

## Standards Update

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This issue of Standards Update reviews the activities at the recent meetings of ISO TC130, Graphic technology, and ISO TC 42, Photography.

### TC130, Graphic technology

ISO TC130 held a series of working group meetings and a Plenary meeting in Berlin the week of September 23, 2002.

For those not familiar with ISO jargon, a Plenary meeting is a meeting of the national body representatives of an ISO Technical Committee held to either take action on behalf of the Technical Committee or to review and approve actions (resolutions) requested by working groups within the Technical Committee. Plenary meetings are typically only held once a year or once every two years.

Some of the events or actions of general interest arising from the TC130 meetings, grouped by the applicable working group, are:

**WG1, Terminology.** Not unexpectedly, this working group has struggled more than most in finding both active participants and leadership. Within TC130, since its inception, the responsibility for chair and vice-chair of individual working groups has been assigned to national bodies. In the meeting in Berlin responsibility for the WG1 chair was transferred from Germany to the UK and for vice-chair from the US to Brazil.

WG1 is about ready to issue a draft for DIS ballot of 12637-1, *Graphic technology — Multilingual terminology — Part 1: Fundamental terms*. This will be the second standard issued in the TC130 series of terminology standards and will join the already published ISO 12637-5:2001, *Graphic technology — Multilingual terminology of printing arts — Part 5: Screen printing terms*.

**WG2, Prepress Data Exchange,** identified three areas of new work that represent exciting opportunities.

- The recently approved ANSI/CGATS.20:2002, *Graphic technology - Variable printing data exchange using PPML and PDF (PPML/VDX)*, has been offered to TC130 for consideration as an International Standard. TC130 has agreed to initiate a new work item for this work.

- Ongoing discussions with the ICC and the ISO management have led to the possibility of a formal working relationship which will allow the ICC the control over and involvement with the ICC specifications that they desire while still enabling joint development of the ICC Profile Specification as an International Standard. TC130 has agreed to participate in its preparation and the proposed agreement is currently being reviewed within the ICC. TC130 has also agreed to create a joint working group (JWG), to involve other ISO TCs in this work, once ICC concurrence is received.

- Work has been initiated under the leadership of have been initiated between AIIM (the Secretariat of ISO TC171 SC2) and NPES concerning the potential development of an International Standard, based on the Adobe PDF file format, to electronically archive documents to ensure preservation of content for an extended time period. This activity is presently identified as PDF/A. (See [www.aiim.org/pdf\\_a](http://www.aiim.org/pdf_a)) Both AIIM and NPES are recommending that this work be conducted in a JWG under the leadership of TC171/SC2. TC130 indicated its willingness to participate in a JWG in this area. TC171/SC2 is being asked to initiate the necessary ballots to create a new work item and a JWG in this area.

In addition WG2 reported that several standards had been forwarded to ISO central secretariat for balloting. These included:

- ISO 12639, *Graphic technology — Prepress digital data exchange — Tag image file format for image technology (TIFF/IT)* submitted for DIS ballot. This is a revision of the 1998 version which has been updated to include new capabilities, as well as a new constrained conformity level called Profile 2 (P2) to supplement the previously defined Profile 1 (P1), which is unchanged. The key added capabilities include: a normative final page (FP) format; a new SD file format with optional G4 compression for copy-dot data; definitive ways to use RGB and CIELAB color spaces in CT, as well as 16-bit-per-channel data in CT; JPEG

compression in CT and MP; Flate compression in all formats except LW, HC and BL; spot colors (colors other than cyan, magenta, yellow and black) in LW, CT, HC, MP, BP, BL, and SD; and support for up to 65535 colors in LW colour palettes.

- ISO 12640-2, *Graphic technology — Prepress digital data exchange — Standard colour image data — Part 2: XYZ/sRGB encoded image data (XYZ/SCID)*, submitted for DIS ballot. This complements the current CMYK/SCID image set and provides a set of standard images that are restricted to the sRGB gamut. Image data is provided in both 16-bit CIEXYZ data and 8-bit sRGB data.
- At the request of WG2, TC130 agreed that three standards in the PDF/X family should go directly to DIS ballot. These are revision to ISO 15930-1:2001, *Graphic technology — Prepress digital data exchange — Use of PDF - Part 1: Complete exchange using CMYK data*, and ISO 15930-3:2002, *Graphic technology — Prepress digital data exchange — Use of PDF — Part 3: Complete exchange suitable for colour managed workflows*, to add compatibility with Adobe PDF 1.4. In addition ISO 15930-2, *Graphic technology — Prepress digital data exchange — Use of PDF — Part 2: Guidelines for partial exchange of printing data (PDF/X-2)*, has been completed and is ready for its first DIS ballot.

