

***"This is exactly what is needed
for the color community."***

**William C. Kress, Manager, Color and Imaging Technology,
Toshiba America, Document Solutions Engineering**

The
Premiere Learning and Networking Event
for Users and Product Developers Working with
ICC-based Color Management



Featuring:

- **Tutorials on critical color topics by leading speakers and an expert user panel**
- **ICC Color management demonstrations**
- **Special networking session**
- **Extensive tutorial materials on CD-ROM**

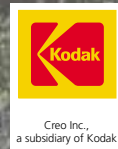
Presented by the International Color Consortium

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**Efficient one-full-day format
in conjunction with the
IS&T/SID 13th Color Imaging Conference**

**Monday, November 7, 2005
Chaparral Suites Resort
5001 North Scottsdale Road
Scottsdale, AZ 85250**



Monday, November 7, 2005

Welcome

ICC Chair Craig Revie,
Fuji Film Electronic Imaging.....8 a.m.

AM Tutorial Schedule8:15 a.m. – noon

A1: What do image pixel values represent?8:15 a.m. – 8:30 a.m.

Image interpretation can affect the selection and control of color processing and can make or break the quality of the results. In addition, the three different classes of color rendering systems deal with image interpretation in different ways. This tutorial will provide background on essential color management concepts.

Presenter: *Ann McCarthy, Lexmark International, Inc.*

A2: What does ICC color rendering do to color?8:30 a.m. – 9 a.m.

Before we dive into programming details, this tutorial will provide a visual overview of rendering intents, the relationships between color space encodings and display devices and important print colorant control concepts such as GCR.

Presenter: *Emmi Enoksson, Dalarna University, Sweden*

A3: How SHOULD applications present color controls?9 a.m. – 9:45 a.m.

This tutorial will discuss color management user interface design from an expert end user perspective. Users almost universally say that color management is too complicated and needs to be simplified. This session will discuss exactly what users really mean when they say this: controls are not intuitive, forcing users to work and think in ways they don't naturally work or think; some controls are too simplistic while others are superfluous, and lead to application interoperability problems (for example, the discrepancy between conversions in desktop publishing applications and RIPs). Further, we'll discuss things users need, but don't know they need, including image and document metadata.

Presenter: *Chris Murphy, Color Remedies*

Morning Break9:45 a.m. – 10:15 a.m.

A4: When and how should a print job be encoded for print?10:15 a.m. – 11 a.m.

Commercial and publications print industries in Europe, the United States and world wide are establishing standard practices to improve the color fidelity of digital print jobs. RGB workflows (with late-stage rendering to print encodings) will be compared to traditional workflows (with print-ready encodings set in design). The focus of the comparison will be on the impacts in color management controls and behaviors and factors that contribute to the predictability of the print outcome. Along with this we will look at the impact of the transition in the print industry from "local printing on traditional litho presses" - with similar colorants across presses - to an "internationally distributed printing environment" that includes digital printing systems with dissimilar colorants. For example, similarity in colorants can no longer be assumed as the basis for color management in printing. As a result, ICC devicelink profiles become critical to the open exchange of print-ready files. Devicelinks can be used to maintain colorant allocations while adjusting tone — or can twist primaries as needed, but application support for devicelink profiles is currently limited. The discussion will include a look at how color management responsibilities can be distributed between profiles, applications, and operating systems, and how color management function allocation impacts distributed color consistency.

Presenters: *Olaf Drümmer, callas software gmbh*
Dr. Phil Green, London College of Communication
Bob Hallam, Quebecor World

A5: What is better about ICC V4?11 a.m. – 11:30 a.m.

The biggest problem faced by users of version 2 ICC profiles was the lack of interoperability between profiles from different vendors. In general in version 2, users were able to achieve good results when input and output profiles were created by software from the same vendor. They achieved mixed results - in some cases very poor results - when the profiles were made by software supplied by different vendors. This problem is most noticeable for the Perceptual Rendering Intent and is the primary reason that most graphic arts users avoid using the Perceptual Rendering Intent. Version 4 profiles solve this problem and in addition address a number of other ambiguities in the ICC Profile Format Specification.

Presenter: *Craig Revie, Fuji Film Electronic Imaging*



A6: How should device drivers use ICC profiles?11:30 a.m. – noon

In a late-binding color workflow, color values are converted to the values needed by each particular display device just as the data is being processed for display. This tutorial will discuss how to construct device driver interactions with ICC profiles and with operating system color APIs. The particulars of exemplary print path software architectures will be explored.

