



NASCIO Staff Contact:
Eric Sweden
 Enterprise Architect
 esweden@AMRms.com

Electronic Records Management and Digital Preservation: Protecting the Knowledge Assets of the State Government Enterprise

Part II: Economic, Legal, and Organizational Issues

I. Introduction

NASCIO introduced the topic of electronic records management and digital preservation in the first report in this series¹ describing the challenges for states, the intersection with enterprise architecture and suggested action items for state CIOs.

In Part 2 the economic, legal and organizational issues associated with electronic records management and digital preservation will be explored. Since these topics are integral to the business of state government, NASCIO believes that it is imperative for the state CIO and chief enterprise architect to involve themselves directly in the management of electronic records management and digital preservation. As will be presented, it is often assumed that these roles are already partnered with records management, archiving and digital preservation. To the contrary, according a 2006 survey of the states conducted by the Center for Technology in

Government², the establishment of standards and the provision of electronic records management and digital preservation services are most often disjointed. Those with expertise in these areas don't necessarily have the authority or responsibility for establishing technology standards. Oftentimes the standards and delivery processes for services are spread across multiple departments or agencies. Digital preservation and Enterprise Architecture initiatives are not well connected.

Most typically there are state librarians, state archivists, state records managers, and others operating independently. As well, there is a disparity in the organization, the roles and responsibilities, and the service delivery processes for these functions across the judicial, legislative and executive branches within the same state government.

Additionally, there is the issue of planning horizons associated with elected and

NASCIO represents state chief information officers and information technology executives and managers from state governments across the United States. For more information visit www.nascio.org.

Copyright © 2007 NASCIO
 All rights reserved

201 East Main Street, Suite 1405
 Lexington, KY 40507
 Phone: (859) 514-9153
 Fax: (859) 514-9166
 Email: NASCIO@AMRms.com

appointed officials that are in conflict with the longer term planning and archival horizon of records management and digital preservation.

This research brief will examine these issues, the need for a multi-disciplinary enterprise approach, and the role of the state CIO in forging relationships to improve the capabilities in states to manage and preserve digital information.

II. The Economics of Digital Preservation

Digital preservation initiatives are often presented as separate activities for managing born digital content once it has been created and there appears some event that threatens the content. Events such as migration to new software, versioning of software, and physical moves are a few of the scenarios that may precipitate a preservation initiative. In other words, the threat of potential loss prompts a *reaction*. With electronic records management, there is also the scenario involving litigation that demonstrates the costs of not adequately managing records including not destroying those records that are past records retention requirements and guidelines. At these times a separate capital investment is planned and if the investment plan receives approval, funds are budgeted to implement an electronic records management and/or a preservation strategy. At such times, it can be extremely difficult to gain executive or legislative support for such an investment. This is certainly the case with born digital content where the value proposition is often difficult to articulate to government decision-makers.

What has occurred in these circumstances is the baseline projects and capital investments that have launched information and knowledge management efforts have not addressed, or fully addressed, the true long term cost of ownership, or total cost of ownership (TCO). That TCO must address the long term management of the

electronic records produced by a business process or information system. Is it conceivable that if the proper consideration had been given to the cost of electronic records management, project approval decisions would have been different? Different solutions put in place? Data management addressed in a different way? Is it also conceivable that some projects would simply not have been approved – or the true cost of ownership would have brought the budget of other projects up to a level of investment as to encounter greater scrutiny?

If a project does present the true cost of ownership - i.e., it includes the cost of managing the entire lifecycle of electronic records, then that project may be at a competitive disadvantage with other competing projects that either left this activity cost out or drastically underestimated it – and therefore appear to provide a better return on investment. Additionally, if proper attention is not given to electronic records management – then there can be a potential return on investment that has not been acknowledged. This potential return comes from future harvesting of value from historical digital records – *knowledge assets*.

The better approach is to examine requirements for digital preservation at the time a business need is identified, management initiatives are planned, and systems for supporting those initiatives are designed and developed. In other words, digital preservation as well as electronic records management issues need to be planned and budgeted part and parcel with any initiative that will create data, information or knowledge. When information will be created by an enterprise, the lifecycle of that information must be determined. Further, it must be valued at each phase of that lifecycle. Those economics along with regulatory requirements determine how long information will be retained by the enterprise. The appropriate safeguards must be put in place to protect that information as a *business asset*. The level and sophistication of those safeguards are determined by the

CIO RECOMMENDATION

Require project plans and capital investments to address electronic records management and preservation

value of that *business asset*. The necessary business rules must be established regarding *how long* that *business asset* will be kept. It must be determined *where* it will be kept, and *who* has responsibility for it during each phase of its lifecycle.

