

# IS&T Archiving Conference

Preliminary Program

April 26-29, 2005

The Hilton Washington  
Washington, DC

**General Chairs:**

**Robert Buckley, Xerox Corporation**

**Franziska Frey, Rochester Institute of Technology**



Sponsored by

**The Society for Imaging  
Science and Technology**

In cooperation with

AIC American Institute for Conservation  
ALCTS Assn. for Library Collections & Technical Services  
CNI Coalition for Networked Information  
DLF Digital Library Federation  
DPC Digital Preservation Coalition  
ECPA European Commission on Preservation and Access  
ISCC Inter-Society Color Council  
MCN Museum Computer Network  
OCLC Online Computer Library Center  
RLG Research Libraries Group  
SPIE The International Society for Optical Engineering

[www.imaging.org](http://www.imaging.org)

# Introduction

We are pleased to announce the program for the Second IS&T Archiving Conference. The 2005 conference looks to build on the success of the first and on the enthusiasm it created. The first conference brought together a diverse group of attendees from academia, industry, museums, libraries, government institutions, and not-for-profit organizations. We expect the second to do the same and further the goal of building a unique international community that brings together multiple organizations and specialties in the domain of archiving and preservation.

Some features of the second conference will be familiar to those who attended the first. The technical papers program is again arranged in a single-track format to promote the interchange of information across specialties in the field.

We will start each day with a keynote address; this year's speakers will be Deanna Marcum, associate librarian for library services, Library of Congress on "The Views of Archiving from the Library of Congress;" Clifford A. Lynch, Executive Director of the Coalition for Networked Information on "Archiving, Stewardship, Curation: From the Personal to the Global Sphere;" and Helen Shenton, Head of Collection Care at the British Library on "Real Time, Deep Time, Life Time—Spanning Digital and Traditional Collections Life Cycles."

As with most IS&T conferences, the Interactive Poster session is a key feature, providing the opportunity for presenters and attendees to mingle and discuss results presented using a variety of media formats. The Interactive Poster Session authors will have the opportunity to introduce their work through 90 second "spotlight" talks at the beginning of the session.

Another important feature of the program is the tutorials, which are organized into three tracks and offered on Tuesday, the day before the papers program. The tracks are "Formats and Metadata," "Imaging Science and Archiving Infrastructure," and "Media and Storage." You may choose to follow a single track all day or personalize your course program to meet your educational or professional needs.

Special events are planned as well. The Conference Reception will be held Wednesday evening; Late Breaking News Session will close the papers program Friday afternoon; and "Behind the Scenes" tours of imaging and archiving facilities in the DC area are being arranged for Friday afternoon after the conference concludes.

An excellent tutorial program, outstanding keynote speakers, and a papers program with high-level speakers from around the world are waiting for you in Washington, DC. Please plan to join us for the Second IS&T Archiving Conference.

Robert Buckley and Franziska Frey  
General Chairs

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## Washington, DC

What draws most visitors to Washington, DC, again and again, is their discovery of a vibrant, accessible, and world-class city with so much to offer—from inspiring monuments and museums to monumental arts and culture. Only in Washington can visitors be inspired by touring the magnificent Capitol Building, Library of Congress, and Washington Monument by day and be moved by a magical performance by the National Symphony Orchestra at night. Marvel at the Lincoln Memorial. Discover a city that loves the arts. Visit the world-renowned museums of the Smithsonian Institution. Beyond Washington, DC's most familiar vistas, the capital city unwinds into a lively urban center. Spontaneous jazz notes tumble out the windows of U Street's nightclubs, while world-class performers take the stage at the highly acclaimed Kennedy Center. Kayakers tackle the Potomac River as it winds past the elegant marble tributes to America's greatest leaders. From its celebrated symbols of patriotism to its undiscovered neighborhoods, the sights and sounds of the nation's capital inspire millions of visitors every year. Packed with famous sights, free attractions, and an endless calendar of special events, Washington offers year-round inspiring experiences. Plan to join us this spring!

Our hotel, the Hilton Washington enjoys a magnificent garden setting that overlooks the capital city's impressive skyline. Conveniently located on fashionable upper Connecticut Avenue and only a quarter mile from the Dupont Circle Metro station, the hotel sits just minutes from Georgetown, Adams-Morgan, Embassy Row, the Washington business district, and all local points of interest.

[www.Washington.org](http://www.Washington.org)

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# Tutorial Program

*Note: We reserve the right to cancel tutorial classes in the event of insufficient advance registration. Indicate your interest early.*

## Track I - Formats & Metadata

T1 – 2 hour tutorial Tuesday, April 26, 2005  
8:00 to 10:00 am

### **Introduction to the Insides of PDF**

*Instructor: James C. King, Adobe Systems*

PDF files are composed from a set of “objects” that can reference each other and can occur within the PDF file in any order. These objects, similar in use to XML’s “elements”, are used to create the structure of a sequence of pages to be imaged, together with the material that makes that sequence of pages into a true document. The objects are also used to construct a table of contents, on-page annotations, fill-in form fields, etc.

#### **Benefits/Learning Objectives**

Tutorial attendees will be able to:

- Judge for oneself whether PDF will satisfy your archiving objectives
- Explain to others how PDF files are organized at the highest level
- Demonstrate how PDF file format impacts performance in viewing
- Examine a PDF using a text editor and understand the representation
- Understand the mechanism for including an embedded file inside of a PDF
- Accurately position PDF as a de facto open standard

#### **Intended Audience**

This tutorial is intended for those considering saving large volumes of PDF files as an archive and those contributing to the activities of the PDF Subset for Archiving (PDF/A). Anyone curious as to what, exactly, is inside a PDF file will find this course useful. No particular training or skill is required to understand this class.

**James King**, a principal scientist at Adobe Systems Inc., is one of the people responsible for the vision, architecture, design, prototyping, and ultimate development of new products and new features for existing Adobe products.

Prior to joining Adobe Systems, Dr. King was manager of the I/O Systems Laboratory (IOSL) at the IBM Almaden Research Center where he was responsible for guiding research projects dealing with advanced printers, scanners, and displays.

