Standards Update

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This issue of Standards Update focus on the International Color Consortium, better know simply as the ICC. It has been some time since I summarized the activities of the ICC and much has changed. For those who want to delve deeper into the ICC activities their website is www.color.org.

Background

The ICC was formed in 1993 and had 8 founding members. These were Adobe Systems Incorporated, Agfa-Gevaert N.V., Apple Computer, Inc., Eastman Kodak Company, FOGRA-Institute, Microsoft Corporation, Silicon Graphics Inc., Sun Microsystems, Inc. These have now grown to include over 70 companies and/or organizations.

The scope or purpose of the ICC is: "To create, promote, and encourage an open vendor-neutral, cross-platform color management system architecture and components. Results of the ICC shall be made available to the public and shall be submitted to the appropriate international standards organizations."

What the ICC produces is a specification for the format for color profile data. The official title of the current version is *Specification ICC.1:2004-10 (Profile version 4.2.0.0), Image technology colour management — Architecture, profile format, and data structure*.

However, the larger contribution of the ICC to the imaging community is the color management architecture into which these profiles fit and a forum which enables the ongoing refinement and extension of an open color management architecture.

The leadership of the ICC is elected annually from within the membership. The current chair is Craig Revie of Fuji Film Electronic Imaging. The work of the ICC is managed by a Steering Committee made up of the representatives of the founding members and representatives of seven additional company members elected annually.

The Secretariat of the ICC is NPES The Association for Suppliers of Printing, Publishing and Converting Technologies. The ICC Secretary is Kip Smythe of NPES. The ICC Technical Secretary for the last several years has been Tony Johnson who is retiring at the end of this year. His replacement is Phil Green of the London College of Printing.

Relationship with ISO

In July 2003 the ISO Council approved a "Cooperative agreement between ISO/TC130 and the International Color Consortium." A key ingredient of this agreement is "the detailed procedures whereby ISO/TC130 (Graphic technology) and the International Color Consortium (ICC) will cooperate to continue the development of a series of ISO standards based on the work of the ICC, including the ICC Profile Specification."

This agreement enables the ICC to participate fully in the development of documents which can be freely distributed under the ICC logo and as International Standards by ISO.

The first of these documents is ISO 15076-1, *Image technology colour management — Architecture, profile format, and data structure — Part 1: Based on ICC.1:2004-10*. ICC.1:2004-10..

DIS 15076-1 is currently in ballot. TC130 has established Joint Working Group 7 (JWG7), Color management, as a vehicle to facilitate ICC involvement directly in TC130. In addition other interested ISO technical Committees were invited to participate in JWG7. Currently ISO TC42, Photography, is the only other participant.

ICC Specification

ICC.1:2004-10 was approved by the ICC in October 2004. Some minor editorial corrections were noted during the final balloting and are being corrected prior to publication. This version is both technically and organizationally identical to the version in ISO balloting. The intent of both the ICC and TC130 is that the versions published by ISO and the ICC will remain identical. It is expected that as the ICC approves new proposals these will be documented and listed on a web site as inputs to a subsequent revision of the specifications/standard. The ICC and ISO versions will be simultaneously revised as often as necessary to incorporate proposed revisions.

Ongoing Work

The ongoing work of the ICC is largely accomplished through a series of working groups that have been formed to address specific topics. These groups are created, merged, and disbanded as the need arises by the ICC main committee. This allows the ICC to have a great deal of flexibility in both dealing with ongoing issues as well as investigating new areas of potential applicability of ICC color management.

The current working groups are:

- Architecture
- Communications
- Digital Cinema
- Digital Photography
- Graphic Arts Special Interest Group
- Profile Assessment
- Proof Certification
- Specification Editing
- Workflow

The following sections provide a brief synopsis of the responsibilities and activities of each working group.

Architecture (AWG)

The charter of the Architecture Working Group is to address issues relating to ICC architecture.

Specifically the group will:

- Document the current architecture, including its functionality for the purpose of defining the baseline for further work and internal usage.
- Investigate and propose improvements and alternatives to the current architecture to address identified issues

Current projects include a sample ICC implementation, possible use of spectral colorimetry, a reference gamut, and implications of the Microsoft Longhorn announcement.

Communications (CWG)

The CWG is responsible for informing the industry and user community about both the activities of the ICC and issues relating to color management in general.

The most recent ICC Progress Report (2003-2004) is available at www.color.org.

Digital Cinema (DCWG)

The charter of the DCWG is to codify an open, vendor-neutral, cross-platform, color management system architecture for Digital Motion Picture production that will enable utilization of ICC color management.