As corroborated by the survey of digital preservation programs by Cornell University, "Organizations tend to rely on or create digital content first and address long-term access issues later."³ It is clear some states simply cannot justify allocating limited resources to electronic records management and digital preservation. In fact, some states do not have records retention requirements, though policy may exist.

As Dr. Timothy Sprehe has emphasized, records are of vital importance to the operations and very existence of the enterprise.⁴ Further, since these are *business assets* of the state, NASCIO suggests the creation, management and digital archival activities should be addressed by the Enterprise Architecture program and be defined as a domain within the enterprise IT architecture. Under this umbrella, the business, economic and technical considerations could be presented and debated at the enterprise level.

III. E-Records and Born Digital: Opportunities and Challenges

Many lessons were gathered from the Katrina disaster. With respect to records management, foremost was the value of moving from paper records to digital records. Recovery of paper-based government records from that disaster is an ongoing arduous process. The initial rescue of the records entailed significant potential exposure of personnel to physical, chemical and biological hazards. This is where information technology, records management and digital preservation *intersect with industrial hygiene, public health, and public safety*. These disciplines should be engaged as partners in developing strategies for protecting workers in these types of operations. "Cakes" of

drenched paper records were recovered and then shipped to facilities specializing in record recovery involving application of antimicrobials, freezing processes and various other detailed chemical and physical processing. Once fully recovered, these records are then subject to review by subject matter experts and either queued for eventual destruction, or digital imaging.⁵ Note that there was significant investment even when certain records were eventually destroyed. These records had to be recovered first, and then evaluated to determine asset value. *This* entire process may be avoided if records are maintained digitally and involve secondary site backup storage procedures. So the case can be made that more leveraging of digital capabilities for records management and preservation avoid this physical insult and subsequent expensive recovery processing.

Many states have laws recognizing the legal standing of public records in electronic form. For example, the state of Hawaii has passed legislation making electronic records *officially recognized* as legal documents. Previously, official records had to be on paper or microfilm. This current legislation charges a team be established to develop standards for managing official electronic records. According to Russ Saito, Chief Information Officer, a master plan will be developed for creating and implementing a system of standards.⁶ Through laws, policies and guidelines, states have been addressing the transition from paper-based to electronic record-keeping. However, because of its explosive growth and decentralized pattern of creation, born digital content presents its own set of challenges.

Electronic capabilities and widespread connectivity have brought the new issue of *record propagation*. A record may be widely distributed, changed, and re-distributed. Related issues are control and ownership, security, integrity, quality, retention, transmittal, official designation, authorization and context of data. These characteristics or properties constitute the *meta data* or the pedigree related to electronic records. Additionally, electronic

CIO RECOMMENDATION

Understand the organization and culture shifts required to implement good electronic records management policy.

records may reside on *multiple databases and multiple versions of software packages* over time. Public records sold to commercial firms or harvested often “live on” and may in fact no longer be official. For example, the courts have learned that truly expunging a criminal record is now very difficult in a world of widely propagated electronic court records.

The proper and legal disposal of government electronic records has become a serious issue. Records management functions cannot ensure all records are truly destroyed in compliance with records retention rules as digital record instances may exist on multiple hard drives, memory sticks, CDs, and servers. Electronic discovery, or *eDiscovery*, has highlighted this problem. When demanded by the court, the need to identify, recover and present evidentiary materials in electronic form is often problematic. In part, this issue is linked to a *distributed maintenance* discipline which includes information technology (IT) policy, procedures and enabling technology. IT operations and records management functions need a collaborative relationship in addressing this growing issue.⁷

Electronic capabilities have accompanying management issues related to the sheer volume of records generated. Too often IT project leaders do not ask the customer how long electronic records need to be retained when they upgrade or design a new computer system. It is difficult to design and scale a system without knowing if select data can or should be purged at some point. This means that a lot of data will be kept too long, which wastes valuable resources. On the other hand, it also means that no one is creating digital migration strategies to ensure long-term and permanent electronic records remain accessible as long as necessary. Authenticity and integrity become significant issues when a migration occurs. Enterprise content management (ECM) tools, especially DoD 5015.2 certified records management applications (RMA) software, can help manage the sheer volume of electronic records. However, these tools have significant implementation

issues, costs and still require improved user interfaces to gain user acceptance.⁷

So “born digital” presents some daunting problems. In a workshop funded by the National Science Foundation and the Library of Congress, a team of expert participants recognized the need for new science and new technology for managing digital records. Results of the workshop were published in a report titled, *It’s About Time: Research Challenges in Digital Archiving and Long-term Preservation*.⁸ That report made the following points:

- *Much more digital content is available and worth preserving.*
- *Digital collections are growing at a rate that outpaces our ability to manage and preserve them.*
- *A significant, multi-disciplinary research effort is needed to produce new knowledge in computer and information science, economics, and policy.*

The issues related to the proliferation of digital records combined with the advantages of “born digital” present a conflict of benefits and costs. There is no “silver bullet” for solving this set of issues. New knowledge must be developed, pilot approaches must be tested and the efforts that are currently in progress for developing technology solutions need to be coordinated and communicated to the appropriate user community.