T2 – 2 hour tutorial Tuesday, April 26, 2005  
10:15 AM – 12:15 PM

### **JPEG 2000 for Cultural Heritage Institutions: Metadata, Access & Archiving**

*Instructor: Robert Buckley, Xerox Corporation*

JPEG 2000 has attracted the interest of the cultural heritage community like no previous image standard. For those interested in image access, possibilities are expanded with the need for image derivatives and supplementary files reduced or eliminated. For those with archiving concerns, metadata management can be simplified with efforts at assuring data integrity and color fidelity more readily sustained. JPEG 2000 also defines a family of file formats for single images, multi-page documents and image sequences. This tutorial will take you on a tour of the JPEG 2000 standard, demonstrate its capabilities, and discuss its use in digital image access and archiving applications.

#### **Benefits/Learning Objectives**

Tutorial attendees will be able to:

- Explain how JPEG 2000 works
- List the factors that control the performance and usefulness of JPEG 2000
- Compare JPEG 2000 to TIFF and other formats
- Show how metadata is used in JPEG 2000
- Assess the JPEG 2000 as a format for digital masters, derivatives and image delivery

#### **Intended Audience**

This tutorial is intended for those in cultural heritage institutions, digital libraries, and archives who work with images and need to understand and assess the implications of JPEG 2000 for image preservation, storage, and delivery.

**Robert Buckley** is a research fellow with the Xerox Imaging and Services Technology Center in Webster, NY. He is the Xerox representative on the U.S. JPEG 2000 committee, was the project editor for Part 6 of the standard, which defines the JPEG 2000 compound image file format, and has spoken before on the adoption of JPEG 2000 by archives and libraries. As general co-chair of the 1st and 2nd IS&T Archiving Conferences, he has played an active role in establishing this meeting.

# Tutorial Program

T3 – 2 hour tutorial Tuesday, April 26, 2005  
1:15 PM – 3:15 PM

## Copyright Law and Archiving

Instructor: Laura N. Gasaway,  
Univ. of North Carolina

Copyright law was designed both to provide economic incentives to authors to stimulate the production of new works and to ensure that their works were made available to the public. Libraries, archives, and museums often seek to preserve archival materials using digital means; such preservation requires a reproduction of the work. The right of reproduction is one of the exclusive rights of the copyright holder provided under the Copyright Act. This tutorial examines the law how it can act as a barrier to legitimate archiving projects, as well as offers suggestions on how to find means for both complying with the law and preserving the materials.

### Benefits/Learning Objectives

Tutorial attendees will be able to:

- Summarize general copyright principles that apply to digital archiving
- Identify copyright barriers to archiving both published and unpublished materials
- Analyze local situations, apply copyright principles, and determine whether copyright permission is needed for projects
- Create local guidelines on how to obtain permission and how to manage permissions received

### Intended Audience

This tutorial is intended for audience for librarians, archivists, and others interested in legal issues related to archiving who have only a basic knowledge of copyright law.

**Laura N. Gasaway** (Lolly) has been director of the Law Library and professor of Law at the Univ. of North Carolina since 1985. She teaches courses in Copyright Law, Intellectual Property Law, and Cyberspace Law in the Law School and Copyright Law in the School of Information and Library Science. She has written widely on copyright as it effects libraries, colleges, and universities. Dr. Gassaway served as the first virtual scholar in residence at the Center for Intellectual Property, Univ. of Maryland, Univ. College, 2001-02. A list of recent articles and books may be found at: [www.unc.edu/~unclng/gasaway.htm](http://www.unc.edu/~unclng/gasaway.htm).

*Visit the IS&T Website ([www.imaging.org](http://www.imaging.org))  
to register online for the tutorials you  
plan to attend.*

T4 – 2 hour tutorial Tuesday, April 26, 2005  
3:30 PM – 5:30PM

## Metadata:

### A Piece of the Preservation Puzzle

Instructor: Robin Dale, RLG (USA)

Metadata is commonly associated with the *description* of digital objects, but metadata is far more than that. Structural and administrative metadata exist to help us manage and deliver our digital files and are therefore essential pieces of the digital preservation puzzle. Capturing, recording, and maintaining this metadata is a critical activity required to support the long-term lifecycle of digital objects. This tutorial will briefly review the types of metadata before focusing on relevant standards, best practices, implementation exemplars, and strategies for preservation, especially those related to digital images.

### Benefits/Learning Objectives

Tutorial attendees will be able to:

- Understand what metadata is and the various roles it plays with digital objects
- Explain and differentiate the categories of metadata relevant to the cultural heritage community
- Recognize the relevant standards and best practices associated with preservation metadata, especially those for digital images
- Assess example digital images and objects and determine critical metadata required to support their access and preservation
- Evaluate existing metadata recommendations and best practices and apply them based on local need/practice

### Intended Audience

This tutorial is intended for staff of cultural heritage institutions, digital libraries and archives who create, acquire, and manage digital objects. Attendees are assumed to be acquainted with high-level metadata concepts, but are not assumed to be metadata practitioners.

**Robin L. Dale** has been a program officer at RLG for 8 years. In that position, she leads RLG's key activities related to the long-term management of digital resources. Her current work focuses on trusted digital repositories, preservation and technical metadata, and digital repository certification. She is a regular speaker on digital preservation initiatives and is active in digital preservation standards and best practice building activities, including the development of the Open Archival Information System (OAIS) international standard and the development of various preservation metadata best practices. She currently serves as the co-chair of the task force creating the *NISO Z39.87 Technical Metadata for Digital Still Images* standard.

# Tutorial Program

## Track II - Imaging Science and Archiving Infrastructure

T5 – 4 hour tutorial Tuesday, April 26, 2005  
8:00 AM – 12:15 PM

### Evaluating Digital Scanner and Camera Imaging Performance

Instructors: *Peter D. Burns and Don Williams, Eastman Kodak Company*

Today's standards for characterizing imaging performance are based on an image science architecture. We begin by introducing this perspective and then describe its application to scanner and digital camera performance in an archiving environment. The standards and accompanying tools will help the user control tone reproduction and evaluate manufacturer's claims of resolution, dynamic range, and noise. In addition, we will identify several common image artifacts associated with digital image capture. Our concentration will be on grayscale and color imaging, but bi-tonal image acquisition will also be covered.

