Amount: \$496,963

Grant: [National Leadership Grants for Libraries](#) - Library-Museum Collaboration

As an extension of the Colorado Digitization Program's Digital Audio Working Group, the project team will develop a shared statewide infrastructure available to cultural heritage organizations with audio resources by digitizing at least 2,000 audio objects to be accessible through catalogs, exhibits, and special indexing. The audio files will be centralized for institutions lacking their own capacity, and central streaming services will be provided. Users will be able to enter a search term, receive a list of audio files containing the search term used in the transcript, and then locate and listen to occurrences of the search term in the audio files. Contributing organizations will prepare their own standards-based metadata with access to DC Builder, and those records will be loaded into Heritage, the digital object metadata catalog of the Colorado Digitization Program. Teacher resources will be created for each collection, and rights will be addressed with the help of Michigan State University Libraries.

University of Rochester, River Campus Libraries – Rochester, NY

Year: 2003 Amount: \$103,546

Grant: [National Leadership Grants for Libraries](#) - Research and Demonstration

This study will research the problem of grey literature (such as theses, conference proceedings and technical standards) and who uses it, and will make recommendations on how to identify it and how to locate and store it. The project will result in new modules for the open source DSpace institutional repository system.

California Digital Library – Oakland, CA

Year: 2002 Amount: \$374,736

Grant: [National Leadership Grants for Libraries](#) - Research and Demonstration

In this two-year demonstration project, the California Digital Library, in partnership with the UC Berkeley Library, will create a model preservation repository for multi-institutional digital materials following the Open Archival Information System (OAIS) reference model. The project will also explore and report on issues related to repository operation and policies.

University of Florida, Center for Library Automation – Gainesville, FL

Year: 2002 Amount: \$190,604

Grant: [National Leadership Grants for Libraries](#) - Preservation or Digitization

In this three-year project, the Florida Center for Library Automation (FCLA) will develop a "Central Digital Archiving Facility" for the libraries of Florida's public college and university system. It will identify costs of all aspects of archiving for cost recovery purposes and serve as a model for the development of other central archiving facilities nationwide.

METADATA AND METADATA REPOSITORIES

Metropolitan Museum of Art – New York, NY

Year: 2006 Amount: \$503,550

Grant: [National Leadership Grants for Museums](#) - Research and Demonstration

The Metropolitan Museum of Art will conduct research on the capabilities of social tagging and folksonomies, methods of labeling and categorizing online collections to make objects easier for the public to find. There are millions of works on the Web, but the general public sometimes has difficulty finding them because the keywords associated with them may be technical or professional terms. This project will evaluate the relationship of user-suggested terms to existing museum documentation, professional-controlled vocabularies, general reference resources, and terms used in searches of on-line museums resources by the public. The results will provide new strategies for subject description and indexing and increase public access to collections using a set of common terms that takes into account the varied perspectives of users. The Met will collaborate with six other museums on this project: Cleveland Museum of Art, Denver Art Museum, Guggenheim Museum, Minneapolis Institute of Art, Rubin Museum of Art, and San Francisco Museum of Modern Art.

Missouri Botanical Garden – St. Louis, MO

Year: 2005 Amount: \$494,216

Grant: [National Leadership Grants for Libraries](#) - Building Digital Resources

The Missouri Botanical Garden will create a public-resource computing application that digitizes and automatically indexes vast amounts of scientific literature, ultimately providing users with an integrated Web portal for the discovery of information about plants. SciLINC (Scientific Literature Indexing on Networked Computers) will use Internet-connected personal computers (PCs) to analyze data when the PC is not active. (The applications generally run in the form of a screen saver, taking advantage of unused computer processing power.) SciLINC, freely available to the general public, will analyze text from digitized botanical literature in order to return a full-text index and a keyword index for each page. These keywords will be annotated with links to other Web pages about a particular plant, allowing users of the portal to search for terms, discover where they reside in a body of digitized literature, view the appropriate pages, and click through to discover other online resources associated with that keyword. This Web portal will be an essential tool for anyone interested in learning about plants, including scientists, students, and the general public.

