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Compiled by Michael Day ([UKOLN](#) , University of Bath) and Gerard Clifton ([National Library of Australia](#))

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This is an archived issue of *What's New*.

Also available as a [print-friendly PDF \(104KB\)](#) .

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This is a summary of selected recent activity in the field of digital preservation compiled from the Preserving Access to Digital Information ([PADI](#)) Gateway and the [digital-preservation](#) and [pa diforum-l](#) mailing lists. Additional or related items of interest may also be included.

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1. Organisations

1.1 The United Nations Educational, Scientific and Cultural Organization (UNESCO)

The National Library of Australia has produced some comprehensive *Guidelines for the preservation of digital heritage* as a companion to UNESCO's Draft Charter on the Preservation of the Digital Heritage. The guidelines are aimed at policy makers, managers and those involved in the practical aspects of preservation. The section on management perspectives introduces the general concepts of digital heritage and preservation, and discusses taking responsibility for digital preservation and the management of preservation programmes. The section on technical and practical perspectives includes chapters on deciding what needs to be kept, rights management, metadata, etc. The final section includes a glossary and a very comprehensive list of further reading.

National Library of Australia, *Guidelines for the preservation of digital heritage*. Paris: UNESCO, 2003. Available in Word format from the UNESCO Web site.

UNESCO Executive Board, "Report by the Director-General on a Revised Draft Charter on the Preservation of the Digital Heritage." UNESCO 166 EX/18, 12 March 2003:
<http://unesdoc.unesco.org/images/0012/001296/129679e.pdf>

1.2 The Joint Information Systems Committee (JISC)

At the end of May 2003, the UK Joint Information Systems Committee (JISC) released three draft reports from projects funded as part of its Digital Preservation and Records Management programme for consultation and peer-review:

Hamish James, Raivo Ruusalepp, Sheila Anderson and Stephen Pinfield, *Feasibility and requirements study on preservation of e-prints*, v. 1.0, 9 May 2003: http://www.jisc.ac.uk/uploaded_documents/e-prints_report_1-0.pdf

Maggie Jones, *Archiving e-journals consultancy - final report*, v. 2.0, May 2003:
http://www.jisc.ac.uk/uploaded_documents/ejournalsdraftFinalReport.pdf

Philip Lord and Alison Macdonald, *Data curation for e-Science in the UK: an audit to establish requirements for future curation and provision*, v. 1.0, May 2003: http://www.jisc.ac.uk/uploaded_documents/e-Sciencefinaldraft.pdf

In addition, JISC also published the final reports of some of the other projects funded as part of this programme. These include two reports on Web-archiving, one on sources of information on formats and software, and a revised version of the JISC's *Study of the Records Lifecycle* (1999):

Andrew Charlesworth, *Legal issues relating to the archiving of Internet resources in the UK, EU, USA and Australia: a study undertaken for the JISC and Wellcome Trust*, 25 February 2003:
http://library.wellcome.ac.uk/projects/archiving_reports.shtml

Michael Day, *Collecting and preserving the World Wide Web: a feasibility study undertaken for the JISC and Wellcome Trust*, 25 February 2003:
http://library.wellcome.ac.uk/projects/archiving_reports.shtml

Elizabeth Parker, *Higher education institutions: Business Function and Activity Model & Records Retention Schedule* [revision of the Study of the Records Lifecycle], 2003:
http://www.jisc.ac.uk/index.cfm?name=srl_structure

University of Leeds, Representation and Rendering Project, *Survey and assessment of sources of information on file formats and software documentation: final report*, 2003:
http://www.jisc.ac.uk/uploaded_documents/FileFormatsreport.pdf

The Supporting Institutional Records Management Programme - JISC has announced the successful projects that will be funded by its Supporting Institutional Records Management Programme. There are seventeen projects, all relatively short term (due to be completed by December 2003), intended to help UK higher and further education institutions to implement records management programmes. More information is available at:

http://www.jisc.ac.uk/index.cfm?name=programme_supporting_irm

The Digital Curation Centre - JISC regularly publish funding opportunities for new projects and initiatives. One that may be of particular interest is a recent call for proposals for a Digital Curation Centre, to be funded jointly by the JISC and the UK e-Science core programme. This is a significant development that will potentially have a large impact on digital preservation activities in the UK:

