



2012
ICC DevCon

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



NOVEMBER 12, 2012
LOS ANGELES, CALIFORNIA



EVENT SCHEDULE

8:30 AM CONFERENCE INTRO NOTE - ICC CHAIR

8:45 AM CONFERENCE KEYNOTE

Chris Cox – Adobe

Color management and the ICC have had many successes, and a few failures — but there are still many real world problems waiting to be solved. What more can we do to improve the customer experience with color, and what can we learn from the problems we've seen so far?

Chris is a senior developer at Adobe, working on the Photoshop team since 1996. Chris is responsible for more features than he can remember, in addition to application performance and color issues.



extensions has been undertaken as part of the ReflccLabs project which will eventually be released to the general public under an open source license. This discussion will highlight some of the aspects of the ReflccLabs implementation with a call for others to participate in the specification process.

Max Derhak has worked for Onyx Graphics Inc. for over 22 years. Max has a Bachelors in Computer Science from the University of Utah, a Masters in Imaging Science at The Rochester Institute of Technology, and is currently working on a Doctorate in Colour Science at RIT. Max was an initial contributor to the open source Sample-ICC and ICCxml projects which he continues to maintain. Max serves as the Vice-Chair of the ICC as well as the Chair of the ICC Architecture Working Group and is active in the ICCLabs project and the ReflccLabs implementation.



9:30 AM ICCLABS I: INTRO TO ICCLABS

Tom Lianza - X-Rite

A number of years ago we looked at the state of the ICC specification, the market, and some thoughts about the future. The market for the current technology matured to the point that any large changes would cause immediate market disruption. The state of technologies that employed color and the needs for different types of color management triggered the concept of ICCLabs: an advanced, open source color management philosophy that did not rely upon OS resources for implementation.

Tom Lianza is Co-Chair of the ICC and holds the title of "Free Electron" within X-rite. His role within X-rite is to work on technical projects either independently or by the direction of the office of the CTO. His principal focus these days examines the problem of inter-device agreement in a decentralized production environment and the communication of color between disparate facilities and users. Tom has an M.S. In Photographic Science from Rochester Institute of technology. He holds 11 patents in the area of image scanning, color calibration, and hardware interface.



10:30 AM COFFEE BREAK

10:50 AM ICCLABS III: IMPLEMENTING BRDF IN ICC LABS

James Vogh - X-Rite

The light that comes from an surface to a viewer of the surface is a complex function that is controlled by many factors. As a surface as view from different angles or the angle of the light shining on the surface changes, the appearance of the object will change. Specular highlights can appear, colors can change. These aspects of surface reflection are described by a Bidirectional reflection distribution function (BRDF). Next generation ICC profiles will optionally contain BRDFs that provide a more complete description of the color behavior of the surface that is profiled. This talk will describe and demonstrate a baseline implementation of BRDFs in an ICC profile.

James Vogh received his M.S. degree in Electrical Engineering form the University of Tulsa in 1990 and a Ph.D. in Cognitive and Neural Systems from Boston University in 1998. During his Ph.D. he developed a neural network architecture for recognizing 3D objects. At Monaco Systems he developed ICC based calibration technologies. Since 2004, he is a principle engineer at X-Rite where he continues to develop calibration technology as conducts advanced research in color science.



9:45 AM ICCLABS II: REFICCLABS - A PEEK BEHIND THE CURTAIN

Max Derhak – ONYX Graphics, Inc.

ICC color management is limited to using D50 colorimetry for profile connection purposes. This becomes problematic if other light sources, observers, (multi-) spectral information, or lighting geometry needs to be used as part of profile connection. Recent work within the ICC Architecture Working Group (code name ICCLabs) has resulted in preliminary specifications for extensions to ICC architecture that allow for more flexible PCS connection, named color specification, and transform definition and implementation. A reference implementation of these

11:25 AM CM BEST PRACTICES: GRAPHIC ARTS - ENGINEERING COLOR WITH ICC PROFILES FOR PRINT

Bob Hallam – Quad/Graphics

Print production has many color challenges and may have been the driving force in ICC color management for related fields of digital imaging. Today's color engineering for print is done mainly with ICC profiles. I will discuss the reasons for color

engineering at each point in the print production workflow and what ICC profiles provide as a solution to those production problems.

