

Standards Update*David Q. McDowell, Editor*

This issue is an update on recent standards activities that impact the printing and publishing industry. I realize that this is in part redundant to the last issue, but I wanted to bring some specific focus on this area and also provide some of the background that too often gets skipped over or I assume that you know.

A brief review of who and what!

Before we dive into details, a brief review of the major players and some of the acronyms that we use.

Two standards committees that directly impact the US printing and publishing market are Committee for Graphic Arts Technologies Standards (CGATS) and ISO TC130, Graphic technology. CGATS is an American National Standards Institute (ANSI) accredited national standards committee. TC130 is the Technical Committee (TC) within the International Standards Organization (ISO) responsible for standards in the area of printing and publishing. There is also a Technical Advisory Group (TAG) accredited by ANSI that is responsible for coordinating the US involvement in, and input to, TC130.

NPES The Association for Suppliers of Printing, Publishing and Converting Technologies is the organization that has been approved by ANSI to be secretariat of CGATS and the USTAG to TC130. In addition NPES is the secretariat for the International Color Consortium (ICC) as well as ANSI Committee B65 (Safety standards for printing presses, bindery machines and other printing equipment).

The work of ISO TC42 (Photography) is closely allied with the work of TC130 and there are several Joint Working Groups (JWG) between TC42 and TC130. These JWGs will be the subject of a future Standards Update.

So, What's New and/or Important?**Color Management**

A contractual agreement has been approved between the ICC and ISO TC130, under which the ICC profile Specification, ICC.1:2004-10 has been prepared as ISO 15076-1:2005, Image technology colour management—Architecture, profile format and data structure—Part 1: Based on ICC.1:2004-10. This ISO standard has been approved and is in the final publication stages. Both the ICC and TC130 are committed to keeping the ICC version and the ISO version of this document synchronized so that both the technical content and text will be identical.

Because the ICC can approve incremental changes, such ICC approved proposed changes will be maintain in a separate addendum until there are sufficient changes (or a change of sufficient technical import) to warrant a revision. When a revision is initiated it will be simultaneously processed through both TC130 and the ICC.

This represents a significant step for both TC130 and the ICC. The work required to create the parallel versions of the document has resulted in a much clearer and more definitive document that benefits the whole color management community.

Viewing and Measuring

The requirements of ISO 3664 (Viewing conditions—Graphic technology and photography) and ISO 13655 (Graphic technology—Spectral measurement and colorimetric computation for graphic arts images), while currently consistent with each other, are not consistent with current industry needs and practices.

These documents need revision. However, it is critical that any revisions be done in a coordinated manner. This is complicated by the fact that ISO 3664 is the responsibility of TC42, while ISO 13655 is the responsibility of TC130. Both TC42 and TC130 have formed joint working groups (TC130 JWG8 and TC42 JWG24) to work on these document together. The chairs of both TCs have pledged that the JWGs will meet together and that the final decisions will be reflected in both documents.

The two key technical issues that must be addressed are the spectral power distribution of the illuminant used for colorimetric measurements and for viewing, and the sample backing used for colorimetric measurements and for viewing.

The real conundrum is that the proper UV component of D50 (or almost any other illuminant that would be desirable for use) is difficult to achieve in a viewing booth and almost impossible to achieve in a small spectrophotometer used for colorimetric measurements. The simple solution is to use UV-blocking filters for both viewing booths and instruments. However, that also kills the effect of optical brighteners used in almost all proofing and printing substrates.

The backing issue goes back to the question of process control. The densitometry standards all call for black backing, based on the concern that when a sample with back-side printing is measured over a white backing, the results vary widely, depending on what is on the back-side. Further, the measurement data obtained is much more sensitive to small variation in the absolute value of a white backing than to similar variations in a black backing. This effect applies to both densitometric measurements and to colorimetric measurements.

Color data exchange format

With the increasing amount of color measurement data being exchanged, it is important to provide data formats beyond the ASCII key-word value pairs that are defined in the current family of standards. The obvious choice seems to be some form of XML data structure. TC130 has a new work item to create an XML data format for such data exchanges. Its current title is ISO 17972 Graphic technology—Prepress data exchange—Colour data exchange format.

The recently completed CGATS.17, Graphic technology—Exchange format for color and process control data using XML or ASCII text, represents the US input to this work, and the other input is the GretagMacbeth CxF - Color Exchange Format. Unfortunately there are significant architectural differences in the XML design of these two formats. One is largely a flat structure and the other is a highly hierarchical structure. It is not clear at this point that there is a way to reconcile these differences so that both can be easily compatible with any ISO standard created.

TIFF/IT alive and well

A revised version of TIFF/IT (ISO 12639), published in 2004, added a P2 conformance definition which includes an expanded LW palette to support up to 65, 535 colours; support for up to 32 separations; a new file format "SD" for copy-dot data with CCITT G4 compression; two new compression schemes: Flate and JPEG; and the "FP" file format is now defined as normative. In addition, an amendment that is in final approval will add JBIG2-Amd2 compression, which will be particularly useful for copy-dot files. While the use of copy-dot files is dwindling in the US and parts

of Europe, they are still considered very important in many of the Asian countries.