Presenter: *Luke Wallis, Apple Computer, Inc.*

**LUNCH and PANEL DISCUSSIONNoon – 1:30 p.m.
“From the trenches” Expert User Panel Q&A**

- Color managed use case examples from creative and prepress workflows
- Audience recommendations on future directions for the ICC

Panel members: *Bob Hallam, Quebecor World
Don Hutcheson, Hutcheson Consulting
Chris Murphy, Color Remedies
Matt Phillips, Adobe Systems Inc.
David Zwang, Zwang & Company*

PM Tutorial Schedule1:30 p.m. – 5:30 p.m.
Each tutorial is 30 min in length

P1: Under the hood: the V4 CMM, V4 ICC profiles, and the new ICC Perceptual PCS

ICC profiles carry information that enables software, the software typically referred to as a color management module (CMM), to interpret color encodings from one device or imaging condition to another. The ICC specification itself pertains to the semantics and formatting of the information in ICC profiles. How is the information in ICC profiles intended to be used? This tutorial will introduce the fundamentals of the V4 CMM color rendering architecture, and provide insight into particular color rendering aspects that may be handled in a CMM, including white point compensation, black point compensation, gamut mapping, and rendering differences as a function of source profile rendering or re-rendering into ICC PCS (ICC profile connection space). The ICC SampleICC code base will be used as an example. The discussion will include exploration of image adaptive methods enabled by the V4 architecture.

Presenter: *Max Derhak, Onyx Graphics Corp.*

P2: V4 LUT structures - advantages, computational models, examples

V2 to V4 look-up table (LUT) structures and computational differences will be explained, with a look at how the V4 changes provide greater adaptability to device characteristics. The discussion will include examination of computational procedures for populating V4 profile LUTs and matrices - pertinent to profile building. Given that understanding, the computational steps required when using the profile LUTs and matrices in ICC V4 CMMs will be explored.

Presenter: *Luke Wallis, Apple Computer, Inc.*

P3: ICC V4 colorimetric rendering intents - applicability, construction examples

The ICC V4 media-relative colorimetric rendering (MRC) intent is strictly defined with a measurement basis. This supports the ICC V4 objective to enable dynamic (runtime adaptive) color rendering in ‘smart’ CMMs. This tutorial will examine ICC media relative colorimetric intent construction and the CMM rendering approaches that it supports. Differences between MRC in V2 and V4 will be evaluated. The discussion will explore the computation required to obtain the ICC absolute colorimetric rendering intent transform from MRC, handling illuminants that differ from D50, using the chromatic adaptation tag and the media white point tag, mixing MRC and perceptual PCS, the relationship between the perceptual rendering intent and the media-relative colorimetric rendering intent transforms within a single profile, and an introduction to Black Point Compensation (BPC).

Presenter: *Marti Maria Saguer, Hewlett Packard*

P4: ICC V4 perceptual rendering intent - applicability, construction examples

The V4 perceptual rendering intent is quite different from that of V2. This tutorial will discuss the details of the enhancement as it affects particular classes of color rendering and as it impacts construction of the perceptual rendering intent tag data in a V4 profile. For example, the perceptual rendering transform in an input profile should (in some cases) be distinctly different from that in an output profile. The discussion will include an analysis of ‘media-relative colorimetric (MRC) rendering plus black point compensation (BPC)’ as a first level perceptual rendering intent (i.e., How does BPC relate to perceptual black?), rendering transform invertibility, and the new Perceptual Reference Medium Gamut (PRMG). Color appearance, viewing environment, and the relevance of the chromatic adaptation tag to the perceptual rendering intent transform will be discussed.

Presenter: *Jack Holm, Hewlett Packard*

Afternoon Break3:30 p.m. – 4 p.m.



P5: Profile Identification and output condition metadata

In color managed workflow scenarios, particularly in automated systems, it can be challenging to automate and simplify the selection of a correct profile for each particular printing process condition. Similarly, it can be challenging to determine whether an output profile linked with a received job file does correctly correspond to the required print process condition. This has been identified by graphic arts industry users as a high priority problem in ICC-based workflow systems. The ICC is currently finalizing a specification change proposal that will provide a new set of tags that can be used to identify the differentiating aspects of various printing systems. When these tags are populated by profile building software applications, and interrogated by print workflow systems and CMMs, the linkage between any particular print process condition and a correctly corresponding profile will be amenable to automation. The new ICC profile tags are also specified to correspond with JDF (Job Definition Format) profile identification information. The discussion will include explanation of the differentiating aspects, affecting color rendition, in printing systems.