Bob Hallam is the Corporate Color Manager at Quad/Graphics, a global leader in providing high-value, complete marketing and advertising solutions. His areas of responsibility are; color technology and color standards from capture to consumer. He works with customers, print and pre-media facilities as well as equipment vendors to analyze and develop technologies to improve color quality and productivity. Prior to his position at Quad Bob has worked as Director of Color at Worldcolor, where



in 2001 he pioneered the first measurement-based SWOP proof certification process, and built proprietary color management systems. Bob's color technology expertise, Lean manufacturing and workflow analysis skills make him a valuable asset to customers and sales people alike. His focus is delivering product color consistency on multiple platforms across multiple plants in multiple countries.

12:00 PM LUNCH BREAK & ICCLABS TABLE PRESENTATIONS

1:15 PM CM BEST PRACTICES: WEB & MOBILE I - SERVING COLOR MANAGED IMAGES TO MOBILE AND DESKTOP DEVICES

Tom Lianza - X-Rite

As the market for distributed imaging grows from desktop to mobile, the challenges for color management multiply exponentially. The wide range of capture and viewing environments present formidable obstacles to high quality color reproduction across the range of viewer experiences and more importantly, viewer expectations. This paper examines the current technologies employed by users today, as well as looking forward at short term technological developments that have an impact on these issues.

Tom Lianza is Co-Chair of the ICC and holds the title of "Free Electron" within X-rite. His role within X-rite is to work on technical projects either independently or by the direction of the office of the CTO. His principal focus these days examines the problem of inter-device agreement in a decentralized production environment and the communication of color between disparate facilities and users. Tom has an M.S. in Photographic Science from Rochester Institute of technology. He holds 11 patents in the area of image scanning, color calibration, and hardware interface.



1:50 PM CM BEST PRACTICES: WEB & MOBILE II - COLOR CONSIDERATIONS WHEN AUTHORIZING CONTENT FOR DIGITAL PUBLICATIONS

Leonard Rosenthal - Adobe

This talk will start by looking at the new frontier that is digital publishing — specifically for tablets and other mobile devices — including the common tools and technologies that are used to deliver these publications. With that understanding, the various issues and concerns about color will be presented as well as various solutions.

Leonard Rosenthal is a Principal Scientist with Adobe Systems and serves as their PDF Architect having been involved with PDF technology for more than 12 years. He also

represents Adobe on various international standards bodies including the ISO (where he is the Project Editor for PDF/A and PDF/E), ICC, W3C and ETSI/ESI.

Prior to re-joining Adobe in 2006, Leonard worked as the Director of Software Development for Appligent, and the Chief Innovation Officer for Apago, while also running the successful consulting business of PDF Sages. Before becoming involved in PDF, Leonard was the Director of Advanced Technology for Aladdin Systems and responsible for the development of the Stuffit line of products.



2:25 PM CM BEST PRACTICES: WEB & MOBILE III - COLOR: FROM COLORIMETRIC ESTIMATIONS TO CALIBRATED PAGES

Nathan Moroney - HP

Mobile computing devices such as smart-phones and tablets often include one or more capture modules. Use of a custom designed color chart allows an app to dynamically estimate unknown scene colors in manner that is both robust to unknown illuminants, camera rendering pipelines and display properties. In addition this processing is highly automated, computational efficient and color accurate over a range of test conditions. The resulting app can then be used for color measurement and the result is a color patch that has effectively been colorimetrically rendered. Given this corrected color it is then possible to communicate this result to either a cloud computing environment for additional analysis or to a web-enabled printer for hardcopy reproduction. The corresponding print can be generated dynamically such that the corrected color is used to adaptively refine the design of the printed page and also to achieve a more colorimetric print reproduction. This presentation will describe both, the mobile capture and processing, as well as the web-based printing and processing.

