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Proposed IS&T Proceedings Articles for Open Access Use by Online Learners
Ordered by Learning Unit

For use in Unit 1: Vision and Digital Imaging
- Kate Devlin, Alan Chalmers, and Erik Reinhard. "Displaying Digitally Archived Images." *IS&T Archiving 2004 Final Program and Proceedings*. January 2004, 157-162.
  - Summary: digital surrogates need to have visual fidelity to the original object, but displays can negatively affect how images appear. This paper summarises the issues concerning display quality control for digital archiving.
  - Access: behind a paywall

For use in Unit 2: Imaging Standards Overview
- Dietmar Wueller and Ulla Bøgvad Kesjer. "Standardization of Image Quality Analysis – ISO 19264." *IS&T Archiving 2016 Final Program and Proceedings*. April 2016, 111-116.
  - Summary: Examines ISO 19264.
  - Access: behind a paywall
- W. Scott Geffert. "Transitioning to International Imaging Standards at the Metropolitan Museum of Art's Photograph Studio: A Case Study." *IS&T Archiving 2011 Final Program and Proceedings*. January 2011, 205-210.
  - Summary: talks about Metamorfoze, FADGI, ISA, CIE, etc. and how the Metropolitan Museum of Art used these standards in their photograph studies.
  - Access: behind a paywall
- Don Williams. "A Decade of Experience with Digital Imaging Performance Guidelines: The Good, the Bad, and the Missing." *IS&T Archiving 2017 Final Program and Proceedings*. May 2017, 165-169.
  - Summary: As with any initiative, despite design intentions, the first efforts have unexpected positives and how-did-we-miss-that negatives. The FADGI (Federal Agency Digital Guideline Initiative) and Metamorfoze guidelines are no exceptions. Whenever such efforts are brought to practice in the field we learn. And that is good, because it forces behavior, software, and hardware to evolve to be more resilient. We address these developments in digitization for cultural heritage collections. We look-back on the last decade of our experience with these guidelines and discuss progress, limitations, and future directions.
  - Access: behind a paywall

For use in Unit 4: Imaging Technology Options
- Peter Krogh. "Camera Scans – Using a Digital Camera as a Film Scanner." *IS&T Archiving 2009 Final Program and Proceedings*. January 2009, 164-168.
  - Summary: Digital cameras can fill an important gap in the scanning environment, enabling large collections to be scanned on-site with low-cost equipment and easily-trained operators. Digital camera scans can now produce very high-quality images, suitable for nearly any kind of reproduction. This paper will discuss the issues

surrounding implementation of camera scanning systems, including scan quality, hardware, software and workflow considerations, and the possible dramatic cost reductions.
- ○ Access: behind a paywall
- ● Yongli Zhou. "Fulfill Your Digital Preservation Goals with a Budget Studio." *IS&T Archiving 2016 Final Program and Proceedings*. April 2016, 38-44.
  - ○ Summary: As digital single-lens reflex (DSLR) camera technologies advance and camera prices drop quickly, a budget photography studio can help to achieve institutions' preservation goals. This paper compares images delivered by a high-end overhead scanner and a consumer level DSLR camera, discusses pros and cons of using each method, demonstrates how to set up a cost efficient shooting studio, and presents a budget estimate for a studio.
  - ○ Access: Free

For use in Unit 5: Imaging Workflow
- ● Peter Burns and Don Williams. "Ten Tips for Maintaining Digital Image Quality." *IS&T Archiving 2007 Final Program and Proceedings*. January 2007, 16-22.
- ● Steffen Hankiewicz. "Dos and Don'ts for digitisation workflows." *IS&T Archiving 2018 Final Program and Proceedings*. April 2018, 99-104.
  - ○ Summary: This paper describes some of the typical pitfalls associated with digitisation project workflows and explains how even very large projects can be managed without reinventing the wheel.
  - ○ Access: behind a paywall
- ● Rob Mildren. "Achieving Quality in Digitisation Workflow." *IS&T Archiving 2006 Final Program and Proceedings*. January 2006, 225-227.
  - ○ Summary: In 2000 the National Archives of Scotland embarked on a project to digitise manuscript material dating from 1500 to 1901. This project was undertaken in conjunction with the Genealogical Society of Utah (GSU). The requirements of this project led us to implement techniques and procedures that have allowed us to capture more than 4 million images. This paper describes the various aspects of the workflow and in particular how we considered quality issues at each step.
  - ○ Access: behind a paywall
- ● Nele Gabriëls, Leuven Dirk Kinnaes, Leuven Diederik Lanoye, Leuven Bruno Vandermeulen, Mark Verbrugge. "Managing the Digitisation Chain: Practical Tools for Process Management and Multi-Faceted QA." *IS&T Archiving 2019 Final Program and Proceedings*. May 2019, 17-20.
  - ○ Summary: Case study of projects at KU Leuven Libraries to create and test specific tools and standardise workflows since 2009 resulting in a standardized yet modular workflow that provide flexibility while promoting detailed tracking.
  - ○ Access: behind a paywall
- ● Martina Hoffman. "Quality Assurance in Mass Digitization Projects." *IS&T Archiving 2016 Final Program and Proceedings*. April 2016, 107-110.
  - ○ Summary: Within one of the largest digitization programs in the Netherlands (Metamorfoze) the National Library has the task to ensure the quality of digitized images for preservation. To accomplish that task the National Library has taken several steps and is constantly improving its own process of quality management to ensure high speed, high volume and high standard controls for a huge amount of terabytes of data that will be stored permanently and made available for (online) use. In this paper you can find the questions we had to answer in order to set up the QA workflow, the