IV. Organization and Culture: The Need for Cross-Boundary Collaboration

Technology developments are moving so rapidly that the software on which much of the digital record is stored is obsolete, and even extinct. This issue is so significant that a recent survey conducted by RLG⁹ reported that technological obsolescence is the single greatest threat to successfully managing digital assets.¹⁰

“One expected trend over the coming

years is for RIM [records information managers] managers to report to CIOs, a natural development in many organizations because records are such an important part of the information universe.”¹¹ Dr. Dearstyne describes the importance of the relationship between the CIO and the *Records Information Manager* or RIM. The RIM can provide expert advice on the nature of records – what constitutes a record – what laws apply to certain record types – how best to manage various record types – delivery of services – and the principles and standards for managing records. The RIM can provide the CIO with an understanding of the information lifecycle, or information lifecycle management (ILM).¹²

One of the lessons repeated from the Katrina disaster is the necessity of a proactive working relationship between records management and information technology functions.¹³ It is also critical for records and IT staff to become “good allies with facility planning and risk management personnel.”

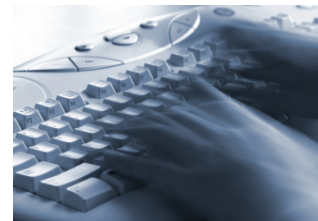
Beyond written records management policy, enabling relationships and technology is the human behavior aspect. Dr. Margaret Hedstrom, School of Information, University of Michigan is currently working under a grant from the National Science Foundation to look at incentives for data producers to create *archive ready* data sets. The problem is researchers who produce social science data sets are required to deposit such data sets at the end of their research. This requirement is often ignored. Hedstrom is investigating incentive mechanisms that would encourage people to provide better meta data, error checking and data quality. Most records management programs include such programs and policies. These programs and policies make assumptions regarding what records producers will do. Dr. Hedstrom’s current research includes investigating what people know regarding their records management responsibilities, their attitudes and motivation.¹⁴ This may be a further application of expert sys-

tems so that the necessary archiving of data is not left to human action. Rather, it is automatic requiring no human intervention, decision making, and delay.

An organizational dilemma facing the states is the disparity in separation of duties and authority as presented in survey findings compiled by the Center for Technology in Government (CTG) report *Preserving State Government Digital Information*. This disparity is also characterized among the different branches of government within a state. Authority for setting standards for information retention and disposal including retention periods and methods of disposal for various types of digital assets is delegated among the following state organizations or approaches:

- state libraries
- state archives
- state records management
- shared authority
- other (e.g., state legislatures, state courts, state CIOs, and IT departments in the legislative and judicial branches)

The results of the survey indicate that authority for setting standards related to the creation and maintenance of digital information resides primarily outside of these traditional information and agency records custodians (such as state libraries, archives, and records management organizations). Information technology organizations, in particular, stand out across all three branches of government as holding a significant role in the standards-setting process and in providing services related to the management of digital information. The units identified as consistently playing a central role include the office of the state CIO or its equivalent and IT organizations in the legislative and judicial branches.¹⁵ There are two concerns related to these results. First, the organizations that have the expertise for electronic records management and archival principles and process often do not have the authority to establish the necessary standards for managing and preserving state digital assets. Additionally, executive, legislative and



judicial branches of state government operate parallel digital preservation efforts.

The fragmentation of roles and responsibilities related to digital archiving provides clear evidence of the cross-boundary nature of this issue and the need for partnership and collaboration among the disparate group of key stakeholders. The fragmentation is clearly a barrier to the efforts of traditional information and records custodians to develop digital archiving capabilities on their own. However, this fragmentation across state CIOs, agency information creators and IT staff, branches of government, and even the private sector provides a very clear list of stakeholders for collaborative and effective cross-boundary solutions.¹⁶

The recommendations coming from this research by CTG are:

- *Identify and build on existing knowledge and expertise.*
- *Build digital preservation partnerships within and among states.*
- *Clarify roles and responsibilities between and among state library, archives, records management, IT, and other interested and responsible parties.*
- *Use state Enterprise Architecture efforts to establish the centrality of digital preservation to enterprise-wide information management.*
- *Continue to invest in knowledge sharing initiatives across the digital preservation community.*

It is highly recommended that those with the expertise and responsibility for providing services related to electronic records management and digital preservation also have ownership of the policies, business processes for establishing the practice of records management and digital preservation. Additionally, the necessary roles and responsibilities must be clarified among librarians, records managers and archivists especially where these functions reside in different organizations in state government.