University of California – Riverside, CA

Year: 2005 Amount: \$999,719

Grant: [National Leadership Grants for Libraries](#) - Research and Demonstration

The University of California Riverside Library will conduct research aimed at producing better machine-based, automatically generated metadata to improve the search and retrieval of online content. This project will refine and augment services and accompanying software tools supported with previous IMLS funding in order to expand their automated and semi-automated textual data mining, data extraction, and metadata generation capabilities. The project will create free open source software and will address organizational and sustainability issues relating to metadata generation service(s) for digital libraries.

University of Nebraska-Lincoln – Lincoln, NE

Year: 2005 Amount: \$169,651

Grant: [National Leadership Grants for Libraries](#) - Research and Demonstration

The University of Nebraska-Lincoln Libraries will use the Walt Whitman Archive project to create a model metadata encoding and transmission standard (METS) profile for digital thematic research collections. Digital thematic research collections constitute a distinct class of digital collection that typically requires high-quality data and metadata, in-depth description, high resolution files, and encoded texts. While standards have been developed for each of these, there has not yet been a disciplined effort to integrate the standards. Created by scholars in collaboration with librarians/archivists, thematic research collections are directed primarily at other scholars, though they are also used by students from kindergarten through graduate school, and by life-long learners. By standardizing the way metadata is encoded, creators of digital thematic research collections can make their work more sustainable and universally usable.

Digital Library Federation – Washington, DC

Year: 2004 Amount: \$292,456

Grant: [National Leadership Grants for Libraries](#) - Research and Demonstration

The Digital Library Federation (DLF), in partnership with Emory University, the University of Illinois at Urbana-

Champaign, and the University of Michigan, will research, design, and prototype a "second generation" OAI finding system, capitalizing on the lessons learned from the first wave of OAI harvesting and using as its raw material collections drawn from across the DLF membership. The aim is to foster better teaching and scholarship through easier, more relevant discovery of digital resources, and enhance libraries' ability to build more responsive local services on top of a distributed metadata platform.

Emory University Libraries – Atlanta, GA

Year: 2003 Amount: \$52,160

Grant: [National Leadership Grants for Libraries](#) - Library-Museum Collaboration

The Emory University Libraries' MetaScholar Initiative will work with the Center for the Study of Southern Culture, the Atlanta History Center, and the Georgia Music Hall of Fame to increase public access to primary source material relating to the music and musicians of the Civil Rights Movement, using the Open Archives Initiative Protocol for Metadata Harvesting to integrate several disparate collections.

Project Website: <http://www.metascholar.org/sw/mm>

Rutgers University Libraries – New Brunswick, NJ

Year: 2003 Amount: \$463,511

Grant: [National Leadership Grants for Libraries](#) - Library-Museum Collaboration

The New Jersey Digital Highway (NJDH) is a statewide repository and collaborative portal created by the Rutgers University Libraries, American Labor Museum/Botto House, New Jersey State Library, New Jersey Historical Society, New Jersey State Archives, and smaller libraries, museums, archives, historical societies, public broadcasting, and schools. The project will create a statewide digital infrastructure and will develop a portal to the state's immigration history and ethnic heritage as the first stage of content development.

Greater Western Library Alliance – Kansas City, MO

Year: 2003 Amount: \$249,736

Grant: [National Leadership Grants for Libraries](#) - Preservation or Digitization

In partnership with the University of Utah, the Greater Western Library Alliance will build a digital library of water resources information for the western United States from a geographically dispersed consortium of 30 major universities. This project will harvest metadata from multiple digital collections servers at the leading participant institutions using the Open Archives Initiative Metadata Harvesting Protocol, and will create a single point of search.

University of Illinois, Urbana-Champaign, Library – Champaign, IL

Year: 2002 Amount: \$499,440

Grant: [National Leadership Grants for Libraries](#) - Research and Demonstration

In this three-year research project, the Library of the University of Illinois at Urbana-Champaign will create a collection-level registry of digital collections created with IMLS funding from 1998 to 2005 and will research, design and implement a prototype item-level metadata repository service based on the Open Archives Initiative Metadata Harvesting Protocol.