PDF/X getting increased capability

The PDF/X family of standards has been very successful and have seen wide implementation. The most current versions are documented in ISO 15930 Parts 4, 5 and 6. However they are better known as PDF/X-1a:2003, PDF/X-2:2003 and PDF/X-3:2003. All are based on Adobe PDF Version 1.4.

Since the PDF/X 2003 standards were published there have been two revisions to the PDF specification—Versions 1.5 and 1.6. While most printing and publishing needs are well served by the existing standards, there are some new feature that warrant inclusion in the PDF/X standards to ensure future compatibility of systems.

TC130/WG2/TF2 is moving forward on a new set of PDF/X standards, based on PDF 1.6, as follows:

- A new conformance level, to be known as PDF/X-4, which will allow for colour managed workflows with optional content and transparency. This will be defined in ISO 15930-7.
- A second new conformance level, to be known as PDF/X-5. A PDF/X-5 reader must read all files that a PDF/X-4 reader must read, and must be able to accept files where one or more of the three categories of fonts¹, ICC profiles and XObjects are supplied externally to the main exchanged file. This will be defined in ISO 15930-8.

Variable Data Exchange

ANSI CGATS.20.-2003, Graphic technology—Variable printing data exchange using PPML and PDF (PPML/VDX), has been successfully moved into ISO and was recently approved as ISO 16612-1 Graphic technology—Variable printing data exchange—Part 1: Using PPML 2.1 and PDF 1.4 (PPML/VDX-2005). This standard builds on the PDF/X standards as well as the industry PPML and JDF specifications.

This community, working through CGATS SC6 TF2, had determined that color characterization data specific to the needs of digital printing is required to support this work. Three color characterization data sets have been proposed and are being developed. The first two are based on the use of a paper having a white point equivalent to a Grade 1 printing paper. The first characterization data set, which is being developed as CGATS TR 007, is based on digital printing with high gloss image characteristics. The second, CGATS TR 008, is based on digital printing with typically low gloss (satin) image characteristics. The third is a smaller gamut that is based on low gloss printing on Grade 5 substrate (Grade 5 white point) and will use the CGATS TR 001 data set.

Characterization Targets

Although the venerable IT8.7/3 CMYK characterization target (and its equivalent ISO 12642) has provided yeoman service as we have learned to develop color characterization data and apply color management to the CMYK world, enhancements are overdue. The biggest issue is that, since it was defined in 1991, color management systems have become more sophisticated and need data at finer increments, specifically in the highlight and shadow areas. Measurement equipment has also become more automated and target size is less of an issue.

Last year both CGATS and TC130 made a decision to not change the IT8.7/3 or ISO 12642 target but to create new standards which could be used as a supplement to, or a replacement for, the older target. The CGATS version is known as the IT8.7/4 target and the ISO target is ISO 12642-2 (the older target will be renamed as ISO 12642-1). Both new target have 1617 patches.

CIELAB/SCID Images

The CIELAB SCID images (ISO 12640-3) have been approved at the CD ballot level and will shortly be in DIS ballot. One exciting aspect of the most recent series of discussions of this standard is that the Reference Colour Gamut defined in Annex B has also been adopted by the ICC as the gamut of the perceptual rendering intent reference medium. Thus the images contained within this standard are based on the same color gamut as the ICC perceptual profile connection space. This will enhance the value of these images and test target in evaluating image compression and manipulation in color management applications.

Proofing Standard

Work has started on ISO 12647-7, which is entitled Graphic technology—Process control—Part 7: Off-press proofing processes working directly from digital data. The preliminary scope is: *“This International Standard specifies a number of process parameters and their values to be applied when producing digital proof prints that simulate a chosen printing condition. This International Standard is directly applicable to half-tone, simulated half-tone and continuous tone proof printing processes that use digital data as the input.”*

While it has a long way to go, the goal is that this standard can replace a large portion of the many trade association proofing certification requirements (e.g., SWOP, GRACoL, etc.) and at the same time bring consistency to that process. Issues like within sheet and between sheet variability, temperature and humidity tolerances, measurement and evaluation procedures, short and long term image stability, etc. are not unique to a particular trade specification. Consistency in specification through use of an ISO reference would make life easier for the manufacturers of proofing systems, as well as for the trade associations trying to certify proofing these systems.

Summary

This has been a quick update about of some of the key activities that have occurred recently in standards for the printing and publishing industry. If you are interested in these activities, please consider becoming involved, either as an active participant or as an observer. However, be warned that even observers are expected to review documents and provide input and comments.

If you want to sign up in either category please send an E-mail to Mary Abbott (the NPES staff person who holds all of this together) at mabbott@npes.org. She can send you more specific information and an application form.

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