Disparity in organization and function across the three branches of government

must be challenged in order to derive consistency in the planning and implementation of electronic records management processes, business rules, and supporting systems.

V. Digital Preservation: The Legal Landscape

It must be recognized that media has become irrelevant when defining what constitutes a *record*. The advent of e-records has certainly brought with it new capabilities for creating and distributing records easily. The other edge of the sword is that it is also challenging to determine and operationalize what should be kept and what should most definitely be destroyed. Keeping everything is not an alternative.

“Keeping everything” can have extremely damaging effects on an enterprise. Major court proceedings and business and government scandals in recent years abound with examples in which non-record materials have come back to haunt an enterprise. If an enterprise still has non-record information in its possession when the legal or media spotlight brings past activities to the public center stage, the enterprise may be held publicly accountable for non-record information with potentially catastrophic consequences.¹⁷

Records retention rules must be established that hold government accountable and protect the enterprise. However, establishing records retention rules will not be effective if they are not *operationalized*. Under most state laws, public records are now recognized to include electronic media and its many forms – text, graphics, audio records, video, essentially any digital form and format. The Hawaii Statute presents the following definition: *The Uniform Information Practices Act defines a “government record” as “information maintained by an agency in written, auditory, visual, electronic, or other physical form.” Haw. Rev. Stat. § 92F-3 (1993).*¹⁸ Kansas law defines a “record” as any document created or received in the course of

CIO RECOMMENDATION

Understand what constitutes a “record” from a legal perspective.

business. This includes anything from a travel voucher to an email to a letter.

A new and challenging legal dimension of electronic records management is e-discovery. According to Federal Rules for Civil Procedure, “discoverable documents” include *digital compilations*.¹⁹ Upon request, this makes available to a court of law any digital record. In reality it must be clarified that courts of law are inconsistent regarding the admissibility of electronic documentation. Some judges will accept such as evidence. Others require printed versions for admittance as evidence.

Recent amendments to the Federal Rules of Civil Procedure effective December 1, 2006, dramatically increase the liability of litigants in meeting the expectations of U.S. District Courts hearing civil cases. Amended Rules now include “electronically stored information.”²⁰ Specific requirements were summarized in a recent news alert by Brian Cave LLP.

Identify all sources of electronically stored information in your possession, custody, or control (Fed.R.Civ.P. 16, 26(b), 34).

Preserve that information from loss or destruction (Fed.R.Civ.P. 16, 37).

Plan for discovery of that information as soon as litigation begins - and agree with your opponent on a discovery plan to be adopted by the court (Fed.R.Civ.P. 16, 26(f)).

Disclose crucial electronically stored information without waiting for a discovery request from your opponent (Fed.R.Civ.P. 26(a)).

Produce relevant electronically stored information upon request (Fed.R.Civ.P. 26, 33, 34, 45).

Protect privileged and other appropriate information (Fed.R.Civ.P. 26(b)).

These rules were necessary because of the

disparity in the courts relative to handling and admissibility of electronic evidence.²¹ As stated in *The Third Branch*, a newsletter of the Federal Courts...

*These amendments and revisions are all **aimed at one particular area of discovery**—electronically stored information, meaning **all information in computers**...*

This revision of federal procedure now brings additional accountability and performance requirements to the state CIO's office. Records retention rules can be overcome per amended Rule 26(b)(2)(B) and 37(f). A requesting party may overcome a *refusal to produce because of undue burden or cost* if the requester can demonstrate “good cause.” Additionally, sanctions for “failing to provide electronically stored information lost as a result of routine, good faith operation ...” will *most likely not apply to information lost subsequent to notice of potential litigation*.

The financial impact of these amendments are described in *The Third Branch*.

One study found that the cost of discovery represents approximately 50 percent of the litigation costs in all cases, and as much as 90 percent of the litigation costs in the cases where discovery is actively employed. A “cottage industry” of forensic specialists has emerged with the sole purpose of assisting law firms comply with their electronic discovery obligations.

Adding more complexity to this legal discussion is the added and growing concern regarding digital archiving of state government websites. Citizens may make business decisions or interpret state policy based on the information presented on a website at a point in time. Think how often websites change and how much *rich content* is presented.²² Without selected and persistent digital archiving, decision making processes lose their traceability and defensibility. The basis for decisions

and the historical context must be archived as part of enterprise operations management. Important historical content that was born digital on a state website may disappear without a structured process for archiving. With dynamic updating, the content of state agency websites are the types of digital sources not preserved and lost forever. Under research demonstration grants funded by the National Digital Preservation Program at the Library of Congress²³ research partners and states have embarked on pilot programs to create rules for identification, collection and access using automated tools and the development of repositories to preserve these primary source materials.