workflow we did implement, the current status of our workflow and the lessons we learned along the way.
- ○ Access: Free
- ● Margot Knijn. "DIGITISE MORE, PAY LESS - Optimising the preparation for digitising large collections of images - Case study Photo collection Netherlands Institution of Sound and Vision." *IS&T Archiving 2011 Final Program and Proceedings*. January 2011, 223-226.
  - ○ Summary: The general conclusion is that time and money spent on preparing your collection and your workflow with the digitisation process in mind will be earned back easily as the supplier will be able to optimise and automate their work process and more precisely calculate their risk, which will result in a lower price. This approach can be applied to smaller digitisation project as well, with the same result: Digitise More, Pay Less.
  - ○ Access: behind a paywall

For use in Unit 6: Assessing System Performance
- ● Don Williams and Peter D. Burns. "Preparing for the Image Literate Decade." *IS&T Archiving 2009 Final Program and Proceedings*. January 2009, 124-127.
  - ○ Summary: The utility of digital over traditional imaging methods in terms of data delivery, access, and manipulation are undeniable and well recognized. Data literacy in such digital matters is well established. What is not yet developed, but slowly emerging, is an accompanying image literacy; the ability to measure, test, and visually recognize good images from bad ones, based on project requirements Leading practitioners are realizing that there are significant additional responsibilities that come with the adoption of digital imaging. Not the least of these is for the control of the performance variability that comes with the freedom of system component selection.
  - ○ Access: behind a paywall
- ● Michael Stelmach and Don Williams. "When Good Scanning Goes Bad: A Case for Enabling Statistical Process Control in Image Digitizing Workflows." *IS&T Archiving 2006 Final Program and Proceedings*. January 2006, 237-243.
  - ○ Summary: In addition to advocating the incorporation of genuine SPC practices into the imaging workflows of cultural heritage institutions, we also present some encouraging progress on enabling ISO imaging performance compliant tools to accomplish this in a workflow and archiving friendly fashion. Results exercising these tools are shared, and future approaches are presented. Because of its fundamental importance, the image capture stage is the focus of this paper. However, the principles involved apply equally to display, printing, and metadata generation.
  - ○ Access: Behind a paywall
- ● Michael Horsley and John Berezich. "Implementing a Quality Assurance Plan for Monitoring Scanner Performance." *IS&T Archiving 2011 Final Program and Proceedings*. January 2011, 97-100.
  - ○ Summary: This paper is a case study of the U.S. National Archives' Special Media and Preservation Division's implementation of an objective and quantifiable quality assurance program for monitoring scanner performance using the DICE/Golden Thread target and software for compliance with the Federal Agency Digitization Guideline Initiative (FADGI) guidelines. The combination of tools and guidelines has made the process of implementing an objective program possible.
  - ○ Access: behind a paywall

- Dietmar Wueller. "What if the image quality analysis rates my digitization system a 'no go'?." *IS&T Archiving 2011 Final Program and Proceedings*. January 2011, 211-215.
  - Summary: It is now easy to monitor the quality of a digitization system. But several questions remain that have not yet been answered. Among these the following three are the most important ones: 1. How do I calibrate the system step by step to meet given specifications like e.g. Metamorfoze? 2. Are the existing specifications suitable for my individual application? 3. What do I do if one of the image quality aspects is out of the range? This paper tries to answer these questions and to provide guidance for the daily use of the QA solutions.
  - Access: behind a paywall