#### Benefits/Learning Objectives

Tutorial attendees will be able to:

- Understand image science principles for digital image conversion
- Describe existing standards to characterize scanner and camera capability and performance
- Connect today's vernacular performance terms (e.g., dpi, bit depth, gamma, etc.) to science-based performance metrics
- Benchmark or audit manufacturer's scanner performance with the above metrics using publicly available standards, compliant software and targets
- Identify several digital imaging distortion sources from image data

#### Intended Audience:

This tutorial is intended for managers, engineers, and technicians charged with evaluating and monitoring scanner performance and understanding how performance metrics connect to other imaging system components such as display, print, and processing.

**Peter Burns** is a member of Eastman Kodak's Research and Development Labs. His published articles and patent activities have been in the areas of detector performance and image noise modeling, image quality evaluation, color-error propagation, and digital image processing. Dr. Burns has taught imaging courses for many years, as an adjunct faculty member at RIT, at Kodak, and at several technical conferences.

**Don Williams** is an imaging scientist in Eastman Kodak's Imaging Science Division where he works on quantitative performance metrics for digital capture devices and systems. He frequently consults and writes for the museum and library community on scanner imaging performance metrics and associated standards. He currently co-leads several ISO/TC42 standardization efforts in this area.

T6 – 2 hour tutorial Tuesday, April 26, 2005  
1:15 PM – 3:15 PM

### Digital Imaging Architecture for Archiving Applications

Instructor: *Sabine Süsstrunk, EPFL, Switzerland*

Images optimized for archiving, images optimized for viewing, and images optimized for printing usually do not contain the same digital values, nor should they. Depending on the intended usage of a digital image, its image state (color encoding, resolution, compression, processing and rendering) needs to be adjusted. In this course, we will cover the workflow from image capture to visualization to archiving and discuss the appropriate image parameters for each step.

#### Benefits/Learning Objectives

Tutorial attendees will be able to:

- Understand different image states and their relevancy in image archiving environments
- Identify the correct image capture parameters (scanners and digital cameras) and image processing workflow for their image archiving and visualization needs
- Define color image encodings, resolution, file formats, and compression requirements for image files
- Understand the basics of colorimetry and color management

#### Intended Audience:

This tutorial is intended for imaging managers and technicians at image archives or libraries involved in the digitization, processing, and maintenance of digital images, and for engineers who develop hardware and software applications for the archival community. Basic knowledge of digital imaging is assumed.

**Sabine Süsstrunk** is professor for Images and Visual Representation at the Swiss Federal Institute of Technology (EPFL) in Lausanne, Switzerland. Prior to that, she was the principle Imaging Researcher for Corbis Corporation in Seattle, WA. She is the Swiss representative to ISO TC42 WG18 and JWG20/22/23, the ISO committees defining digital photography and color imaging standards. She has lectured and

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published several articles in the area of color imaging for archiving and has consulted with several museums, archives, and companies.

T7 – 2 hour tutorial Tuesday, April 26, 2005  
3:30 PM to 5:30 PM

## **Long Term Archiving of Digital Images**

*Instructor: Rudolf Gschwind, Univ. of Basel*

The archiving of digital images involves two separate steps. First, images to be archived must be prepared to meet archival requirements like a standardized uncompressed image format and the inclusion of image metadata into the file header. Second, the archiving process must consider the following points: the choice of the appropriate archiving medium, the number of copies, a storage location, a plan for periodical data integrity proofs, and the final data migration to new environments (systems).

### **Benefits/Learning Objectives**

Tutorial attendees will be able to:

- Understand different image file formats
- Understand possible data loss scenarios
- Develop an archiving strategy
- Choose the appropriate storage medium for archiving
- Plan the data migration process

### **Intended Audience**

This tutorial is intended for imaging managers and technicians at image archives or libraries involved in the digitization, processing, and maintenance of digital images, and for engineers who develop hardware and software applications for the archival community. Basic knowledge of IT is assumed.

**Rudolph Gschwind** works on imaging technology and photography at the Imaging and Media Lab at the Univ. of Basel. Prof. Gschwind's research topics are image processing and analysis, color photography, color imaging, digital archiving, and preservation of the photographic cultural heritage.

## **Track III - Media and Storage**

T8 – 2 hour tutorial Tuesday, April 26, 2005  
8:00 to 10:00 AM

### **The Stability of Materials used in Digital Hardcopy**

*Instructor: Rita Hofmann,  
Ilford, Switzerland*

Digital printing and photography now meet the high image quality standards of professionals

and consumers and are replacing analog printing and photography at a fast pace. Digital photography and digital fine art are now being used for important works of art and in imaging applications that require long-term preservation. This class will teach attendees how to recognize various print technologies and identify the media and colorants used. Ink/colorant/media characteristics relating to the permanence of imaging materials will also be discussed and some guidance on how to best handle and preserve digital color images will be given.

### **Benefits/Learning Objectives**

Tutorial attendees will be able to:

- Identify digital printing technologies and digital media
- Describe permanence properties of materials used in digital photography and fine art printing
- Understand the permanence requirements of various imaging applications
- Assess the factors that are most detrimental to media permanence, predict the material's sensitivity to environmental factors, and learn how to avoid these factors
- Recommend handling and storage conditions adapted to the materials

### **Intended Audience**

This tutorial is an introductory- to medium-level class for those involved in the storage and archiving of digital color images and documents, as well as for scientists and engineers involved in printer/ink and media development and evaluation. Those who provide print for the artist community and gallerists and museum conservators who need to make decisions about print preservation and display will also benefit from this class.

**Rita Hofmann** has a degree in physical chemistry from the Univ. of Goettingen. After her postdoctoral studies in atmospheric sciences and air pollutants at the Univ. of Colorado, she joined Ciba-Geigy for research of new analytical methods. In 1985, she joined ILFORD, where she was involved in work on digital photography, photographic colour science, image evaluation of hardcopy technologies, and the development of tests methods for ink-jet media. She is a long-time active member of the ISO TC42-WG5 subcommittee responsible for standardizing image stability test methods for digital photographic prints and she is currently head of R&D at ILFORD Imaging Switzerland. For several years Dr. Hofmann has given numerous presentations on image stability in ink-jet images, color science, and digital photography.