CIO RECOMMENDATION

Understand the long term implications of off-shoring electronic records management.

VI. The Implications of Off Shoring

Government and industry have “off-shored” digital information in the form of customer records, taxpayer records, and email. This presents significant risks associated with identity management, management of financial records, competitive intelligence and national security. Even those organizations that have intended to keep records management activities “on shore” can not necessarily ensure that is happening when those activities have been outsourced. The supplier of services may itself outsource aspects of electronic records management. This cycle of iterations can go on until the original customer’s policy may not be remembered or followed.

Widespread internet availability and high speed communication capabilities have introduced new business capabilities in global sourcing. There are short term and long term implications associated with moving information into foreign territories that have motivations, values, principles, laws, economics, culture, and politics that differ from those of the United States. For example, there are implications associated with transmitting vast data bases of customer information, government information, commercial information, research and

development information, financial information and even email to foreign countries. However, few agency directors or elected officials understand these implications.

The state and local outsourcing market will grow from nearly \$12 billion in 2006 to approximately \$20 billion in 2011, according to a report released by INPUT.²⁴ In a 2005 report titled “Offshoring of Services, An Overview of the Issues”, the Government Accountability Office (GAO) outlined a number of concerns regarding national security and potential risk mitigation strategies including the requirement that certain types of projects be required to be performed exclusively in the United States. GAO is currently conducting work that examines offshoring of protected health information and related privacy issues.²⁵ In a follow up report titled “PRIVACY: Domestic and Offshore Outsourcing of Personal Information in Medicare, Medicaid, and TRICARE”, GAO reported the following:

One federal contractor and one state Medicaid agency reported outsourcing services directly offshore. However, some federal contractors and state Medicaid agencies also knew that their domestic vendors had initiated offshore outsourcing. Thirty-three Medicare Advantage contractors, 2 Medicare fee-for-service (FFS) contractors, and 1 Medicaid agency indicated that their domestic vendors transfer personal health information offshore, although they did not provide information about the scope of personal information transferred offshore. Moreover, the reported extent of offshore outsourcing by vendors may be understated because **many federal contractors and agencies did not know whether their domestic vendors transferred personal health information to other locations or vendors.**²⁶

The risks associated with offshoring can be somewhat mitigated through careful contracting with offshore vendors regarding

data ownership, rights and maintenance. A relationship to collect, store and maintain government data with a U.S. based vendor poses many of the same exact challenges. Such contracts must detail responsibilities and require significant oversight.²⁷

The state CIO and the state enterprise architect may be in a unique position to reach out to policy makers and decision makers to present a compelling message regarding the long term implications of offshoring management of information – that is – *electronic records*. This requires taking a longer term view of events and effects. We typically maintain a very short sight view in the U.S. In state government, typically the planning horizon is four years. There are long term implications and effects on the taxpayer associated with this viewpoint.

VII. Summary

In this second in NASCIO's series on electronic records management and digital preservation, some of the economic, legal and organizational issues surrounding records management and digital preservation have been explored. These issues present a compelling case for state CIOs and state chief architects to be more engaged.

Calls to Action for the state CIO

1. Prepare a baseline for your state to more fully understand the legal framework, institutional roles, responsibilities, authorities and existing services for managing electronic records. Leverage expertise to expose the gaps and identify at-risk state government digital information.
2. Champion the promotion of digital capabilities for managing enterprise knowledge assets and the inherent capabilities of digital preservation related to disaster planning.
3. Lead the development of collaborative relationships with and among the functions of records management, archiving, library services and digital preservation. Promote the development of a consistent operating discipline across all branches of state government.
4. Establish the CIO office as the lead for the operating discipline for managing knowledge assets as part of the state Enterprise Architecture Program. Include electronic records management and digital preservation as a domain within the state Enterprise Architecture Program.
5. Lead the establishment of standards for project and capital investment proposals to include the total cost of ownership including the long term cost of managing the enterprise knowledge assets that are created and referenced by these investments. Ensure the state project management training includes material on this topic.
6. Partner with state expertise centers for records management and digital preservation to establish goals, objectives and strategies for managing knowledge assets. Leverage national initiatives and vendor solutions related to digital preservation technology. Because they are in the early stages of development, maintain a healthy skepticism toward these initiatives.
7. Build awareness and lead the development of a global perspective across the enterprise relative to global sourcing, and offshoring of digital assets. Be a communicator of the risks and long term effects of moving digital assets offshore. Lead the development or enhancement of project management delivery processes that include proper attention to viability analysis and risk analysis. These processes must include evaluation of economic and political factors and appropriate attention to national security and defense when evaluating proposals. Be the conscience of the enterprise.