JISC Circular 6/03: Digital Curation Centre:

http://www.jisc.ac.uk/index.cfm?name=circular_06_03

1.3 The Council on Library and Information Resources (CLIR)

At the beginning of 2003, the US Council on Library and Information Resources (CLIR) published a number of new reports that have relevance to digital preservation. June Besek produced a short preliminary assessment of copyright issues on behalf of the Library of Congress's National Digital Information Infrastructure and Preservation Program (NDIIPP). Abby Smith reports from a meeting of scholars, librarians, archivists, publishers, technology specialists, etc. that met to discuss the preservation of 'new-model' scholarly resources, which are typically Web-based and 'born digital.' The appendices of the report include two documents that were circulated in advance of the meeting: an introduction to organisational models by Dale Flecker, and a survey of research and practice in the United States by Daniel Greenstein and Abby Smith. Neil Beagrie's report was commissioned and sponsored by the NDIIPP and surveys digital preservation developments outside of North America, concentrating specifically on Australia, France, the Netherlands, the UK and multinational initiatives.

June M. Besek, *Copyright issues relevant to the creation of a digital archive: a preliminary assessment*. Washington, D.C.: Council on Library and Information Resources, January 2003. ISBN 1-887334-97-8. Available:

<http://www.clir.org/pubs/abstract/pub114abst.html>

Abby Smith, *New-model scholarship: how will it survive?* Washington, D.C.: Council on Library

and Information Resources, March 2003. ISBN 1-887334-99-8. Available:

<http://www.clir.org/pubs/abstract/pub114abst.html>

Neil Beagrie, *National digital preservation initiatives: an overview of developments in Australia, France, the Netherlands, and the United Kingdom and of related international activity*

. Washington, D.C.: Council on Library and Information Resources, April 2003. ISBN 1-932326-00-6. Available:

<http://www.clir.org/pubs/abstract/pub116abst.html>

1.4 OCLC Online Computer Library Center

Brian Lavoie of OCLC Research has produced a white paper that looks at incentives for preservation, an important factor in deciding whether preservation can become an economically sustainable process. The report identifies key decision-making roles, outlines five potential organisational models and examines their implications.

Brian F. Lavoie, *The incentives to preserve digital materials: roles, scenarios, and economic decision-making*. White paper published electronically by OCLC Research, April 2003:

<http://www.oclc.org/research/projects/digipres/incentives-dp.pdf>

1.5 National Center for Biotechnology Information

The National Center for Biotechnology Information (NCBI), a centre of the US National Library of Medicine has released two XML Document Type Definitions (DTDs) for the publishing and exchange of e-journal articles. The Archiving and Interchange DTD Suite can be used to create new DTDs for the transfer of e-journal articles from publishers to archives (or between archives) or to support the preservation of the intellectual content of journals. The Publishing DTD is a prescriptive subset of the Archiving and Interchange DTD intended to provide a common format for the creation of e-journal content in XML (e.g. for importing into services like PubMed Central). The DTDs are the result of collaboration between the NCBI and the Harvard University E-Journal Archiving Project.

NCBI Archiving and Interchange Document Type Definition:

<http://dtd.nlm.nih.gov/>

NCBI Journal Publishing Document Type Definition:

<http://dtd.nlm.nih.gov/publishing/>

1.6 The National Library of the Netherlands

Following its agreement with Elsevier last year, In May 2003, the National Library of the Netherlands (Koninklijke Bibliotheek) signed an agreement with Kluwer Academic Publishers for the e-deposit of the electronic publications available through the Kluwer Online service:

Koninklijke Bibliotheek, "National Library of the Netherlands and Kluwer Academic Publishers agree on long-term digital archiving." Press release, 19 May 2003:

http://www.kb.nl/kb/resources/frameset_kb.html?/kb/pr/pers/pers2003/kb-kap-en.html

1.7 The National Diet Library

A recent article in *RLG DigiNews* describes the current activities and initiatives at Japan's National Diet Library in creating a National Digital Library Digitization Project. Several other projects are planned, including WARP (Web ARchiving Project) and DNAVI (the NDL Database Navigation Service). The National Diet Library has also begun research and study for long term preservation of digital information, beginning a three-year project in 2002 to set up comprehensive guidelines and policies for long term preservation.