TOOLS

University of California, Berkeley – Berkeley, CA

Year: 2006

Amount: \$398,451

Grant: [National Leadership Grants for Libraries](#) - Research and Demonstration

The Electronic Cultural Atlas Initiative at the University of California, Berkeley will create improved tools and identify best practices to automatically link biographical information about people to their historic and geographic context in a way that is clearly displayed and easy to use.

University of Southern California – Los Angeles, CA

Year: 2006

Amount: \$600,000

Grant: [National Leadership Grants for Museums](#) - Research and Demonstration

The University of Southern California has formed a partnership with Cultural Heritage Imaging to develop technology that is capable of providing a three-dimensional, multi-view representation of cultural objects that will be

downloadable and available over the Internet. This project is a modification of Reflection Transformation Imaging, which until now presented views of only one surface of the objects. The project should result in a tool that will simplify the technology for ease of use by almost any museum. It will also produce the complete process history for each digital object, enabling replication by scholars.

University Libraries of Virginia Polytechnic Institute and State University – Blacksburg, VA

Year: 2006 Amount: \$165,364

Grant: [National Leadership Grants for Libraries](#) - Building Digital Resources

The Virginia Tech University Libraries will expand LibX, a tool that allows users of academic and public libraries to search library resources directly from the Web, so that it can be more easily accessed through the Internet. LibX has allowed people to find what they need on the Web without having to access internal databases and catalogs. But the tool is not currently compatible with the predominant internet browsers. This project will also create an easy-to-use “wizard” to help librarians set up a customized LibX for their library. As a result, any library, with a minimal investment of time, will be able to integrate its resources into the user’s browser for seamless access.

George Mason University – Fairfax, VA

Year: 2005 Amount: \$249,420

Grant: [National Leadership Grants for Libraries](#) - Building Digital Resources

George Mason University’s Center for History and New Media will develop free, open source Web browser tools to enhance the use of digital library and museum collections. These tools will turn a regular browser into SmartFox: the Scholar’s Browser for Digital Collections, which will allow users to capture and organize digital scholarly materials. SmartFox [now renamed Zotera] will relieve libraries and museums of the need to build personal collection tools for their users and will leverage the substantial investment they have already made in digitizing collection materials. In addition to capturing and organizing digital materials seamlessly from diverse, heterogeneous sources it will also enable better provenance and rights tracking for items collected in scholarly research.

University of Chicago – Chicago, IL

Year: 2005

Amount: \$249,857

Grant: [National Leadership Grants for Libraries](#) - Building Digital Resources

The Goodspeed Manuscript Collection Project will produce a digital collection of 65 Greek, Syriac, Ethiopian, Armenian, Arabic, and Latin manuscripts dating from the seventh to the nineteenth centuries. Created in many of the key production centers of Asia Minor, the Balkans, Armenia, and North Africa, these resources are seriously understudied because access is currently limited to individual, on-site consultation. The manuscripts are of great artistic and historical, significance and include examples of the Byzantine and Eastern schools of manuscript illumination. The digital collection project will allow, free to the public, comparative and cross-cultural textual and iconographic research through open source interfaces for searching, browsing, page turning, and zooming in and out of high-resolution images.

New Jersey Institute of Technology – Newark, NJ

Year: 2004 Amount: \$498,786

Grant: [National Leadership Grants for Libraries](#) - Research and Demonstration

In partnership with the Newark Public Library, the New Jersey Institute of Technology will bring relevant resources directly to library users by providing a sustainable infrastructure for virtually integrating the collections and services of libraries nationwide. The research project will link three commercial databases, the New Jersey Digital Highway, and the online catalog systems at the two test bed libraries.