Appendix A: Contributors and Reviewers

Mary Alice Baish
Associate Washington Affairs
Representative
American Association of Law Libraries
E.B. Williams Law Library
Georgetown University Law Center
111 G Street, NW
Washington, DC 20001-1417
P: 202-662-9200
E: baish@law.georgetown.edu

Jim Bryant
Chief Information Officer
State of South Carolina
Budget and Control Board
4430 Broad River Road
Columbia, SC 29210
P: 803-896-0222
E: jabryant@cio.sc.gov

L. Reynolds Cahoon
former Senior Advisor on Electronic
Records
Office of the Archivist of the United States
National Archives and Records
Administration
8601 Adelphi Road
Room 4202
College Park, Maryland
20740
P: (301) 837-1566
E: lrcahoon@nara.gov

G. Brian Burke
Senior Program Associate
Center for Technology in Government
University at Albany – State University of
New York
187 Wolf Road, Suite 301
Albany, New York 12205
P: 518-442-3892
E: bburke@ctg.albany.edu
www.ctg.albany.edu

David Carmicheal,
Past President
COSA
The Georgia Archives
5800 Jonesboro Road
Morrow, GA 30260-1101
P: 678-364-3714

F: 678-364-3859
E: dcarmicheal@sos.state.ga.us

Robert Chadduck
Director of Research
Electronic Records Program
National Archives and Records
Administration
P: 301-837-1585
E: Robert.Chadduck@nara.gov

Stephen Fletcher – Co-chair
Chief Information Officer
State of Utah
Office of the Governor
East Capitol Complex Bldg
Ste E-220
Salt Lake City, UT 84114
P: (801) 538-3298
E: sfletcher@utah.gov

Debbie Gearhart, CRM
Director
Records Management Services
Michigan Historical Center
Department of History, Arts, and Library
3405 N. Martin Luther King Jr. Blvd.
PO Box 30026
State of Michigan,
Lansing, MI 48909
P: 517-335-9145
E: Gearhardt@michigan.gov
<http://www.michigan.gov/recordsmanagement>

Margaret Hedstrom, Ph.D.
Associate Professor
University of Michigan
School of Information
3210 SI North
Ann Arbor, MI 48109
P: (734) 647-3582
E: hedstrom@umich.edu

Scott A. Leonard
Electronic Records Specialist
Kansas State Historical Society
6425 SW Sixth Avenue, Topeka, KS 66615
P: 785-272-8681, ext. 280
E: Leonard@kshs.org
www.kshs.org
ERM at KSHS: www.kshs.org/government/records/electronic/index.htm

Reagan Moore
 Associate Director
 Data-Intensive Computing
 San Diego Supercomputer Center (SDSC)
 UC San Diego, MC 0505
 9500 Gilman Drive
 La Jolla CA 92093-0505
 P: 858-534-5073
 F: 858-534-5152
 E: moore@sdsc.edu

Stephen Newell
 IT Architect
 IBM
 2401 W Jefferson St
 Springfield, IL 62702-3495
 P: (217) 793-5825
 E: srnewel@us.ibm.com

Doug Robinson
 Executive Director
 NASCIO
 201 East Main St., Suite 1405
 Lexington, KY 40507
 P: (859) 514-9153
 E: drobenson@AMRms.com

Bill Roth
 Chief Architect
 State of Kansas
 Landon State Office Building
 900 Southwest Jackson
 Room 751 South
 Topeka, KS 66612
 P: (785) 296-2108
 E: Billr@ksdot.org

Michael P. Ryan
 Enterprise Architect
 Minnesota Office of Enterprise Technology
 658 Cedar Street
 Room 450
 St. Paul, MN 55155
 P: 651.556.8024
 E: mike.ryan@state.mn.us

Russ Saito
 Comptroller
 State of Hawaii
 Department of Accounting & General
 Services
 1151 Punchbowl St Rm 412
 Honolulu, HI 96813-3007

P: (808) 586-0400
 E: russ.k.saito@hawaii.gov

Dr. Timothy Sprehe
 Sprehe Information Management
 Associates, Inc.
 5504 Surrey Street
 Chevy Chase, MD 20815-5524
 P: 301-657-2481
 E: jtsprehe@jtsprehe.com
<http://www.jtsprehe.com>

Chris Walls
 Senior Website & Publications Coordinator
 AMR Management Services
 201 E. Main St., Suite 1405
 Lexington, KY 40507
 P: 859-514-9174
 E: cwalls@AMRms.com