Harada, Hisayoshi, "Digitizing, archiving and preserving Japanese cultural heritage", *RLG DigiNews*

7(2), 15 April 2003:

<http://www.rlg.org/preserv/diginews/diginews7-2.html#feature1>

1.8 The National Archives of Australia

Several papers have been released describing the National Archives of Australia's approach to preservation of digital records and the Agency to Researcher (AtoR) Digital Preservation Project. A green paper by Heslop, Davis and Wilson describes NAA's 'performance model' and concept of 'essence' in digital records, as well as outlining the approach and process to using XML as an archival format.

A presentation by Simon Davis describes the AtoR project in more detail, including the development of a software tool called 'xanadu', a Java-based application that converts digital

source documents into XML-based formats and allows viewing of XML documents of particular formats. The National Archives of Australia expects to make the xanadu software freely available in July 2003.

Helen Heslop, Simon Davis and Andrew Wilson, *National Archives Green Paper: an approach to the preservation of digital records*, Canberra: National Archives of Australia, December 2002.
http://www.naa.gov.au/recordkeeping/er/digital_preservation/summary.html

Simon Davis, *The Commonwealth's digital preservation strategy*, Canberra: National Archives of Australia, November 2002
http://www.naa.gov.au/recordkeeping/rkpubs/fora/02Nov/digital_preservation.pdf

1.9 The National Archives (UK)

In April 2003, the UK's Public Record Office and the Historical Manuscripts Commission merged to form the National Archives. The organisation's new Web pages can be found at:
<http://www.nationalarchives.gov.uk/>

The pages include an overview of PRONOM, the National Archives' database system for storing detailed descriptions of software applications, including file formats to which an application can read and write and any dependencies that may exist in order to run the application. Future developments of the system are expected to include a web-accessible interface and facilities for external contribution.

Overview of PRONOM available at:

<http://www.pro.gov.uk/about/preservation/digital/pronom.htm>

UPDATE 03 October 2005 This link was disabled - information on PRONOM can now be found at

<http://www.nationalarchives.gov.uk/aboutapps/pronom/default.htm>

Some pages on the National Archives rescue of BBC Domesday are available at:

<http://www.pro.gov.uk/about/preservation/digital/domesday/default.htm>

UPDATE 03 October 2005 This link was disabled - information on the National Archives rescue of BBC Domesday can now be found at

<http://www.nationalarchives.gov.uk/preservation/research/domesday.htm/default.htm>

1.10 Computer Science and Telecommunications Board (CSTB)

The US Computer Science and Telecommunications Board Expert Committee (CSTB) is examining an approach under consideration by the US National Archives and Records Administration (NARA) and will assess technologies for long-term digital archiving and preservation, develop a picture of what is commercially available both currently and in the near future, and consider the feasibility of commercialising new ideas from research. The first of two reports from the Committee on Digital Archiving is now available and recommends a strategy for engineering and acquiring NARA's Electronic Records Archives (ERA). The second and final report is anticipated in 2004.

Committee on Digital Archiving and the National Archives and Records Administration, Robert F. Sproull and Jon Eisenberg, (Editors), *Building an electronic records archive at the National Archives and Records Administration: recommendations for initial development*, Washington D.C.: National Academies Press, 2003. ISBN 0-309-08947-6. Available: http://www7.nationalacademies.org/cstb/pub_nara1.html

The project site may be found at:

http://www7.nationalacademies.org/cstb/project_nara.html

2. Specific initiatives

2.1 OCLC/RLG Preservation Metadata Working Group II: Implementation Strategies

Following the publication in 2002 by the OCLC/RLG Working Group on Preservation Metadata of *A metadata framework to support the preservation of digital objects*, the same sponsors are now supporting a new working group that will develop recommendations and best practice for implementing preservation metadata. This group is called PREMIS (PREservation Metadata: Implementation Strategies).