Presenter: *Uwe-Jens Krabbenhoft, Heidelberger Druckmaschinen AG*

P6: DeviceLink profile construction for interoperability

As described in tutorials earlier in the day, DeviceLink profiles are a key enabler in distribute and print commercial print workflows. This tutorial will explore building DeviceLink profiles, and the ways in which DeviceLink profile behavior can re-shape or preserve an intended ink channel structure. The discussion will include: criteria for DeviceLink interoperability, design and implementation methods including commercially available tools, and CMYK - CMYK conversions that “do no harm” e.g., black preservation.

Presenter: *Eric Magnusson, Left Dakota*

P7: Profile and CMM computational quality, a.k.a. why “perfect” math may not be enough

“Perfect” math doesn’t always yield good results when building profiles. 8 bits is not enough for color rendering in many imaging applications. The source color space encoding, the destination color space encoding, the target customer for the system, the size of the LUTs in the profiles, and the LUT interpolation method used in the CMM all contribute to the quality of results. This tutorial discussion will explore these interactions, and will include recommendations for testing CMM and profile accuracy, and recommendations pertinent to testing and improving CMM software performance.

Presenter: *Chris Cox, Adobe Systems Inc.*

Wine & Cheese Networking Event ..5:30 p.m. – 7:30 p.m. Products and Applications

- ICC Color Management Technology Demonstrations by ICC DevCon’05 sponsors* and ICC members

* To become a sponsor, contact the ICC Secretariat at 703/264-7200 or e-mail ksmythe@npes.org.



ICC DevCon ‘05 will be held at the Chaparral Suites Resort in Scottsdale, Arizona, convenient to the Scottsdale Airport. Sleeping rooms are \$139 plus tax per night and may be reserved by calling 800/528-1456 and referring to NPES ICC. Reservations requested after October 7 will be accepted on a space availability basis only.

Why Attend?

Digital information today includes color. How should color be encoded? How should it be processed for your application? ICC DevCon ‘05 is your opportunity to learn from the experts — experienced developers and users in the imaging, printing and publishing color community. Come and join in the development of color management technologies today and in the future.



REGISTRATION INFORMATION

ICC DevCon '05 will be held November 7, 2005 at the Chaparral Suites Resort, 5001 North Scottsdale Road, Scottsdale, Arizona. A block of rooms has been reserved at a special rate of only \$139 plus tax for single or double occupancy. Reservations must be received by October 7; thereafter reservations will be accepted on a space and rate availability basis. Call the hotel at 800/528-1456 and ask for the NPES ICC rate.

Use the form below to register for the conference. Registration fees:

ICC and IS&T Members

Full time teachers and

students:

**\$400 each for the first and second registration from each company,
\$300 each for additional registrations from the same company**

Non-Members:

**\$500 each for the first and second registration from each company,
\$375 each for additional registrations from the same company**

Registrations received by October 3 qualify for a \$50 "early bird" discount.

Cancellations must be submitted in writing to ICC. If your cancellation is received by October 3, you will receive a full refund minus a \$50 administrative processing charge. No refunds can be given for cancellations received after October 3. Substitutions may be made at no charge.

Save a copy for your records and return this Registration Form to:

ICC Secretariat
1899 Preston White Drive
Reston, VA 20191-5367 USA
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- **ICC Color management demonstrations**
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ICC DevCon '05 will be held in conjunction with the IS&T/SID 13th Color Imaging Conference: Color Science and Engineering Systems, Technologies, and Applications November 7-11 in Scottsdale. CIC brings together color scientists and engineers from across the globe to discuss the latest advances in the science and applications of color in a single-track format. Topics range from color appearance to color management of input and output devices, from color in all forms of digital media to image processing and quality assessment. In addition to interactive papers and technical sessions, this year's CIC features tutorials, three exciting keynotes, and a special session commemorating Hans Neugebauer's seminal contributions to color imaging. More information can be found at www.imaging.org/conferences/cic13/. The meeting is cosponsored by IS&T and SID, in cooperation with ISCC, ISJ, RPS, SMPTE, and SPSTJ.

IS&T—the Society for Imaging Science and Technology—is an international non-profit organization whose goal is to keep members and other interested parties aware of the latest scientific and technological developments in the field of imaging through conferences, journals and other publications. IS&T focuses on all aspects of imaging, with particular emphasis on digital printing, electronic imaging, photofinishing, image preservation, image assessment, pre-press technologies, hybrid imaging systems and silver halide photography. For more information, visit www.imaging.org.

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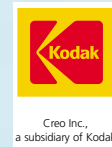
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