For use in Unit 8: Tone Response
- Robert Buckley and Steven Puglia. "Report of the CIE Technical Committee on Archival Colour Imaging." *IS&T Archiving 2013 Final Program and Proceedings*. January 2013, 112-115.
  - Summary: This is the latest in a series of progress reports from CIE TC8-09, the CIE Division 8 Technical Committee on Archival Colour Imaging. This report focuses on the tone capture and error performance of the capture of a standard test targets and sample prints across multiple institutions.
  - Access: behind a paywall
- Robert W. G. Hunt. "The Importance of Being Not Too Earnest." *IS&T 11th Color and Imaging Conference Final Program and Proceedings*. January 2003, 6-10.
  - Summary: Impairments in imaging systems are discussed in the areas of lens vignetting, camera spectral sensitivities, reproduction gamut, tone reproduction, luminance-chrominance coding, and spatial resolution. The causes of these impairments are reviewed, and their importance discussed. Means of providing corrections are considered, and the factors determining whether such means are used or not, are reviewed; the type of scene being imaged is shown to be decisive in many cases.
  - NOTE: only use the section on tone reproduction?
  - Access: behind a paywall

For use in Unit 9: Color Accuracy
- Natalie Russo, Allen Phillips, and Franziska Frey. "Demystifying Color Science: an Applicable Color Management Approach for Photographers Working with Cultural Heritage." *IS&T Archiving 2006 Final Program and Proceedings*. January 2007, 12-15.
  - Summary: This paper begins with the transition from analog to digital photography, and the expanding role of the now digital museum photographer. The problems of color accurate digital image capture of art and artifacts are discussed, and a simple method using readily available tools to calibrate monitors, profile cameras, and adjust the profiles to obtain color accurate RGB files is presented.
  - Access: behind a paywall
- Don Williams and Peter D. Burns. "Rethinking Image Color Correction, Validation and Testing." *IS&T Archiving 2016 Final Program and Proceedings*. April 2016, 175-180.
  - Summary: Digital image capture normally includes a color-correction step that transforms detector signals into corresponding image pixel values. For digital cameras and scanners, we usually base the color-correction operation on captured images of reference color charts. Measures of object color-capture are included in recent imaging guidelines for cultural heritage institutions. Several methods have been adopted as standard practice, with the aim of reducing image-capture variation. During the

evaluation of the goodness of object-to-image color-encoding, there is normally a validation step. This involves comparing the original target colorimetry to that of the predicted colors and calculating summary color-difference metrics for the population of target samples.
    ○ Access: behind a paywall
- F. Barry Wheeler and Michael J. Bennett. "Accurate Color? A Preliminary Investigation into the Color Gamut of Selected Special Collection Library Objects." *IS&T Archiving 2011 Final Program and Proceedings*. January 2011, 87-91.
    ○ Summary: This study provides such measurements of sample colors taken directly from the surface of a wide selection of objects from the Library of Congress' collections – maps, prints, photographs, books, rare books, sheet music, and manuscripts. Colorimetric measurements are the focus and analysis was then done to characterize the colors currently being stored in common RGB TIFF files and to provide guidelines for selecting appropriate color spaces when digitizing different kinds of objects. Comparisons of the document colors and the colors commonly used to build ICC color profiles are shown. These comparisons indicate that using a broader set of profiling colors – particularly colors similar to those in the original documents – may provide more accurate color in digital images.
    ○ Access: behind a paywall
- Don Williams and Peter D. Burns. "Capturing the Color of Black and White." *IS&T Archiving 2010 Final Program and Proceedings*. January 2010, 96-100.
    ○ Summary: For digital collections with limited color-gamut, or where detection of small differences in material properties is important, adopting collection-specific color test targets is often advisable. This can reduce metamerism, and sample the device signal space in the most important regions. As an example of such content, the spectral-reflectance characteristics of a collection of early photographic prints were measured. The underlying structure of the data set was investigated in terms of principal components, and a spectral reconstruction based on two principal components was demonstrated.
    ○ Access: behind a paywall