More information is available at: <http://www.oclc.org/research/pmwg/>

2.2 The Copyright and Licensing for Digital Preservation project

The UK Arts and Humanities Research Board have funded the Copyright and Licensing for Digital Preservation (CLDP) project to investigate whether and how copyright law and licensing practice affects long-term access to digital content. The project is being run by the Department of Information Science at Loughborough University. A background paper is already available on the project's Web site.

The CLDP Web site is available at:

<http://www.lboro.ac.uk/departments/dis/disresearch/CLDP/>

2.3 The CAMiLEON project

The CAMiLEON (Creative Archiving and Michigan and Leeds Emulating the Old on the New) project has released some Web pages giving information on the 'migration on request' preservation strategy and on the project's rescue of the BBC Domesday system. The 'migration on request' pages include the concepts behind the strategy, the development of a 'migration on request' tool exemplar, and executable files, source code and developer documentation for the tool. The BBC Domesday pages include FAQ's, technical and property rights issues and screenshots of the emulator in action. An article in *RLG DigiNews* also outlines CAMiLEON's experience with BBC Domesday.

Migration on Request:

<http://www.si.umich.edu/CAMiLEON/reports/mor/>

BBC Domesday:

<http://www.si.umich.edu/CAMiLEON/domesday/domesday.html>

Andrew Charlesworth, *The CAMiLEON Project: legal issues arising from the work aiming to preserve elements of the interactive multimedia work entitled "The BBC Domesday Project."*, University of Michigan, CAMiLEON Project, 2002

<http://www.si.umich.edu/CAMiLEON/reports/IPRreport.doc>

Phil Mellor, "CAMiLEON: emulation and BBC Domesday." *RLG DigiNews*, 7(2), 15 April 2003:

<http://www.rlg.org/preserv/diginews/diginews7-2.html#feature3>

3. Specific Areas of Activity

3.1 Web Archiving

Recent publications on Web archiving include two reports produced as part of a feasibility study undertaken on behalf of the JISC and the library of the Wellcome Trust. The first of these looks at the size and nature of the Web, reviews selected Web archiving initiatives, and provides guidance on implementation issues. The second report, by Andrew Charlesworth of the Centre for IT and Law at the University of Bristol, comprises a comprehensive assessment of legal issues (copyright, defamation, content liability and data protection) relating to the archiving of Internet resources in the UK, the European Union, the United States and Australia.

In February 2003, the final report of the Danish netarkivet.dk pilot project was published in English (<http://www.netarkivet.dk/rap/index-en.htm>). The project tested various strategies for the collecting and archiving of Internet material and the final report recommends a hybrid strategy based on both selective and bulk harvesting.

The April issue of *D-Lib Magazine* contained an article that summarised trends in the evolution of the public Web identified by OCLC Research's Web Characterization Project. In this, O'Neill, Lavoie and Bennett, found that the annual growth rate of the public Web had slowed steadily throughout the five-year period covered by the project to date. The article contains much that would be of interest to those considering Web archiving initiatives.

Two articles in *RLG DigiNews* have covered the more practical issues of Web archiving. Peter Botticelli of Cornell University described the collection of South-East Asian Web sites as part of Project Prism, while Carol van Nuys of the National Library of Norway introduces that institution's experiences with electronic legal deposit and the Paradigma Project. In *Ariadne*

, Brian Kelly of UKOLN published a short analysis of historical UK university Web sites captured by the Internet Archive.

References:

Peter Botticelli, "Risk management for Web resources: a case study on Southeast Asian Web sites" *RLG DigiNews*, 7(1), 15 February 2003:

<http://www.rlg.org/preserv/diginews/diginews7-1.html#feature2>

Andrew Charlesworth, *Legal issues relating to the archiving of Internet resources in the UK, EU, USA and Australia: a study undertaken for the JISC and Wellcome Trust*, 25 February 2003:

http://library.wellcome.ac.uk/projects/archiving_reports.shtml

Birte Christensen-Dalsgaard, *et al.*, *Experiences and conclusions from a pilot study: Web archiving of the District and County Elections, 2001*.

netarkivet.dk final report, February 2003:

<http://www.netarkivet.dk/rap/webark-final-rapport-2003.pdf>

Michael Day, *Collecting and preserving the World Wide Web: a feasibility study undertaken for the JISC and Wellcome Trust*, 25 February 2003:

http://library.wellcome.ac.uk/projects/archiving_reports.shtml

Brian Kelly, "WebWatch: surfing historical UK university Web sites." *Ariadne*, 35, 29 April 2003:

<http://www.ariadne.ac.uk/issue35/web-watch/>

Edward T. O'Neill, Brian F. Lavoie, Rick Bennett, "Trends in the evolution of the public Web, 1998-2002," *D-Lib Magazine*, 9(4), April 2003:

<http://www.dlib.org/dlib/april03/lavoie/04lavoie.html>

Carol van Nuys, "The Paradigma Project" *RLG DigiNews*, 7(2), 15 April 2003:

<http://www.rlg.org/preserv/diginews/diginews7-2.html#feature2>

3.2 e-Science and the preservation of scientific data

In January 2003, the US National Science Foundation published the report of a Blue Ribbon Advisory Panel on Cyberinfrastructure. This noted that technologies developed to the extent that it was possible to build "new types of scientific "cyberinfrastructure" on which to build new

types of scientific and engineering knowledge environments and organizations and to pursue research in new ways and with increased efficacy" (executive summary). The panel recommended that the NSF should establish a \$1 billion Advanced Cyberinfrastructure Program (ACP) to facilitate this. The report also noted (p. 43) that the panel had repeatedly heard members of the research community stating the need for "trusted and enduring organisations to assume the stewardship for scientific data," including legacy data. For the report and a press release, see: <http://www.cise.nsf.gov/sci/reports/toc.cfm>

The final report of the OECD (Organisation for Economic Co-operation and Development) Follow-up Group on Issues of Access to Publicly Funded Research Data was published in March 2003. The core principle of the report is that "publicly funded research data should be openly available to the maximum extent possible," and the group (amongst other things) note that the public investment made in data collection can only be maximised if it is preserved, managed and made accessible (p. 13). Background information on the group and report is available from:

<http://dataaccess.ucsd.edu/>

The publication *Promise and practice in data sharing*, edited by Paul Wouters and Peter Schroder, contains the following articles: "Digital research data as the floating capital of the Global Science System" (Peter Schroder), "Big science data policies" (Paul Wouters and Colin Reddy), "Issues of electronic access in biodiversity" (Kathleen Casey) and "Research woes and new data flows" (Anne Beaulieu). The volume includes an analysis of data use and sharing at CERN and the European Bioinformatics Institute (EBI), as well as a look at data sharing facilities used for biodiversity data (e.g., the Global Biodiversity Information Facility) and neuroinformatics (the functional Magnetic Resonance Imaging Data Center).

In the UK, the JISC has published the consultation draft of a review of the data curation of e-Science in the UK undertaken for the JISC Committee for the Support of Research (JCSR). The report, by Philip Lord and Alison Macdonald of the Digital Archiving Consultancy, looks at the current provision of and future requirements for the curation of primary research data, with a particular focus on e-Science data. The report includes several strategic recommendations, including an endorsement of the proposed Digital Curation Centre and a suggestion that there should be long-term funding available for data centres and curation. The JISC also published a report from a meeting of the Digital Data Curation Task Force held in November 2002.

Lord and Macdonald's report note the growing importance of e-Science, which tends to be data- and computing power intensive, collaborative in nature, and distributed. Recent papers by Hey and Trefethen, Rajasekar, *et al.* mark an increasing interest in the long-term preservation

aspects of e-Science and Grid computing, as do the ongoing activities of the Persistent Archive Research Group (PA-RG) of the Global Grid Forum (GGF). Several documents are available from the PA-RG Web pages (<http://www.zib.de/ggf/data/pa/>), including a draft recommendation specifying the minimum capabilities that need to be provided by data grids to enable the creation of persistent archives.