University of California, Berkeley, Electronic Cultural Atlas Initiative – Berkeley, CA

Year: 2004 Amount: \$240,162

Grant: [National Leadership Grants for Libraries](#) - Research and Demonstration

The Electronic Cultural Atlas Initiative will show how existing and emerging standards and protocols can be used or adapted to create an intermediate infrastructure in support of learners with respect to the questions What? Where? When? and Who? A client interface and links with existing specialized resources will be created and evaluated for two purposes: use by teachers seeking additional resources to supplement textbooks, and use for contextualizing digital objects in library and museum collections by identifying the objects in other collections that are most closely related in terms of place and time of origin and human associations.

Berkeley Art Museum and Pacific Film Archive – Berkeley, CA

Year: 2004 Amount: \$238,787

Grant: [National Leadership Grants for Libraries](#) - Library-Museum Collaboration

The Museums and Online Archives Collaboration Community Toolbox will develop a software tool that enables production and sharing of standards-based content and will distribute this tool to cultural organizations through a "community toolbox" Web site. This software tool will allow museums and libraries to produce standards-based data for broad content sharing. The project will also test the effectiveness of the tool for broad content sharing by working with multiple museums to distribute digital content to several national content gateways and will share tools freely with the cultural heritage community.

University of Connecticut, Homer Babbidge Library – Storrs, CT

Year: 2004 Amount: \$168,446

Grant: [National Leadership Grants for Libraries](#) - Preservation or Digitization

The Homer Babbidge Library will create an international metadata-driven, dynamic access tool that will enable users to access and view scanned and geo-referenced images from 1877-1914 Austro-Hungarian topographic maps by querying an easy-to-use digital gazetteer. In addition to being accessible from the University of Connecticut's Web site, the material will be linked to the FamilySearch website of the Church of Jesus Christ of Latter-Day Saints. The American Geographic Society Library at the University of Wisconsin-Milwaukee and the New York Public Library are partners in this project; the Bodleian Library at Oxford University and three national libraries in Europe are also participating.

University of Texas at Austin [original award to Simmons College – Boston, MA]

Year: 2004 Amount: \$272,179

Grant: [National Leadership Grants for Libraries](#) - Library-Museum Collaboration

This tool kit will let a broad range of museums, libraries, and other institutions with video resources catalog these resources and make them accessible through Web-based digital video libraries. Northeast Historic Film, the museum partner, provides video content within the resource limitations common among small museums. The Moving Image Collections (MIC) project will work with the project partners to ensure that an appropriate descriptive, technical, and rights metadata schema is incorporated into the tool kit, a critical component for facilitating high-level interoperability and broad accessibility of resources in digital video libraries. The project will be guided by an advisory board with representatives from key digital video-related projects, including the Internet Archive, Open Video, WGBH-TV, and MIC.

New Media Consortium – Austin, TX

Year: 2003 Amount: \$499,500

Grant: [National Leadership Grants for Libraries](#) - Library-Museum Collaboration

The New Media Consortium, a non-profit consortium of college and university libraries, instructional media centers, museums and technology companies, and the San Francisco of Modern Art (SFMOMA), will work with five major museums, software development teams, and digital library experts to create a new, open source multimedia online authoring and publishing tool. The tool will be provided royalty-free to every not-for-profit museum, university, and library in the United States. Other project partners include the Metropolitan Museum of Art, the Cleveland Museum of Art, the Fine Art Museum of San Francisco, the California State University Center for Distributed Learning, the University of Arizona, Case Western Reserve University, the University of Calgary, and DesignWorlds for Learning.

University of Florida Libraries, George A. Smathers Libraries – Gainesville, FL

Year: 2003 Amount: \$184,609

Grant: [National Leadership Grants for Libraries](#) - Library-Museum Collaboration

Ephemeral Cities will allow citizens to explore the evolution of their city through an interactive, Web-based digital city atlas. The project will develop the atlases using GIS (Geographic Information System) and historic and modern map imaging technologies. City-based learning communities will not only use the atlases but will also contribute digital objects to enrich the exploration process for others. Through a partnership of the University of Florida, University of South Florida, Florida International University and the Alachua County Historic Trust/Matheson Museum, the project will develop the model and demonstrate its use in the cities of Gainesville, Tampa, and Key West.