For use in Unit 10: Image File Formats
- Volker Heydegger. "Analysing the Impact of File Formats on Data Integrity." *IS&T Archiving 2008 Final Program and Proceedings*. January 2008, 50-55.
    ○ Summary: Which file format is most suitable for ensuring the longevity of its information? In this study a particular criteria for long-term preservation suitability is picked up: the robustness of files according to their bit error resilience. The question we address is: Up to what extent does a file format, as a set of formatting rules, contribute to the long-term maintainability of the information content of digital objects? Or in other words: Are there any file format basing factors promoting the consistency of digital information?
    ○ Access: behind a paywall
- Peter Fornaro, Lukas Rosenthaler, and Erwin Zbinden. "TIFF in Archives: A survey about existing files in memory institutions." *IS&T Archiving 2017 Final Program and Proceedings*. May 2017, 6-10.
    ○ Summary: The aim of the TI/A initiative was to find a proper subset of tags for the use of TIFF in archival environments. To select proper features in such a recommendation, it was necessary to analyse existing files first. In this paper we present the results of two

surveys that have been done in this context: A) The analysis of about 4 million TIFF files stored as digital assets in memory institutions. The files represent a large variety of TIFF formats, regarding e.g. compression schemes, quantization depth and date of creation. B) A survey about the number, use and relevance of digital files in archives, museums and libraries. The survey was done in the context of an ongoing project of the Swiss government to find a sustainable strategy for archiving digital cultural heritage objects.
- ○ Access: behind a paywall
- Laurent Duplouy. "JPEG2000 as a preservation format for digitization: lessons learned from a library." *IS&T Archiving 2017 Final Program and Proceedings*. May 2017, 157-159.
  - ○ Summary: This article attempts to present the methodology used to respond to questions and issues raised by the adoption of JPEG2000 format at the National Library of France for mass digitization. It attempts to describe particularly the methodology used to define a compression ratio for heritage digitization. Finally, it presents lessons learned after two years of mass production.
  - ○ Access: behind a paywall

For use in Unit 11: Image Processing
- Matthew Pearson. "Preservation Still Image Defects: A New Resource." *IS&T Archiving 2013 Final Program and Proceedings*. January 2013, 154.
  - ○ Summary: This paper showcases the value, interest, and impact of a long-awaited resource that serves a range of production, development, and training needs. It includes sample images of common (and uncommon) defects, causes/sources, and potential remedies Work on the Image Defects Pages includes contributions from members of the cultural heritage, and preservation fields and will continue to grow with the support and participation of members of the community throughout the world.
  - ○ Access: behind a paywall

For use in Unit 12: Image Metadata Standards
- Kari R. Smith, Sarah Saunders, and Ulla Bøgvad Kejser. "Making the Case for Embedded Metadata in Digital Images." *IS&T Archiving 2014 Final Program and Proceedings*. June 2014, 52-57.
  - ○ Summary: This paper discusses the standards, methods, use cases, and opportunities for using embedded metadata in digital images. In this paper we explain the past and current work engaged with developing specifications, standards for embedding metadata of different types, and the practicalities of data exchange in heritage institutions and the culture sector. Our examples and findings support the case for embedded metadata in digital images and the opportunities for such use more broadly in non-heritage sectors as well.
  - ○ Access: behind a paywall

For use in Unit 13: Costs and Outsourcing
- Ulla Bøgvas Kesjer, Joy Davidson, David Wang, Stephan Strodl, Tomasz Miksa, Kathrine Hougaard Edsen Johansen, Anders Bo Nielsen, and Alex Thirifays. "State of the Art of Cost and Benefit Models for Digital Curation." *IS&T Archiving 2014 Final Program and Proceedings*. June 2014, 144-149.
  - ○ Summary: This paper presents the results of an evaluation carried out by the EU 4C project to assess how well current digital curation cost and benefit models meet a range of stakeholders' needs. This work aims to elicit a means of modelling that enables

comparing financial information across organisations, to support decision-making and for selecting the most efficient processes – all of which are critical for ensuring sustainability of digital curation investment. The evaluation revealed that the most prominent challenges are associated with the models' usability, their inability to model quality and benefits of curation, and the lack of a clear terminology and conceptual description of costs and benefits. The paper provides recommendations on how these gaps in cost and benefit modelling can be bridged.
  ○ Access: behind a paywall