Nathan Moroney is a principal scientist at Hewlett-Packard Laboratories in Palo Alto, California. Previously, he worked for the Barcelona division of Hewlett-Packard and at the RIT Research Corporation. He has a Masters Degree in Color Science from the Munsell Color Science Laboratory of RIT and a Bachelors degree in color science from the Philadelphia University. His research interests span various color imaging technologies and machine learning techniques. Nathan was the technical chair for CIE Technical Committee 8-01, which developed the CIECAM02 color appearance model. He was the past general co-chair for the IS&T/SID Color Imaging Conference and has written over thirty papers and presentations, with ten invited presentations. He holds eighteen US patents on technologies ranging from large format printers, displays, halftoning, image enhancement, gamut mapping and other technologies. His contributions to the imaging field have been recognized with the awarding of Fellow status by the Society for Imaging Science and Technology.



3:00 PM CM BEST PRACTICES: WEB & MOBILE IV - ANDROID MOBILE COLOR NEEDS, DIFFICULTIES AND APPROACHES. WHERE TO GO NEXT?

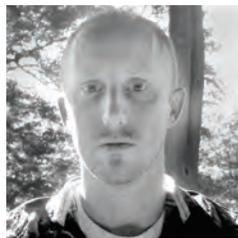
Jeremiah Snader - X-Rite

The Android operating system has been around for only half a decade, but has spawned thousands of different mobile devices in that time frame. With each of these devices comes different hardware and slightly different operating system

modifications. The future support for each of these devices a couple months from their release rely upon popular demand and adaptation of the hardware by the community.

Android is the mobile platform that needs color calibration more than any other or any others that will probably follow it. Color managing these mobile platforms will not be a simple case in this fast paced community. With a million device activations each day and still climbing, there's a large market of users who could benefit from the technologies. Beyond handheld devices, Android has even branched into other non-mobile hardware that such as displays, television sets and even virtual screens. The near and short term solutions could be extremely beneficial to various industries and professionals.

Jeremiah Snader holds a BS in Computer Science & BA in Mathematics with Masters course-work studies at RIT that focused on Image Processing and Artificial Intelligence. Current career focus over the past several years has been with government contractors that supported research and development opportunities for soldiers. Development on mobile platforms has been a focal point since Google Android's introduction of the operating system back in 2007. Mobile development projects have varied from stand-alone applications, attached hardware devices, and integrated communications of mobile and online services.



3:35 PM COFFEE BREAK

3:50 PM CM BEST PRACTICES: MOTION PICTURE I - VFX COLOR WORKFLOWS

Jeremy Selan – *OpenColorIO*

Color affects many areas of the visual-effects pipeline, from texture painting to lighting, rendering, compositing, image display, and digital intermediate. This section will begin with an introduction to VFX color processing and its relationship to image fidelity and physical realism. Topics include: common misconceptions about linearity, gamma, and working with high-dynamic-range (HDR) color spaces. Pipeline examples from recent films by Sony Pictures Imageworks explain which color transforms were used and why.

Jeremy Selan is an Imaging Supervisor at Sony Pictures Imageworks, specializing in color management, lighting, and compositing. His work has been used on dozens of motion pictures including The Amazing Spider-Man, Men In Black 3, and Alice in Wonderland. He is the founder of OpenColorIO, and also co-founded Katana (a recently commercialized visual effects and animation lighting toolkit). His work on color processing has been previously featured in GPU Gems 2 and Siggraph's Electronic Theater.