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T9 – 2 hour tutorial Tuesday, April 26, 2005  
8:00 to 10:00 AM

## **When Good Images Go Bad: Understanding Image Permanence**

*Instructor: Jon Kapecki  
Imaging Consultant*

All images change with time, and modern imaging systems are no different. Rather, they bring with them new challenges for understanding and predicting those changes. This tutorial will take a data-driven approach to the four major factors that influence the permanence of hard copy images and how those factors interact.

Because people, not machines, perceive images, we'll examine how people use their images in the real world and why human factors and psychophysics are important to understanding how people perceive change.

We'll take a look at how we measure change and try to predict the future state of our images, along with the pitfalls that are inevitable in this endeavor, and why a holistic approach to image permanence is mandatory.

I want attendees to reach your their conclusions, so I'll try to provide them with the data they need to apply these concepts to their particular environment and needs. Class notes and reference materials will be provided.

### **Benefits/Learning Objectives**

Tutorial attendees will be able to:

- Describe how images are used in real-world environments
- Identify the causes of image degradation and how they interact
- Know the four questions you should always ask about image preservation
- Understand how we measure both objective and subjective change in images
- Appreciate the pitfalls involved in predicting image permanence
- Understand the arguments for a holistic approach to image permanence

### **Intended Audience**

This course will be of value to anyone who creates, uses, sells, or preserves photographic-quality images and who wants to understand how these images change over time under the influence of environmental factors. Examples will be drawn from a variety of imaging technologies to understand both their differences and common attributes.

**Jon Kapecki** is an imaging consultant who was a senior researcher for more than 30 years with the Eastman Kodak Company, where he studied image formation and degradation processes and new photofinishing technologies. He holds a PhD from the University of Illinois and has taught

courses at Kodak, the University of Rochester, and state universities. He has authored several review articles and encyclopedia entries on imaging systems and is a member of an ISO task group on image permanence standards.

T10 – 2 hour tutorial Tuesday, April 26, 2005  
1:15 PM – 3:15 PM

## **The Highest Standard of Care: Small and Large-scale Sub-zero Storage for the Long-term Preservation of B&W and Color Photographs, Glass Plates, Motion Pictures, Paper Documents, Newspapers, Magazines, Books, and Electronic Media**

*Instructors: Henry Wilhelm and  
Mark McCormick-Goodhart,  
Wilhelm Imaging Research, Inc.*

This course provides a practical introduction to the design and construction of sub-zero storage facilities. Safe access and moving objects both in and out of sub-zero storage is emphasized. Simple and safe handling procedures for individual objects, boxes, and even full filing cabinets are discussed. The preservation benefits of low-temperature storage are described for different types of materials. The important roles of temperature and relative humidity are discussed. The practical and economic advantages of sub-zero storage for mixed media collections, including glass plate negatives, are described; one storage condition can indeed provide low-cost and effect preservation storage for almost everything. Relevant ANSI and ISO storage standards are discussed. Simple and practical guidelines for digital cataloging systems for "finding what is in the vault" are described.

The three principal approaches to cold storage are described, along with field examples now in actual use, including:

1. Home or commercial freezers with CMI (critical moisture indicator) or vapor-sealed packaging.
2. Safe and low-cost "Sealed-cabinet Sub-zero Storage Method" developed for the Smithsonian Institution.
3. Traditional humidity-controlled, large-scale, sub-zero storage vault.

Examples of archives with the recommended – 4°F (–20°C) and 0°F (–18°C) cold storage are shown and discussed.

Future (announced) sub-zero preservation facilities that will be described include the National Archives of Canada Nitrate Preservation Facility, (Ottawa, Ontario – 2007); the Chicago "City 2000" collection at the Univ. of Illinois (Chicago, Illinois – 2005); and The New Mormon Church Long-term Preservation Archive, (Salt Lake City, Utah – 2005).



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## Benefits/Learning Objectives

Tutorial attendees will be able to:

- Describe the criteria used in the design of sub-zero storage
- Outline the three principal approaches to cold storage and reference examples of facilities using them successfully
- Discuss the benefits of low-temperature storage for particular materials
- Explain safe access and handling procedures to maximize long-term preservation of materials in sub-zero storage environments

## Intended Audience:

This introductory level course will be of value to those who need a good understanding of the sub-zero storage facilities in order to use such facilities effectively or to make recommendations about the preservation of their collections.

**Henry Wilhelm** is co-founder, president, and director of research at Wilhelm Imaging Research, Inc. and appears frequently as a speaker on inkjet printing technologies and print permanence and preservation at industry conferences, trade shows, and museum conservation meetings.

Dr. Wilhelm was a founding member of the Photographic Materials Group of the American Institute for Conservation of Historic and Artistic Works, is a member of the Electronic Materials Group of AIC, and was a founding member of American National Standards Institute Subcommittee IT9-3 [now incorporated into ISO and known as ISO Working Group 5/Task Group 3 (WG-5/TG-3)] which is responsible for developing standardized accelerated test methods and specifications for the stability of color photographs and digital print materials. Dr. Wilhelm has served as secretary of the group since 1984 and he presently serves as chair of the TG-3 Technical Sub-committee on Test Methods for Indoor Light Stability. He is also an active member of the ISO Task Groups responsible for storage standards for black-and-white films and prints.

Dr. Wilhelm has been a consultant to many collecting institutions, including the Museum of Modern Art in New York and Corbis on various issues related to the display and preservation of both traditional photographic prints and digital print media.

**Mark McCormick-Goodhart** is a research scientist specializing in image quality and permanence of digital printing technologies and traditional photographic materials. From 1988 until 1998 he was the senior research photographic scientist at the Smithsonian Institution in Washington, DC. His research concerned the effects of temperature and relative humidity on cultural

materials with particular emphasis on low-temperature storage of photographic collections. His environmental recommendations for use and storage of photographic materials became the standard adopted by the Museums and Galleries Commission in the United Kingdom. From 1976 to 1988, Dr. McCormick-Goodhart worked for Energy Conversion Devices, Inc., where he was granted eight US patents related to non-silver film and electronic imaging technology.