General information on the PA research group is available on the GGF Web pages:
http://www.gridforum.org/6_DATA/persist.htm

References:

Tony Hey and Anne Trefethen, "The data deluge." In: Fran Berman, Geoffrey Fox and Tony Hey (eds.), *Grid computing: making the global infrastructure a reality*, Wiley, January 2003. Also available:
<http://www.rcuk.ac.uk/escience/documents/DataDeluge.pdf>

Philip Lord and Alison Macdonald, *Data curation for e-Science in the UK: an audit to establish requirements for future curation and provision*, v. 1.0
(consultation draft), May 2003:
http://www.jisc.ac.uk/uploaded_documents/e-Sciencefinaldraft.pdf

Alison Macdonald and Philip Lord, "Digital Data Curation Task Force: report of the Task Force strategy discussion day," JISC, January 2003:
http://www.jisc.ac.uk/uploaded_documents/CurationTaskForceFinal1.pdf

National Science Foundation, *Revolutionizing science and engineering through cyberinfrastructure: report of the National Science Foundation Blue-Ribbon Advisory Panel on Cyberinfrastructure*, NSF, January 2003:
<http://www.cise.nsf.gov/evnt/reports/toc.htm>

OECD Follow-up Group on Issues of Access to Publicly Funded Research Data, *Promoting access to public research data for scientific, economic, and social development: final report*

. University of California, San Diego, March 2003:
http://dataaccess.ucsd.edu/Final_Report_2003.pdf

Arcot Rajasekar, Michael Wan, Reagan Moore, George Kremenek and Tom Guptil, "Data grids, collections, and Grid Bricks," 20th IEEE/11th NASA Goddard Conference on Mass Storage Systems and Technologies, San Diego, Calif., 7-10 April 2003:
<http://www.storageconference.org/2003/papers/01-Rajasekar-Data.pdf>

Paul Wouters and Peter Schroder (eds.), *Promise and practice in data sharing*. Amsterdam: NIWI-KNAW, 2003. ISBN 90-6472-184-X. Available:
<http://www.niwi.knaw.nl/nerdi/paul/datasharing.pdf>

3.3 Institutional Repositories

Reflecting a growing awareness of the importance of open-access principles, e-prints, etc., there have been a number of new publications on institutional repositories and similar subjects. These include reviews of institutional repositories in the UK by Stephen Pinfield and Michael Day, both on behalf of projects funded by JISC's Focus on Access to Institutional Resources (FAIR) Programme. Other publications have included a new overview of functionality of the DSpace repository system, and articles in *Ariadne* and the *Times Higher Education Supplement* on how research assessment could be used to drive the population of repositories in the UK.

References:

Michael Day, *Prospects for institutional e-print repositories in the United Kingdom*. ePrints UK supporting study, no. 1, 28 May 2003:
<http://www.rdn.ac.uk/projects/eprints-uk/docs/studies/impact/>

Hamish James, Raivo Ruusalepp, Sheila Anderson and Stephen Pinfield, *Feasibility and requirements study on preservation of e-prints*, v. 1.0, 9 May 2003
http://www.jisc.ac.uk/uploaded_documents/e-prints_report_1-0.pdf

Stephen Pinfield, "Open archives and UK institutions," *D-Lib Magazine*, 9(3), March 2003:
<http://www.dlib.org/dlib/march03/pinfield/03pinfield.html>

Stevan Harnad, "Why I believe that all UK research should be online." *Times Higher Education Supplement*, 6 June 2003, p. 16. A longer version is available at:
<http://www.ecs.soton.ac.uk/~harnad/Temp/thes.html>

Stevan Harnad, Les Carr, Tim Brody and Charles Oppenheim, "Mandated online RAE CVs linked to university eprint archives: enhancing UK research impact and assessment." *Ariadne*, 35, 30 April 2003:
<http://www.ariadne.ac.uk/issue35/harnad/>

Robert Tansley, Mick Bass, David Stuve, Margaret Branschofsky, Daniel Chudnov, Greg McClellan and MacKenzie Smith, "The DSpace insitutional repostory system: current functionality." In: *Proceedings 2003 Joint Conference on Digital Libraries, May 27-31, 2003, Rice University, Houston, Texas, USA*. Los Alamitos, Calif.: IEEE Computer Society, 2003, pp. 87-97.

4. Other recent publications

Barry Fox, "Not fade away." *New Scientist*, 177 (2384), 1 March 2003, pp. 40-43.