This group had initially been referred to as the Digital Motion Picture Working Group but it was felt that Digital Cinema was more descriptive.

This working group was formed at the May 2004 meeting of the ICC and has been actively meeting with representatives of the motion picture industry to better understand their problems.

Digital Photography (DPWG)

This is one of the newest ICC working groups. It was formed at the November 2004 meeting of the ICC. The preliminary goals are to work with digital photographers to understand how they are using ICC profiles and what needs to be done to improve their workflows.

The DPWG is working with DIMA, a sub-group of PMA, that deals with digital photography issues. The DPWG is still in a largely fact finding mode of operation.

Graphic Arts Special Interest Group (GASIG)

The primary focus of the GASIG is to address issues raised when using ICC Profiles for printing presses or related printing systems, for example digital proofers.

Their objectives are to:

- Promote the use of ICC Profiles in "high end" graphic arts applications.
- Identify areas where the existing ICC Profile format is unable to provide the functionality required by these printing systems.
- Propose changes in working practice and if necessary in the ICC Profile format to address current limitations.

The GASIG closely monitors the work of ISO TC130 (Graphic technology) and provides ICC input to the standards being developed by TC130. It also has the responsibility of keeping the ICC informed about applicable graphic arts standards that affect the ICC and helping interpret their impact and implications.

Profile Assessment (PAWG)

The mission of this group is to seek methods for assessing quality of ICC profiles.

The objectives it has established include:

- Define a set of quality attributes for ICC profiles.
- Identify analytical methods for defining and investigating performance capabilities of valid ICC profiles. (A valid profile is one that conforms to the ICC specification.)
- Investigate metrics that might quantify or qualify said performance characteristics.
- Recommend promising solutions to the ICC body for their consideration.
- Short term goal is to develop evaluation methods for use within the ICC.
- Longer term goal is to offer suggestions to users for evaluation.

Two profile assessment tools are being reviewed by the PAWG, Alwan Color Pursuit and ColorThink Pro.

The PAWG has also developed a "probe profile" which is posted on the ICC website. This profile is intended to identify which rendering intent is really being used by an application. The profile contains tables that in the B2A direction either give a cyan, magenta or yellow version of image – depending on the rendering intent selected by the application. When the profile is tested in the A2B direction – for soft proofing - the image transformed in the B2A direction becomes lighter, darker or stays the same.

Proof Certification (PCWG)

The PCWG was also created at the November meeting of the ICC. It was noted that current digital proofing procedures have largely relied on a variety of calibration and color management procedures, often with poor, or even no, ICC support. This lack of standardization has led to a variety of results. Various groups (such as SWOP, USA; PPA, UK; SICOGIF, France, ECI/FOGRA, Germany) have initiated procedures to try to permit digital proofs to be used as contract proofs.

The proposed activities for this group include:

- Co-ordinate with other interested groups to agree to, or establish, reference gamuts for various printing conditions.
- Develop a requirements document for proof certification.
- Define the procedures to improve agreement between measurement and visual assessment.
- Define additional tags needed to improve agreement between measurement and visual assessment.
- Ensure co-ordination with other ICC working groups.

Specification Editing (SEWG)

The SEWG is responsible for dealing with issues related to published ICC specifications.

Specifically, the group will:

- Ensure that balloted changes to published ICC specifications, including both ICC published and directly derived versions are published in minor or major revisions in a timely fashion, including performing the mechanics of ensuring that the specifications are published.
- Discuss, review, and make recommendations on non material changes to the specifications which help clarify the intent of the specification, as well as ensure that these changes are made to the appropriate published specifications.
- Be responsible for the publication and maintenance of new ICC specification documents as they are developed by the body of the ICC.

It was noted that ICC v4.2 has been approved in the recent ballot, though there are a few editorial changes that will be made with approval by the SEWG.

Workflow (WWG)

The charter of the WWG is:

- To identify a small number of the most commonly used workflows.
- To recommend effective ways for application to use the ICC specification to satisfy those workflows and recommend improvements to the specification, or implied architecture, in order to make the workflow procedure more efficient.
- To identify where predictability and consistency are required in the workflow and insure that the recommendation enable them to be achieved.
- To recommend what procedures are required to ensure ease of use with the recommendations made.
- To identify any liaison relationships that need to be established.

A key document being developed by the WWG is a "Color Management for Distributed Systems Requirements Document" which forms the basis for evaluating workflows and necessary ICC support.

For suggestions for (or input to) future updates, or standards questions in general, please contact the author at mcdowell@npes.org or mcdowell@kodak.com