In 1997, he co-founded Old Town Editions, Inc., one of the first digital fine art printmaking studios with fully-implemented color management and softproofing capability based on ICC profiles. He is currently a member of the ANSI subcommittee IT9 that addresses standards and test methods for image permanence. His life-long interest in the art, science, and history of photography began as a teenager in 1969 with black-and-white and color printing. He graduated with a degree in photographic science from RIT in 1976.

T11 – 2 hour tutorial Tuesday, April 26, 2005  
3:30 – 5:30 PM

## Current and Future State of Storage Technologies

*Bob Blatt, Electronic Image Designers, Inc.*

This state of current storage technologies class will provide detailed information from the archival and content management perspectives, as well as information associated with storage technologies commonly used to store and manage digital data in enterprise content management (ECM) environments. Technical reviews of current and future media technology will be imbedded in the tutorial. This discussion will enable the attendee to gain a better technical understanding of various storage technologies, and how to select the technology that best meets their requirements and needs. Technology migration issues including “do’s” and “don’ts” will be discussed.

## Benefits/Learning Objectives

Tutorial attendees will be able to:

- Describe technical properties of current storage technologies
- Identify characteristics of storage technology components and their interactions
- Determine how to use storage technology depending on application space
- Summarize usage considerations for technology migration

## Intended Audience

This tutorial is geared towards technical managers, archivists, and other personnel involved in records storage and/or management. Attendee’s will gain a better understanding of the various

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types of storage technologies used to store and/or archive digital data. As this tutorial will include discussions related to current technologies and those technologies coming to market within the next few years, attendee's will be able to identify the most appropriate storage technology and migration strategy for their organization.

**Robert Blatt** has more than 23 years experience in the electronic content management (ECM) industry. Starting his career at AT&T Bell Labs in 1979, Mr. Blatt, worked on optical storage and ECM technologies from all technical aspects including design, development and implementation

Since 1990, Mr. Blatt has participated in the analysis, design, project management and implementation of a significant number of ECM-based

solutions on an international scale. Mr. Blatt is an industry analyst and is currently the principal consultant at Electronic Image Designers, Inc. He is a recognized expert within the ECM industry and has been actively involved in the development of numerous AIIM/ANSI/ISO ECM standards and technical reports from the participant, project leader, and chair perspectives.

Mr. Blatt was awarded the AIIM Master of Information Technology in 1997 and both the Document Imaging and Workflow Laureate accreditation's in 1998. He was then appointed to the AIIM-US Technical Advisory Group (TAG), which represents US technology interests internationally. Mr. Blatt is currently the chairman of three national standards committees within the electronic content management and workflow industry.

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## Week-at-a-Glance

### TUTORIALS

**Tuesday, 8:00 am to 5:30 pm**

Track I: Formats and Metadata - T1, T2, T3, T4

Track II: Imaging Science and Archiving Infrastructure - T5, T6, T7

Track III: Media and Storage - T8, T9, T10, T11

6:00-7:30 Ice-Breaker Reception

### CONFERENCE SESSIONS

<b>Wednesday</b>	8:30 am to 9:20 am	Keynote: Deanna Marcum, <i>Library of Congress</i>
	9:20 am to Noon	Rethinking Repositories
	1:30 pm to 3:10 pm	Case Studies
	3:40 pm to 5:00 pm	Hard Copy Permanence

6:30 to 7:30 pm Conference Reception

<b>Thursday</b>	8:30 am to 9:10 am	Keynote: Clifford Lynch, <i>CNI</i>
	9:10 am to 11:20 am	Imaging
	11:20 am to Noon	Image Workflow Session
	1:30 pm to 3:10 pm	Digital Archiving — Metadata
	3:10 pm to 3:40 pm	Interactive Poster Spotlight Presentations
	3:40 pm to 5:30 pm	Interactive Poster Displays

<b>Friday</b>	8:30 am to 9:10 am	Keynote: Helen Shenton, <i>British Library</i>
	9:10 am to 10:00 am	Focal Session
	10:30 am to 11:50 am	Formats for Digital Archiving
	1:30 pm to 3:10 pm	Migration: Methods and Tools
	3:10 pm to 3:30 pm	Late Breaking News Session

Optional "Behind the Scenes" Tours

# Conference Program

Wednesday April 27, 2005

## Opening Remarks

8:30 am

General Chairs: Robert Buckley, Xerox Corp.  
and Franziska Frey, RIT

## Keynote Session

8:40 to 9:20 am

**The View of Archiving from the Library of Congress**, Deanna Marcum, associate librarian for library services, US Library of Congress

## Rethinking Repositories

9:20 am to 12:00 pm

Session Chairs: Stephen Chapman,  
Harvard Univ. Library (USA) and  
Simon Tanner, King's College London (UK)

**Curation and Preservation: Re-thinking Roles and Responsibilities in the Distributed Digital Environment (Focal/Invited)** Sheila Anderson, Arts and Humanities Data Service, King's College London (UK)

**Paper Repositories: Developing a JSTOR Repository at the Univ. of California**, Roger C. Schonfeld, Ithaca (USA)

**Digital Repository Planning and Policy**, Lee Mandell and Sue Kriegsmann, Harvard Univ. Library (USA)

**Building a Dark Archive in the Sunshine State: A Case Study**, Priscilla Caplan, Florida Center for Library Automation (USA)

**Long-Term Preservation of Complex Processes**, Raymond A. Lorie, IBM Almaden Research Center (USA) and Raymond J. van Diessen, IBM Business Consulting Services (The Netherlands)

**A Performance Model and Process for Preserving Digital Records for Long-term Access**, Andrew C Wilson, National Archives of Australia (Australia)

## Case Studies

1:30 to 3:10 pm

Session Chair: Helen Tibbo,  
Univ. of North Carolina (USA)