For use in Unit 14: Future of Digital Imaging
- Harriett Green and Angela Courtney. "The Role of Digital Collections in Scholarly Communications." *IS&T Archiving 2016 Final Program and Proceedings*. April 2016, 193-196.
  ○ Summary: This paper examines the role of digital collections in scholarly communications and the needs of scholars as they build digital scholarship projects and scholarly networks for digital humanities research and ultimately explores how scholars need robust scholarly communications systems and virtual collaboratories in order to advance digital humanities research.
  ○ Access: Free
- Seyed Ali Amirshahi and Marius Pederson. "Future Directions in Image Quality." *IS&T 27th Color and Imaging Conference Final Program and Proceedings*. October 2019, 399-403.
  ○ Summary: With the advancements made in the field of image processing and computer vision, the last few decades have seen an increase in studies focused on image quality assessment. While this has resulted in the introduction of different new metrics which some show high correlation with the perceptual judgement of the human observers there still exists a huge room for improvement. In this short paper which is prepared as a complement to the workshop on Future Directions in Image Quality at CIC 27 in Paris, France we aim to introduce future directions in the field and challenges facing ahead.
  ○ Access: behind a paywall

Maybes:
- Unit 9: **MAYBE**. Robert Buckley, Steven Puglia, and Michael Stelmach. "Color in Digital Preservation." *IS&T Archiving 2011 Final Program and Proceedings*. January 2011, 83-86.
  ○ Summary: To provide practitioners of image capture with practical guidance, the CIE Technical Committee on Archival Colour Imaging (TC8-09) and the Still Image Working Group of the Federal Agencies Digitization Initiative are working together to develop use cases and content type combinations, conducting a series of practical color imaging tests, and evaluating a range of encoding methods. They are concentrating on practical solutions using existing RGB and other tristimulus-based methods to encode the data in a manner that has a known accuracy, can create an accurate representation of the object when displayed, and provide encoding models we believe are sustainable. The work so far on this effort is presented in this paper.
  ○ Access: behind a paywall
- Uit 12: **MAYBE**. Martyn Jessop. "Metadata Creation for Digital Humanities Projects." *IS&T Archiving 2006 Final Program and Proceedings*. January 2006, 84-87.
  ○ Summary: The Centre for Computing in the Humanities at King's College London researches issues concerning the digitization, design, implementation and delivery of digital resources. This paper focuses on issues surrounding the compilation of metadata and the effects that these have by focusing on three case study projects.

- ○ Access: behind a paywall
- Unit 13: **MAYBE**. Virginia A. Dressler. "Digitally Archiving History: A game plan for large, unruly archival collections with limited staffing." *IS&T Archiving 2016 Final Program and Proceedings*. January 2016, 75-80.
  - ○ Summary: In this paper, an outline of workflows currently in use for the digitization of a large archival collection at Kent State University is provided. A blend of both in-house digitization and outsourcing methods used to achieve the goals of the project with limited staffing and resources. The notion at the conclusion of the project is to apply these practices and workflows to other archival collections.
  - ○ Access: behind a paywall
- Unit 13: **MAYBE** Long Schisler and Millard Wesley. "When Perfect is the Enemy of Good - Quality and Sustainability in Digitization Processes." *IS&T Archiving 2020 Final Program and Proceedings*, 43-48.
  - ○ Summary: analysis of how good is good enough for digitization projects.
  - ○ Access: free
- Unit 14: **MAYBE** Meghan Wilson, Fenella France, and Chris Bolser. "Multispectral Imaging for Scientific Analysis and Preservation of Cultural Heritage Materials." *IS&T Archiving 2018 Final Program and Proceedings*, 147-150.
  - ○ Uses for multispectral imaging for analyzing and preserving cultural heritage materials.
  - ○ Access: behind a paywall
- Unit 14: **MAYBE** Scott Geffert et al. "From the Inside Out: Practical Application of 3D Imaging Techniques in Art Conservation." *IS&T Archiving 2018 Final Program and Proceedings*, 151-156.
  - ○ Summary: About designing a carbon filter internal support for Chinese lacquer Buddha sculptures using 3D scanning
  - ○ Access: behind a paywall
- Unit 14: **MAYBE** Jaroslav Valach, Petra Štefcová, and Ladislav Polák. "Development of a Multi-Disciplinary Database of Cuneiform Tablets – an Improvement of 3D Models and Data Re-use." *IS&T Archiving 2019 Final Program and Proceedings*, 107-110.
  - ○ Summary: case study showing how improvements in 3D modeling of cuneiform tablets can help spur data re-use
  - ○ Access: behind a paywall
- Unit 14: **MAYBE** Michael Tetzlaff and Gary Meyer. "IBRelight: An Image-Based 3D Renderer for Cultural Heritage." *IS&T Archiving 2018 Final Program and Proceedings*, 93-98.
  - ○ SUMMARY: Using IBRelight to render images of cultural heritage materials in 3D
  - ○ Access: behind a paywall