

Introduction to IccLabs

Tom Lianza

X-rite

Quick Outline

- Review some history
- Update on current specification
- Update on current activities
- Review some technical challenges
- Update on technical contributions from X-rite
- Some conclusions

Quick History

■ Founding Members 1993:

- Adobe Systems Inc.
- Agfa-Gevaert N.V.
- Apple Inc.
- Microsoft Corporation
- Kodak
- Taligent
- Sun
- Silicon Graphics Inc

■ * Red denotes no longer associated or physically non-existent.

Quick History

- Consortium: An association of two or more individuals, companies, organization, or governments with the objective of participation in a common activity or pooling of resources for *achieving a common goal*.
- The ICC is NOT a Standards Organization, but it is heavily impacted by standards and it influences standards.
- Financial gain played a very strong role in the early foundations of the organization
- Original Organization included business/product marketing, but things got “too technical”. As a result, the “common goal” was never communicated in detail.



“achieving a common goal”

- The original idea was to arrive a common platform so that all players could address the mass (volume) markets.
- Note conspicuous absence of traditional Graphic Arts entities.
- *“The ICC defines the format precisely but does not define algorithms or processing details. This means there is room for variation between different applications and systems that work with ICC profiles.”* ref. Wikipedia
- Current Membership count ~ 50 companies from a wide range of categories (i.e. Rip Vendors, hardware vendors, Paper vendors etc.

Market Trends and some Analysis

Packaging/Specialized Printing/Media transformations	Hybrid workflows / Proprietary workflows
Common Graphic Arts Tasks CMYK workflows	Basically working well, but implementation is not trivial
Photographic /RGB workflows to Print	Problems in Printing and Screen to Print match
Consumer Market	Poor implementations or no implementations

- Emerging Packaging market requirements may require upgrades to the specification or a new specification
- Current Graphic Arts applications working fairly well, especially in RIP market place.
- Photo market has serious issues, particularly in printing color managed to different brands of printer on Mac and Windows OS.
- Consumer market applications are completely unaddressed, untested or simply broken.

Getting to “TODAY”

Is your system ICC Version 4 ready?

One way to find out is to view or print this page using your system.

The test image below uses a mix of unusual ICC version 4 and version 2 profiles, one for each quadrant of the image.

The test is also available in **pdf** format, as in both html and pdf file formats each image can use an unique profiles.

Profiles in each quadrant: v4 e-sRGB v4 YCC-RGB
v2 GBR v2 Adobe RGB



- Fundamental technical issues led to a number of specification changes and today we have Version 4.0 as an ISO specification and many applications still use Version 2.0 profiles
- Results from Google Chrome Browser (not color managed)

Expected Results

The display of the above test image on your system will change according to the abilities of your system. Here are three possible outcomes. (These are RGB screenshots from actual systems)



The system supports these ICC version 4 and version 2 profiles



The system supports ICC version 2 profiles only



The system does not support these ICC profiles

Color managed browser

The page as viewed:

as printed ->

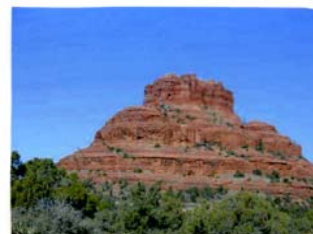
Is your system ICC Version 4 ready?

One way to find out is to view or print this page using your system.

The test image below uses a mix of unusual ICC version 4 and version 2 profiles, one for each quadrant of the image.

The test is also available in **pdf** format, as in both html and pdf file formats each image can use an unique profiles.

Profiles in each quadrant: v4 e-sRGB v4 YCC-RGB
v2 GBR v2 Adobe RGB



Epson R2400
System CM ON

Printer CM on (non color managed)

HP Z3100

System CM ON

Printer CM (Non Color Managed)



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





Current Activities

- **Requirements for advanced functionality will lead to specification change:**
 - <http://www.color.org/icclabs.xalter>
 - ICC Labs is an open source initiative to handle advanced situations not currently manageable in the current specification.
 - Open for comment from anyone. You need not be a member of the ICC.
- **Web compatibility is in very bad shape. Communication of true color on the web is currently impossible in a general fashion.**
- **The ICC is investigating the potential to join W3C to have a greater role in the advancement of color management on the web.**



ICC Labs

- It should be noted that ICC Labs is not intended as a replacement for ICC.1, the existing architecture, but as an extension or alternative where requirements cannot be fully met by ICC.1. Currently the areas covered by ICC Labs include:
 - Multi-spectral
 - Image Capture/Digital Photography
 - Package Printing
 - Color Management on Internet
 - Fine Art
 - Color Information Archiving

What needs to be done?

- ***“The ICC defines the format precisely but does not define algorithms or processing details. This means there is room for variation between different applications and systems that work with ICC profiles.” ref. Wikipedia***
 - This situation is common with many specifications: detailed implementations are often not specified.
 - Resultant implementations meet the letter of the specification but not the INTENTION of the specification
 - Lack of rigorous test methods (i.e. ASTM methods) lead to poor results when implemented in the field.
- **Specifications need a better definition of qualification, this is especially true of the latest specifications from ISO.**



Technical Challenges

- **Communication of color information**
 - Measurement Conditions (M0, M1, M2, M3)
 - Management of Fluorescence
 - Optical Brighteners in paper
 - Fluorescent (“NEON”) inks.
 - UV “kind of” excluded, but substrate “normalized”
 - Managing two different paper bases.
 - The viewing booth situation

X-Rite / Pantone contributions

- **CxF3 color exchange format moving into ISO: *ISO 17972 Graphic technology — Colour data exchange format (CxF/X)*.**
 - Mechanism to communicate color information that extends beyond measurement data.
- **XRGA - Two companies, X-rite and GretagMacbeth merge, Two different standards, move to single standard and provide a mechanism to map legacy instruments and or measurements to new standards**
- **Implementation of M1. M1 will be supported, but questions still revolve around how measurement modes are communicated and the real utility of M1 to the needs of the customer base**
- **Pantone PMS+ is XRGA based and M1 data set generation is currently under consideration.**



Some Conclusions

- For the professional printing market, color management is working, but implementation is not simple.
- The packaging market will probably require some changes to the ICC specification to better handle multiple families of spot color.
- The consumer market is probably not going to see any improvements. The sRGB/Rec.709 color spaces will be de-facto standards
- Changes in illumination and measurement modes will lead to market confusion and miscommunication until all the suppliers and other stakeholders standardize on the new standards and the standards committees provide better conformance test standards.



Thanks for listening!