**Don't Forget the STAGES! Searching for Values in Digital Surrogates of Historical Photographs**, Veronica Davis Perkins, Richard Butterworth, and Paul Curzon, Middlesex Univ., London (UK)

**Photographs in Western Cape Museums (South Africa): Protecting the National Heritage**, Irvine A.C. Meyer, Cape Peninsula Univ. of Technology (South Africa)

**Designing Effective Retrieval Systems for Digital Archives of Historical Documents**, Andy White, Public Record Office of Northern Ireland (Ireland)

**Characterizing Web Archive Content**, Andrew Boyko, Library of Congress (USA)

**Design Strategies for a Prototype Electronic Preservation System for Biomedical Documents**, Song Mao, Dharitri Misra, and George R. Thoma, National Library of Medicine (USA)

## Hard Copy Permanence

3:40 to 5:00 pm

Session Chair: Peter Adelstein,  
Image Permanence Institute,  
Rochester Institute of Technology (USA)

**The Fading Of Dye Based Inkjet Images: Colorimetric Issues**, Alan Hodgson, Independent consultant and Amanda M. Jackson, ILFORD Imaging UK Ltd (UK)

**Stability of Acetate Film Base: Accelerated-Aging Data Revisited**, Jean-Louis Bigourdan, Image Permanence Institute, Rochester Institute of Technology (USA)

**IPI's Climate Notebook Software for Environmental Analysis**, James M. Reilly, Image Permanence Institute, Rochester Institute of Technology (USA)

**The Database of the St. Catherine's Library Conservation Project in Sinai, Egypt**, Athanasios Velios and Nicholas Pickwood, Camberwell College of Arts (UK)

Thursday April 28, 2005

## Keynote Session

8:30 to 9:10 am

**Archiving, Stewardship, Curation: From the Personal to the Global Sphere**, Clifford Lynch, Executive Director, CNI

## Imaging

9:10 to 11:20 am

Session Chair: Sabine Süssstrunk,  
EPFL (Switzerland)

**RIT American Museums Survey on Digital Imaging for Direct Capture of Artwork**, Mitchell R. Rosen, Munsell Color Science Laboratory, Rochester Institute of Technology (USA), and Franziska S. Frey, School of Print Media, Rochester Institute of Technology (USA)

**Experimental Evaluation of Museum Case Study Digital Camera Systems**, Erin P. Murphy, Lawrence A. Taplin, and Roy S. Berns, Munsell Color Science Laboratory, Rochester Institute of Technology (USA)

# Conference Program

**High-Accuracy Digital Imaging of Cultural Heritage without Visual Editing**, Roy S. Berns, Lawrence A. Taplin, Mahdi Nezamabadi, Yonghui Zhao, and Yoshio Okumura, *Munsell Color Science Laboratory, RIT (USA)*

**The Digital Paul Klee: A Case Study**, Rudolf Gschwind, *Imaging and Media Lab, Univ. Basel (Switzerland)*, and Michael Baumgartner, *Zentrum Paul Klee, Bern (Switzerland)*

**High Spatial Resolution and Bit Depth in Reformatting Projects: Supporting Varied Outputs and High Volume Throughput**, Phil Michel and Carl Fleischhauer, *US Library of Congress (USA)*

## Image Workflow Session

11:20 am to 12:00 pm

Moderator: S. Tanner, *King's College London (UK)*

Participants: Erik Landsberg, *MoMA*; Chris Gallagher, *Art Institute of Chicago*; and David Remington, *Harvard College Library*

Key practitioners from major institutions will talk about the digital workflow they use for capture through to the repository.

## Digital Archiving: Metadata

1:30 to 3:10 pm

Session Chair: Robin Dale, *RLG (USA)*

**Design for the Long Term: Authenticity and Object Representation in the British Library's Digital Object Management System**, Adam Farquhar, Vince Dooher, Sean Martin, and Richard Masters, *The British Library (UK)*

**A Metadata Schema Registry for the Registration and Analysis of Recordkeeping and Preservation Metadata**, Anne Gilliland-Swetland, *Univ. of California, Los Angeles (USA)*, and Sue McKemmish, *Monash Univ. (Australia)*

**PREservation Metadata: Implementation Strategies**, Rebecca Guenther, *US Library of Congress (USA)*

**Portable Image Archiving: Annotation, Search and Data Retrieval**, Vladimir Mistic, Jim Kang, Ankur Teredesai, and Jordan Sissel, *CS Department, Rochester Institute of Technology (USA)*

## Interactive Poster Session: Spotlight Presentations

3:10 to 3:40 pm

Session Chair: Scott Stovall,  
*Government Printing Office (USA)*

**An Open Source Tool for Migrating Digital Records for Long-term Preservation**, A. C. Wilson, *National Archives of Australia (Australia)*

**The Brunel Collection: Piloting Digital Archiving**, Kate Devlin, *Univ. of Bristol (UK)*

**A Study on a Viewing System for Museum Collections using High-definition Images**, Fumio Adachi, Takuzi Suzuki, and Kimiyoshi Miyata, *National Museum of Japanese History (Japan)*

**Creating and Maintaining a Permanent Electronic Archives: The Maryland Experience**, Edward C. Papenfuse, Jr., *Maryland State Archives (USA)*

**Archiving City Goes Digital: Case Mikkeli, Finland**, Osmo Palonen, *Mikkeli Polytechnic (Finland)*

**JPEG 2000-based Camera for Archiving**, Andrew Leung and Eisaburo Itakura, *BEAM Group, Information Technologies Laboratories, Sony Corporation (Japan)*

**Extending the Gamut of Print Quality for Artists Ink Jet Printing**, Paul Thirkell, Stephen Hoskins, and Carinna Parraman, *Centre for Fine Print Research, Univ. of the West of England (UK)*

**The Experience of Images Digitization at the National Palace Museum: The Digital Archives Project of Chinese Antiquities**, C. Alan Cheung and Mei-li Yabg, *National Palace Museum (R.O.C. Taiwan)*