4:20 PM CM BEST PRACTICES: MOTION PICTURE II - COMMUNICATING COLOR FROM SET

Joseph Slomka – *FotoKem*

Motion picture production has transitioned from film to a digital image capture. Many of the techniques of digital color management available in other fields are being adopted and adapted to the needs of motion picture production. I am going to be discussing the motion picture color management : Hardware limitations,

and how on set color decisions are made and communicated.

Joseph Slomka's background includes a master's degree in color science from the Munsell Color Science Laboratory at the Rochester Institute of Technology and a bachelor's degree in information technology from RIT. His industry experience includes working closely with the Science and Technology Council of the Academy of Motion Picture Arts and Sciences in the development of the Academy Color Encoding Specifications (ACES). He has also worked with the American Society of Cinematographers (ASC) Technology Committee, and was a contributor to the Sony Imageworks OpenColorIO (OCIO) project. He currently spearheads the execution of color science, management, and best practices for FotoKem's digital post production and creative services. Prior to his current role, Slomka served as color scientist of Sony Pictures Imageworks, where he managed the color pipeline on over 30 major studio pictures in addition to multiple facility projects. He was instrumental in designing the color architecture for several major motion pictures and visual effects integration at SPI, as well as planning and implementing workflows, pre-production decisions, onset acquisition and production support, digital intermediate technologies, software development, and archival YCM separations.



4:50 PM CM BEST PRACTICES: MOTION PICTURE III - COLOR FOR COMPUTER ANIMATED FEATURES

Rod Bogart – *Pixar*

This talk will examine the color pipelines used in animated feature production, with a focus on color management issues associated with authoring color spaces, desktop displays, and audience presentation environments.



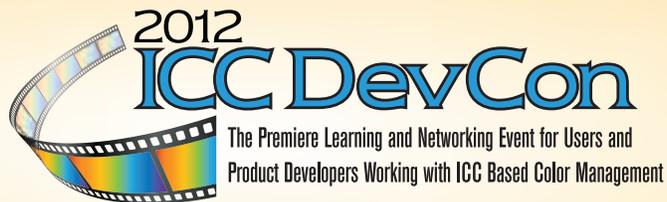
Rod Bogart joined Pixar in 2005 after spending ten years as a software engineer at Industrial Light & Magic. He has a M.S. from the University of Utah, where he specialized in computer graphics. At Pixar, Rod is in charge of color science at the studio, overseeing the technology for creating the final distributed masters of the movies. His initials are RGB.

5:20 PM CM BEST PRACTICES: MOTION PICTURE PANEL - CINEMATIC COLOR MANAGEMENT

5:45 PM BREAK

6:00 PM NIGHT RECEPTION & BOOTH PRESENTATION ENDS AT 8.00 PM

THE PROGRAM IS AVAILABLE ONLINE AT:
WWW.COLOR.ORG/DEVCON/DEVCON12PROGRAM.XALTER



NOVEMBER 12, 2012
LOS ANGELES, CALIFORNIA

REGISTRATION FORM

ICC DevCon 2012 will be held on November 12, 2012 at the Sheraton Los Angeles Downtown, 711 South Hope St., Los Angeles, CA.

ICC and IS&T Members: \$300 for each of the first and second registrations from a company
\$200 for each additional registration from the same company

Non-Members: \$400 for each of the first and second registrations from a company
\$300 for each additional registration from the same company

Students: \$25 for each registration

Early Bird Special: Register by October 15, 2012 for \$50 discount (does not apply to students).

Special Offer: New member companies who join the ICC during the DevCon 2012 will receive a reduction of membership fees for the first year in the amount of conference fees paid by the company.

Cancellations must be submitted in writing to ICC. Cancellations received by October 1, 2012 will receive a full refund, minus a \$50 administrative processing charge. No refunds will be issued for cancellations received after October 1, 2012. (Substitutions may be made at no charge.)