An article on the preservation of sound archives. Much of it concentrates on older analogue formats, e.g. wax-coated cylinder recordings, "acetate" discs, magnetic audio tape, etc., but the final paragraphs introduce problems with digital recordings, e.g. the master copies that recording engineers stored on Betamax videotape. After noting potential problems with the compact discs, Fox concludes, "today's conservators might simply be laying down problems for their descendants."

Michael A. Keller, Victoria A. Reich and Andrew C. Herkovic, "What is a library anymore,

anyway?" *First Monday*, 8(5), 5 May 2003:
http://www.firstmonday.dk/issues/issue8_5/keller/

Richard Marciano, Bertram Ludascher, Ilya Zaslavsky, Reagan Moore and Keith Pezzoli, "Multi-level information modeling and preservation of eGOV data" In: R. Traunmuller and K. Lenk (eds.), *Electronic Government: First International Conference, EGOV 2002, Aix-en-Provence, France, September 2-5, 2002. Proceedings*, Lecture Notes in Computer Science, 2456, Springer-Verlag, 2002, 93-100. Abstract at:
<http://link.springer.de/link/service/series/0558/bibs/2456/24560093.htm>

Deanna Marcum and Amy Friedlander, "Keepers of the crumbling culture: what digital preservation can learn from library history" *D-Lib Magazine*, 9(5), May 2003:
<http://www.dlib.org/dlib/may03/friedlander/05friedlander.html>

Gerhard O. Michler, "How to build a prototype for a distributed mathematics archive library," *Annals of Mathematics and Artificial Intelligence*, 38(1-3), May 2003, 137-164.

Introduces the Electronic Mathematics Archiving Network Initiative (EMANI), and describes how papers can be linked to create a prototype distributed digital library.

Sam Searle and Dave Thompson, "Preservation metadata: pragmatic first steps at the National Library of New Zealand," *D-Lib Magazine*, 9(4), April 2003:
<http://www.dlib.org/dlib/april03/thompson/04thompson.html>

Abby Smith, "Issues in sustainability: creating value for online users," *First Monday*, 8(5), 5 May 2003:
http://www.firstmonday.dk/issues/issue8_5/smith/

Vanessa Spedding, "Data preservation: great data, but will it last?" *Research Information*, 5, Spring 2002, pp. 16, 18, 20:
<http://www.researchinformation.info/rispring03data.html>

Thornton Staples, Ross Wayland and Sandra Payette "The Fedora Project: an open-source digital object repository management system," *D-Lib Magazine*, 9(4), April 2003:
<http://www.dlib.org/dlib/april03/staples/04staples.html>

Marcel van Dijk, "It always hurts the first time: experiences with transferred electronic records", *Cultivate Interactive*, issue 9, 7 February 2003:
<http://www.cultivate-int.org/issue9/amsterdammro/>

5. Events

5.1 Recent events

Practical Experiences in Digital Preservation, The National Archives, London, UK, 2-4 April 2003

This international conference, organised by the National Archives and the International Council on Archives, focused on practical approaches to preservation. The conference Web site contains the proceedings (presentation slides and audio), some images and a conference report: <http://www.pro.gov.uk/about/preservation/digital/conference/>

UPDATE 03 October 2005 This link disabled; information now available at <http://www.nationalarchives.gov.uk/preservation/news/conference/default.htm>

ERPANET Workshop, Long-term Preservation of Databases, Berne, Switzerland, 9-11 April 2003

Presentations, images and a conference report are now available on the ERPANET Web site:
<http://www.erpanet.org/>

International Symposium, Archives Online: Moving Archives into the Digital Era, Koninklijke Bibliotheek, Den Haag, Netherlands, 17 April 2003

Presentations from this event are now available from the ERPANET Web site:

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

5.2 Forthcoming Events

June:

404 Object Not Found: What Remains of Media Art?, Dortmund, Germany, 19-22 June 2003:

<http://www.hartware-projekte.de/programm/inhalt/eueng.htm>

DPC Forum, Open Source and Archiving Dynamic Databases, BL Conference Centre, London, UK, 24 June 2003