**Metadata Structures in the ElkaD-Project**, Sari Järn, Milla Roine, and Jani Salminen, *Mikkeli Polytechnic (Finland)*

**When Form is Content: A User's Perspective from InterPARES**, Bonnie Mak, *School of Library, Archival, and Information Studies, Univ. of British Columbia (Canada)*

**The Issues of Compliance and Interoperability in Integrating Heterogeneous Digital Information Resources: Lessons from Texas History Portal**, Cathy Nelson Hartman, Daniel G. Alemneh, and Mark Phillips, *Univ. of North Texas (USA)*

**The Public Face of the Minds of Carolina**, Helen R. Tibbo, *Univ. of North Carolina (USA)*

**Palette-based Steganography Used for Secure Digital Image Archiving**, Sos S. Agaian, Benjamin M. Rodriguez, and Juan Pablo Perez, *Univ. of Texas at San Antonio (USA)*

**Secure Multilayer Database System for Digital Image Archiving**, Sos S. Agaian, Okan Caglayan, and Natalie Granado, *Univ. of Texas at San Antonio (USA)*

**Joint Compression and Restoration of Documents with Bleed-through**, Eric Dubois, *Univ. of Ottawa*, and Patrick Dano, *CIBC (Canada)*

# Conference Program

**Water Damage Recovery of Digital and Traditional Prints**, *Peter Z. Adelstein, Daniel M. Burge, and Jannette Hanna, Image Permanence Institute, Rochester Institute of Technology (USA)*

**ECHO DEPOSITORY Project**, *Judith Cobb and Taylor Surface, OCLC, Richard Pearce-Moses, Arizona State Library and Archives, and Janet Eke, Univ. of Illinois (USA)*

**Survey of Environmental Conditions Relative to Display of Photographs in Consumer Homes: Phase II**, *Douglas Bugner, Joseph LaBarca, Jon Kapecki, Robert Willard, Thomas Kaltenbach, Jonathan Phillips, and Adam Bush, Eastman Kodak Company (USA)*

**Exploring Strategies for Digital Preservation for DSpace@Cambridge**, *Jim Downing, Cambridge Univ. Library, DSpace@Cambridge, and Grace Carpenter, MIT Libraries, DSpace@Cambridge (USA)*

**Metadata Extraction from Office Documents**, *William Stumbo and John Handley, Xerox Corporation (USA)*

**Continuous Archiving of Personal Digital Photograph Collections with an Ontology-based MPEG-7 Dozen Dimensional Digital Content Architecture**, *Pei-Jeng Kuo, Terumasa Aoki, and Hiroshi Yasuda, Yasuda-Aoki Laboratory, The Univ. of Tokyo (Japan)*

**Moving Beyond Manual Media Migration**, *James Lindner, Media Matters LLC (USA)*

**ArchiveLaser: Accurate and Safe Long-term Storage of Analogue Originals and Digital Data of any kind with Laser Technology on Microfilm**, *Andreas Hofmann, Fraunhofer Institut für Physikalische Messtechnik IPM (Germany)*

**The Ending of Digital Obsolescence**, *Michael C. Maxwell and Ken Quick, Affiliated Computer Services (USA)*

3:40 pm to 5:30 pm

## Interactive Poster Displays

*Session Chair: Scott Stovall,  
US Government Printing Office (USA)*

Ninety second spotlight previews are followed by the poster display session, at which presenters will be available to discuss their work.

**Friday April 29, 2005**

## Keynote Session

8:30 to 9:10 am

**Real Time, Deep Time, Life Time: Spanning Digital and Traditional Collections Life Cycles (Keynote)** *Helen Shenton, British Library (UK)*

## Focal Session

9:10 to 10:00 am

*Session Chair: Larry Masinter,  
Adobe Systems (USA)*

**Risk Analysis for Digital Library Materials**, *Deborah Woodyard, Woodyard-Robinson Holdings Ltd. (UK)*

**PASS: Picture Archiving and Sharing Standard for Consumers**, *Ben Gibson, Eastman Kodak Company (USA)*

## Formats for Digital Archiving

10:30 to 11:50 am

*Session Chair: Melitte Buchman,  
New York Univ. (USA)*

**Digital Formats: Factors for Sustainability, Functionality, and Quality**, *Caroline Arms and Carl Fleischhauer, Library of Congress (USA)*

**Microfilm: A Preservation Technology for the 21st Century?**, *Stephen Chapman, Harvard Univ. Library (USA)*

**New File Formats in Archiving: JPEG2000, High Compressed PDF, JBIG2 with Real World Examples**, *Klaus Jung and Thomas Zellmann, LuraTech GmbH (Germany)*

**An Evaluation of Motion JPEG 2000 for Video Archiving**, *Glenn Pearson and Michael Gill, The National Library of Medicine, NIH, HHS (USA)*

## Migration: Methods and Tools

1:30 to 3:10 pm

*Session Chair: Steve Puglia,  
Nat'l. Archives and Records Administration (USA)*

**Keeping the Bits in Place: A Case Study on Migration of Raster Image Data**, *Jacob J. Nadal, Craig Preservation Lab., Indiana Univ. Libraries (USA)*

**Migration of Photo CD Image Files**, *Peter D. Burns, Edward J. Giorgianni, Thomas E. Madden, Don Williams, Eastman Kodak Company (USA)*

**Image Preservation Through PDF/A**, *Frank L. Walker and George R. Thoma, National Library of Medicine (USA)*

**Digital Archival Tomorrow a Foresight**, *Lukas Rosenthaler and Rudolf Gschwind, Imaging and Media Lab, Univ. of Basel (Switzerland)*

**Breaking News from the Multi-million Book Projects**

# Hotel Reservation Request Form

## IS&T ARCHIVING CONFERENCE

April 26-29, 2005

The Hilton Washington Hotel, Washington, D.C.