Company _____

Name _____

Title _____ Badge Name _____

Name _____

Title _____ Badge Name _____

Address _____ E-mail _____

City _____ State _____ Zip Code _____

Telephone _____ Fax _____

Full registration fee must accompany this form with payment by credit card, or check in U.S. funds drawn on a U.S. bank payable to ICC.

Visa Master Card American Express Discover Card Carte Blanche/Diners Club

Card Number _____ Expiration Date _____

Verification Number _____ Total Dollar Amount Authorized for Charge _____

(3-4 digits printed on back of card, after card number)

Card Holder Name _____ Card Holder Signature _____

Registration fees are not deductible for federal income tax purposes.

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

ICC Secretariat

1899 Preston White Drive, Reston, VA 20191 USA

Telephone: (703) 264-7200 Fax: (703) 620-0994 E-mail: ksmythe@npes.org

ICC DEVELOPERS CONFERENCE IS THE PREMIER LEARNING AND NETWORKING EVENT FOR USERS AND PRODUCT DEVELOPERS WORKING WITH ICC-BASED COLOR MANAGEMENT.

ICC DevCon 2012 Developers Conference which will focus on presenting current best color management practices in the areas of graphic arts, photography, motion picture, mobile and web. Individual use cases, examples and ways to assure consistency in workflows will be discussed. The 'Vision' and the next generation efforts for color management will be presented. DevCon 2012 will include discussion of testing and certification of implementations and an introduction into icclabs open source efforts.

FEATURING:

- Tutorials on Critical Color Topics by Leading Speakers
- ICC Color Management Demonstrations
- Special Networking Session
- Extensive Tutorial Materials on CD-ROM
- Efficient one-day format in conjunction with the IS&T/SID 20th Color Imaging Conference

WHY ATTEND?:

ICC DevCon 2012 is your opportunity to learn from the experts — experienced developers and users in the imaging, printing and publishing color community.

WHEN:

Monday, November 12, 2012

in conjunction with IS&T/SID 20th Color Imaging Conference

WHERE:

**Sheraton Los Angeles
Downtown**

711 South Hope Street
Los Angeles, CA

Sheraton Los Angeles Downtown Hotel is where family, friends and colleagues gather. The hotel is located in the heart of the financial district in Downtown Los Angeles allowing for easy access to all of LA. Find yourself in the center of Los Angeles entertainment venues, sports arenas, cultural attractions, and beautiful Southern California beaches.



<http://www.sheratonlosangelesdowntown.com>

ICC DevCon 2012 will be held in conjunction with the **20th Color and Imaging Conference**, November 12-16, 2012, Los Angeles, CA. CIC brings together color scientists and engineers from around the globe to discuss the latest advances in the science and application of color in a single-track format. Topics range from color theory to color in devices, systems, applications, and illumination. This year a focus on color in motion imaging and temporal color highlights the program.

New courses—such as the Role of Color in HVS; Introduction to the Academy Color Encoding System, and Color Image Quality Assessment—as well as perennial favorites and a two-day Color Science and Imaging course are offered.

Outstanding keynote speakers include Paul Debevec (University of Southern California's Institute for Creative Technologies) on *Creating Photoreal Digital Actors: Capturing Light and Reflectance*; Mark Fairchild (Munsell Color Labs/ RIT) on *Progress and Poverty: An Inquiry into Color Appearance Modeling and Increase of Want with Increase of Wealth*; and the incomparable Robert W.G. Hunt on *The Challenge of our Unknown Unknowns*.

Supplementing the technical papers program are five invited talks that look at the past 20 years in color and are being given by some of the most well-respected members of the color community. A special evening event at the Academy of Arts and Sciences promises to delight all.

The Society for Imaging Science and Technology (IS&T) is an international non-profit society dedicated to keeping its members and other industry professionals abreast of the latest scientific and technological developments in the broad 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, image perception, photo fulfillment, color imaging, image preservation, digital fabrication and the physics and chemistry of imaging processes.

For more
information visit:
www.imaging.org