ELPUB 2003 - ICCC (International Council for Computer Communication)/IFIP (International Federation for Information Processing) 7th International Conference on Electronic Publishing: From Information to Knowledge, University of Minho, Guimaraes, Portugal, 25-28 June 2003: <http://piano.dsi.uminho.pt/elpub2003/>

DAVID (Digitale Archivering in Vlaamse Instellingen en Diensten) Conference - e-Archiving for Posterity: Electronic Record Keeping and Long-Term Preservation of Digital Data, Katholieke Universiteit Leuven, Louvain, Belgium, 26 June 2003:

<http://www.law.kuleuven.ac.be/icri/seminars.php?id=20&where=>

PDF brochure: <http://www.antwerpen.be/david/teksten/brochure.pdf>

July:

EUNIS 2003: Beyond the Network, 9th International Conference of European University Information Systems, 2-4 July 2003:

<http://www2.ic.uva.nl/eunis2003/>

HATII (Humanities Advanced Technology and Information Institute) Digitisation Summer School for Cultural Heritage Professionals, University of Glasgow, UK, 6-11 July 2003:
<http://www.hatii.arts.gla.ac.uk/SumProg/DigiSS03/>

Navigating the shoals of Accountability and Access, NAGARA (National Association of Government Archives and Records Administrators) Annual Meeting, Providence, Rhode Island, USA, 9-12 July 2003:
http://www.nagara.org/2003_meeting/03_program.pdf

Sound Savings: Preserving Audio Collections, Austin, Texas, USA, 24-26 July 2003:
<http://www.ischool.utexas.edu/~soundsavings/>

August:

World Library and Information Congress: 69th IFLA (International Federation of Library Associations and Institutions) General Conference and Council, Berlin, Germany, 1-9 August 2003:
<http://www.ifla.org/IV/ifla69/>

Digital Preservation Management: Implementing Short-Term Strategies for Long-Term Problems, Cornell University Library, Ithaca, New York, USA, 4-8 August 2003:
<http://www.library.cornell.edu/iris/dpworkshop/>

ECDL2003 - 7th European Conference on Research and Advanced Technology for Digital Libraries, Trondheim, Norway, 17-22 August 2003:
<http://www.ecdl2003.org/>

ECDL Workshop on Web Archiving, Trondheim, Norway, 21 August 2003:

<http://bibnum.bnf.fr/ecdl/>

SAA (Society of American Archivists) Annual Meeting, Los Angeles, California, USA, 18-24 August 2003:

<http://www.archivists.org/conference/index.asp>

DRH 2003: Digital Resources for the Humanities, University of Gloucestershire, Cheltenham, UK, 31 August - 3 September 2003:

<http://www.glos.ac.uk/humanities/content.asp?sid=6>

September:

ERPANET Training Seminar, Metadata in digital preservation, Marburg, Germany, 3-5 September 2003:

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

Symposium 2003 - Preservation of Electronic Records: New Knowledge and Decision Making - La preservation des documents électroniques: Information recente et prise de decisions, Library and Archives of Canada, Ottawa, Canada, 15-18 September 2003:

http://www.cci-icc.gc.ca/symposium2003/index_e.shtml

SEPIA (Safeguarding European Photographic Images for Access) Conference, Changing images: the role of photographic collections in the digital age, Finnish Museum of Photography, Helsinki, Finland, 18-20 September 2003:

<http://www.knaw.nl/ecpa/sepia/conference.html>

IASA (International Association of Sound and Audiovisual Archives) Annual Conference: Audiovisual Archives: Memory and Society, University of Pretoria, Hatfield, Pretoria, South Africa, 21-25 September 2003:

<http://www.iasa-web.org/iasa0009.htm>

Archaeology Data Service, The bluffer's guide to metadata, York, UK, 24 September 2003:
<http://ads.ahds.ac.uk/project/workshop/metadata03.html>

DC-2003 - 2003 Dublin Core Conference, Supporting Communities of Discourse and Practice -
Metadata Research & Applications, Seattle, Washington, USA, 28-September - 2 October 2003:
<http://dc2003.ischool.washington.edu/>

A more comprehensive list of forthcoming events is available from the PADI Web site:
<http://www.nla.gov.au/padi/format/event.html>

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