Name \_\_\_\_\_ No. in party \_\_\_\_\_

Company \_\_\_\_\_

Mailing Address \_\_\_\_\_

Telephone (\_\_\_\_\_) \_\_\_\_\_ Fax(\_\_\_\_\_) \_\_\_\_\_

A special block of rooms is being held at a discounted rate at the Hilton Washington Hotel for IS&T attendees for the nights of April 25 - 30. The discounted rate will also be extended for 3 days before and 3 days after these dates if space is available. Reservations will be assigned on a priority basis to the IS&T group provided they are received by March 26, 2005. All reservations must be guaranteed with one night's deposit by check or major credit card (provide number, expiration date, and signature). Deposits are refundable up to 72 hours prior to arrival. Guests must inform the hotel of changes in their departure schedule at or before check-in to avoid a \$50 early departure charge. Room rate includes a minimal rebate to our housing associate. Check-in time is 3:00 pm. Check-out time is 12:00 noon. There is no charge for children under 18 years when sharing a room with a parent. Please advise us of any change of date or plan (202) 797-5820—ask for reservations.

Please reserve my room as indicated:  Single-\$149  Double -\$149

Additional person: \$25; rates are as above per night, plus tax (currently 14.5%).

Arrival Date \_\_\_\_\_ Time \_\_\_\_\_ Departure Date \_\_\_\_\_ Time \_\_\_\_\_

Sharing with: \_\_\_\_\_

Special Requirements: \_\_\_\_\_

AMEX  MasterCard  Visa  Discover  Diners Club

Exp. Date \_\_\_\_\_ Card # \_\_\_\_\_

Signature \_\_\_\_\_

**Send this form to:** Reservations Manager  
Attn: IS&T ARCHIVING 2005 (SIS)  
Hilton Washington Hotel  
1919 Connecticut Avenue  
Washington, DC 20009 USA  
Telephone: (202) 483-3000, Fax: (202) 232-0438  
www.hilton.com [use code SIS]

**Plan to stay over  
for Friday afternoon's  
Special TOURS program!**

NOTE: IS&T will facilitate participants finding others interested in sharing a room. Send us an e-mail (info@imaging.org) with your name, e-mail address, gender, and room preferences, i.e., smoking, special needs, etc.

**Airport Transportation Notes:** Washington, DC is serviced by 3 area airports: Reagan National is located five miles (15-20 minutes); Dulles International is located 27 miles (45 minutes); and Baltimore/Washington International (BWI) is located 35 miles (45 minutes) from the hotel. Taxi rates are approximately \$20.00 from Reagan National and \$50.00 from Dulles or BWI. Super Shuttle rates per person (1-800-258-3826) are Reagan National, \$10.00; Dulles, \$20.00, and BWI, \$30.00. The Hilton offers self parking for \$9.00/hour or \$21.00/day maximum for overnight guests. Garage clearance is 6 ft. 4 in. The hotel is located a quarter of a mile uphill from the Dupont Circle Metro station.

### Special "Behind the Scenes" Tours Program

Washington offers many opportunities for those of us interested in archiving. The committee is actively working to set up some tours of relevant facilities. We currently have a tour arranged in the late afternoon on Friday, April 29, for the Prints and Photographs Division of the US Library of Congress. Many thanks to Phil Michel of the US Library of Congress for working as our local coordinator for this opportunity. Tours of other local production imaging studios are also being arranged. Participants interested in signing up for tours should check the appropriate box on the Conference Registration Form (next page).

More details will be sent as the time of the meeting nears. Consider staying over on Friday so you can take advantage of this opportunity.

# Conference Registration Form

**IS&T ARCHIVING Conference**  
April 26-29, 2005  
The Hilton Washington, Washington, DC

Name \_\_\_\_\_

Title/Position \_\_\_\_\_

Company \_\_\_\_\_

Mailing Address \_\_\_\_\_

\_\_\_\_\_

Telephone (\_\_\_\_\_) \_\_\_\_\_ Fax(\_\_\_\_\_) \_\_\_\_\_

E-mail: \_\_\_\_\_

Full registration includes admission to all regular sessions, the final program/proceedings, and ticketed receptions. Separate registration fees are required for the tutorials.

## Full Conference Registration

(CHECK ONE)

	until 3/26	after 3/26
<input type="checkbox"/> Member or Government Employee*	\$525.00	\$575.00
<input type="checkbox"/> Non-member	\$625.00	\$675.00
<input type="checkbox"/> Student (Student ID required)	\$125.00	\$150.00
<input type="checkbox"/> Speaker-Member	\$400.00	\$450.00
<input type="checkbox"/> Speaker-Non-member	\$500.00	\$550.00

## ALL PARTICIPANTS

Circle days you will attend: T, W, Th, F

Member # \_\_\_\_\_ Name of Society \_\_\_\_\_

## Tutorials per class (Separate registration required):\*

	Member	Non-member
<input type="checkbox"/> 4-hour tutorial (per class)	\$200.00	\$250.00
<input type="checkbox"/> 2-hour tutorial (per class)	\$150.00	\$190.00

After 3/26, add \$25 per class for late registration fee.

Indicate Classes you will Attend:

Total Classes: \$ \_\_\_\_\_

T\_\_\_\_; T\_\_\_\_; T\_\_\_\_; T\_\_\_\_

**Extra Proceedings Book** \$65.00

I am interested in participating in the Friday afternoon tours program. Please send details.

Total Remittance U.S. \$ \_\_\_\_\_

Payment Method:  Check  AMEX  MC  VISA Check # \_\_\_\_\_

Card# \_\_\_\_\_ Exp. Date \_\_\_\_\_

Name as it appears on card \_\_\_\_\_

Signature \_\_\_\_\_

Charge Authorization

\*Member rate is available for all IS&T Members, Members of Co-operating Societies, and US Government Employees with ID. For group rate inquires, contact Jennifer Potter at [jennifer.potter@imaging.org](mailto:jennifer.potter@imaging.org).

Return this form with signed credit card authorization or check payable in US dollars to  
IS&T, 7003 Kilworth Lane, Springfield, VA 22151; 703-642-9090; Fax: 703-642-9094; [info@imaging.org](mailto:info@imaging.org)  
Register online at [www.imaging.org](http://www.imaging.org)

Cancellations made one month before the meeting will be refunded in full.  
Late cancellations will be charged \$55.00.



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IS&T ARCHIVING CONFERENCE  
Preliminary Program  
April 29 - 29, 2005  
The Hilton Washington  
Washington, DC, USA