Caryn Wojcik
 Government Records Archivist
 Records Management Services Michigan
 Historical Center Department of History,
 Arts and Libraries
 3405 N. Martin Luther King Jr. Blvd.
 PO Box 30026
 Lansing, Michigan 48909
 P: (517) 335-8222
 F: (517) 335-9418
 E: wojcik@michigan.gov

Appendix B: Resources

NASCIO

www.nascio.org

Department of Justice, Office of Justice Programs

Global Privacy and Information Quality Working Group

http://www.it.ojp.gov/topic.jsp?topic_id=55

Center for Technology in Government

Preserving State Government Digital Information: A Baseline Report

http://www.ctg.albany.edu/publications/reports/digital_preservation_baseline

Records Management / Digital Preservation Related Web sites

Library of Congress / Digital Preservation

<http://www.digitalpreservation.gov>

The National Archives

<http://www.archives.gov/>

Knowledge Management World

<http://www.kmworld.com/>

Council of State Archivists

<http://www.statearchivists.org/>

National Association of Government Archives and Records Administrators

<http://www.nagara.org/>

Association of Records Managers and Administrators

<http://www.arma.org/>

The Society of American Archivists

<http://www.archivists.org/>

Digital Preservation Coalition

<http://www.dpconline.org/graphics/whatsnew/>

Tutorial on Digital Preservation Management, Cornell University

http://www.library.cornell.edu/iris/tutorial/dpm/eng_index.html

Online Course – email Retention Guidelines – State of Michigan

http://www.michigan.gov/documents/hal/mhc_rm_email_class_175020_7.pdf

Articles by Dr. Timothy Sprehe
Sprehe Information Management Associates, Inc.

<http://www.jtsprehe.com/newpage6.htm>

NECCC Best Practices for eDiscovery

www.ec3.org/Downloads/2004/Effectively_Man_Discovery_of_EI_Records.pdf

eDiscovery 2004 eC3

http://www.ec3.org/Downloads/2004/Effectively_Man_Discovery_of_EI_Records.pdf

The San Diego Supercomputer Center

The San Diego Supercomputer Center (SDSC) enables international science and engineering discoveries through advances in computational science and high performance computing. Continuing this legacy into the era of cyberinfrastructure, SDSC is a strategic resource to science, industry and academia, offering leadership in the areas of data management, grid computing, bioinformatics, geoinformatics, high-end computing as well as other science and engineering disciplines.

The mission of SDSC is to extend the reach of scientific accomplishments by providing tools such as high-performance hardware technologies, integrative software technologies and deep inter-disciplinary expertise, to the community.

<http://www.sdsc.edu/>

The Fedora Project

Fedora is a general purpose repository system developed jointly by Cornell University Information Science and the University of Virginia Library. The Fedora Project is devoted to the goal of providing open-source repository software and related services to serve as the foundation for many types of information management systems. The Fedora software is available under the terms of the Educational Community License 1.0 (ECL).

The Fedora Project is based on previous research at Cornell University Computer Science that was funded by DARPA and the National Science Foundation.

The Fedora Project is currently supported by generous grants from the Andrew W. Mellon Foundation.
<http://www.fedora.info/about/>

Reports

Federal Enterprise Architecture (FEA)
Records Management Profile, version 1.0
<http://www.archives.gov/records-mgmt/policy/rm-profile.html>

Appendix C: Endnotes

¹ NASCIO Electronic Records Management and Digital Preservation: Protecting the Knowledge Assets of the State Government Enterprise, PART I: Background, Principles and Action for State CIOs, May 2007

² See Pardo, T., Burke, B., July 2006, "Preserving State Governmental Digital Information: A Baseline Report", http://www.ctg.albany.edu/publications/reports/digital_preservation_baseline

³ See Kenney, A., & Buckley, E. (2005, August 15), Developing Digital Preservation Programs: the Cornell Survey of Institutional Readiness, 2003-2005. *RIG DigiNews*, Volume 9, Number 4, ISSN 1093-5371, Feature Article 1. Retrieved September 1, 2006 from http://www.rlg.org/en/page.php?Page_ID=20744#article0

⁴ See Sprehe, J.T., "Enterprise Records Management: Strategies and Solutions", September 2002, Retrieved on September 21, 2006, from <http://www.jtsprehe.com/newpage6.htm>, secondary source: http://www.hummingbird.com/alt_content/binary/pdf/collateral/wp/rmstrategies.pdf

⁵ See Swartz, N., "Dealing with Disaster", *Information Management Journal*. Lenexa: Jul/Aug 2006. Vol. 40, Iss. 4; pg. 28, retrieved September 12, 2006 from <http://proquest.umi.com.ezproxy.jocolibrary.org/pqdweb?RQT=318&pmid=23201>

⁶ Interview with Russ Saito, Chief Information Officer, state of Hawaii; see [Uniform Electronic Transactions Act; HRS § 489E-1 et. seq.](#), chapter 489E-7

⁷ Contributory writing from Caryn Wojcik, Government Records Archivist, state of Michigan

⁸ See Hedstrom, M., "It's About Time: Research Challenges in Digital Archiving

and Long-term Preservation"; retrieved October 27, 2006, from <http://www.digitalpreservation.gov/about/NSF.pdf>

⁹ See http://www.rlg.org/en/page.php?Page_ID=2

¹⁰ See Digital Preservation Coalition, "Technology Issues"; Retrieved September 7, 2006, from <http://www.dpconline.org/graphics/digpres/presissues.html>

¹¹ See Dearstyne, B., "CIOs: Information Program Leaders in Transition", January / February 2006. Vol. 40, Iss. 1; pg. 44, *The Information Management Journal*, retrieved September 8, 2006 from <http://proquest.umi.com.ezproxy.jocolibrary.org/pqdweb?RQT=318&pmid=23201>

¹² See Harwood, M., "Storage Basics: Information Lifecycle Management", January 14, 2004, *Enterprise Storage Forum*. Com, retrieved on October 10, 2006 from http://www.enterprisestorageforum.com/management/features/article.php/11186_3299031_1

¹³ Swartz, September 2006

¹⁴ Interview with Dr. Margaret Hedstrom, Associate Professor, University of Michigan, School of Information. See <http://www.si.umich.edu/people/faculty-detail.htm?sid=48>

¹⁵ Pardo and Burke, July 2006

¹⁶ See "Digital Archiving: From Fragmentation to Collaboration", Report developed jointly by the National Association of Secretaries of State (NASS) and the National Electronic Commerce Coordinating Council (eC3), December 2006. http://www.ec3.org/Pubs/2006NASS_WhitePaper.pdf

¹⁷ See Sprehe, J.T., "Enterprise Records Management: Strategies and Solutions", September 2002, Retrieved on September

21, 2006, from <http://www.jtsprehe.com/newpage6.htm>, secondary source: http://www.hummingbird.com/alt_content/binary/pdf/collateral/wp/rmstrategies.pdf

¹⁸ See The Reporters Committee for Freedom of the Press, "Access to Electronic Records, A state-by-state guide to obtaining government data," retrieved September 7, 2006 from <http://www.rcfp.org/elecaccess/hawaii.htm>, See also, <http://www.hawaii.gov/oip/uipa.html>

¹⁹ See brief on federal rules for civil procedure, Kahn Consulting, retrieved on October 30, 2006, from http://material.talentum.com/tietoviikko_data/tivi_infra_pdfs/Federal_Rules_of_Civil_Procedure.pdf

²⁰ Summary retrieved from http://www.bryancave.com/pubs/pub_results.asp?search=all on May 17, 2007.

²¹ "Electronically Stored Information Target of New Rules," The Third Branch, Newsletter of the Federal Courts, Vol. 38, No. 11., November 2006, retrieved from <http://www.uscourts.gov/rules/newrules4.html> on May 17, 2007, see <http://www.uscourts.gov/ttb/11-06/electronically/index.html>

²² Interview with Scott Leonard, Kansas Historical Society

²³ See <http://www.digitalpreservation.gov/partners/>

²⁴ INPUT press release, January 21, 2007, retrieved on 2/1/2007 from <http://www.input.com/corp/press/detail.cfm?news=1308>

²⁵ U.S. Government Accountability Office, "Offshoring of Services, An Overview of the Issues," November 2005, GAO-06-5, pp., 39, 47.

²⁶ Government Accountability Office, "PRIVACY: Domestic and Offshore Outsourcing

of Personal Information in Medicare, Medicaid, and TRICARE," September 2006, GAO-06-676.

²⁷ Contributory writing from Caryn Wojcik, Government Records Archivist, State of Michigan

This report and the NASCIO Enterprise Architecture Program are funded by a grant from the Bureau of Justice Assistance, Office of Justice Programs, U.S. Department of Justice.

The opinions, findings, conclusions, and recommendations contained in this publication are those of the contributors, and do not necessarily reflect the official positions or policies of the Department of Justice.

Disclaimer

NASCIO makes no endorsement, express or implied, of any products, services, or websites contained herein, nor is NASCIO responsible for the content or the activities of any linked websites. Any questions should be directed to the administrators of the specific sites to which this publication provides links. All critical information should be independently verified.