WG2 also reported that ISO/TR 16066, *Graphic technology — Standard object colour spectra database for colour reproduction evaluation (SOCS)*, has been approved and the final draft of this technical report has been sent to ISO Central Secretariat for publication.

**WG3, Prepress Process Control** reported that ISO15790, *Graphic technology and photography — Reflection and transmission metrology — Certified reference materials - Documentation and procedures for use, including determination of combined standard uncertainty*, has been approved and is in final preparation for publication.

Revisions of ISO 12647-1:1996, *Graphic technology — Process con-*

trol for the manufacture of half-tone colour separations, proof and production prints — Part 1: Parameters and measurement methods, and Part 2: Offset lithographic processes have been started and are in CD ballot.

WG3 also recommended that ISO 12647-3:1998, *Graphic technology — Process control for the manufacture of half-tone colour separations, proofs and production prints — Part 3: Coldset offset lithography and letterpress on newsprint*, be revised to bring it into better compliance with current practice. It was suggested that the sub-title be change to be simply *Part 3: Coldset offset lithography on newsprint*. Proposed changes include a revision of the definition of the magenta ink colorimetric aim, definition of the colorimetry of the three-colour overprint, a higher dot gain curve, and the new higher brightness newsprint. It is hoped that as part of this revision even better agreement can be achieved between the United States, European, and Japanese newspaper printing standards.

**WG4, Media and Materials**, continues its work on several standards involving materials used in graphic technology. Most significant of these are the work to develop ISO 15994, *Graphic Technology — Testing of prints — Determination of visual lustre*, and ISO 20101, *Graphic technology — Process control — Cell volume measurement: Measurement and interpretation of anilox cells*.

**WG5, Ergonomics - Safety**, also met during this period. While their work is critical to the printing and publishing community, it is not generally of interest to the imaging community and is therefore not reported here.

#### TC42, Photography

TC42/JWG 20, JWG21, JWG22, JWG23, and WG18 all met in Berlin during the period September 30 through October 10. That scheduling was deliberate because all four JWGs involve participation by TC130.

**JWG21, Revision of the ISO 5 series of densitometry standards**, is responsible for the revision of all parts of the ISO 5 family. The new title of ISO 5 is *Photography and graphic technology — Density measurements* which recognizes the broader applicability of these standards. The names of the various parts, which are

unchanged, are: *Part 1: Terms, symbols and notations*, *Part 2: Geometric conditions for transmission density*, *Part 3: Spectral conditions*, and *Part 4: Geometric conditions for reflection density*.

The goal of this current revision is threefold. First, all of the documents fail to adequately differentiate between the definition of density and the practical requirements for, and tolerances on, the measurement of density. Second, these standards have not kept up with the needs of graphic technology applications. Third, Part 3 is based on the use of filter instruments and makes no provision for the computation of density from measurements of spectral reflectance or transmittance factors. The initial focus has been on Parts 3 and 4 which require the greatest degree of updating. Both have completed an initial CD ballot and the meeting of JWG 21 focused on resolving the ballot comments and determining a way forward.

While the basis of the definition of status density in ISO 5-3 is still the traditional spectral products, these have been extrapolated to provide reference data at 1 nm. These 1 nm data are also defined to be spectral weighting factors for computation from spectral reflectance or transmittance factor data. Because few instruments are available to provide data at a data interval of 1 nm, spectral weighting factors have been included in the standard, for data intervals of 10 nm and 20 nm.

All data will be made available as electronic files and it is expected that this new version of ISO 5-3 will be an "electronic" standard available on CD-ROM or as a downloadable file.

The major change in ISO 5-4 is the inclusion of a normative definition of the requirements for polarization in reflection density measurements. The use of polarization is optional, but when used it must comply with these newly defined requirements. It is recognized that polarization is primarily used in the graphics industry, and even there it is only predominant in some geographic areas.

**JWG20, Colour characterization of digital still cameras**, is responsible for developing ISO 17321, *Graphic technology and photography — Colour characterisation of digital still cameras (DSCs)*. This is a 2-part standard where Part 1 is subtitled *Stimuli, metrology, and test*

*procedures* and Part 2 is *Methods for determining transforms from raw DSC to scene-referred image data*. It includes procedures for collecting characterization data through use of a reflection or transmission target or by narrow band spectral illumination. Part 1 will have another round of WD comments and is scheduled to be in CD ballot by January 2003. Part 2 still requires some experimental work to determine the preferred path forward. It is not expected to be in CD ballot until late 2003.

**JWG22, ISO coordination group for ISO-IEC joint activities re color management**, currently is only involved in coordinating ISO input on two standards, Amendment 1 to IEC 61966-2-1, *Multimedia systems and equipment — Colour measurement and management — Part 2-1: Colour management — Default RGB colour space — sRGB* and IEC 61966-2-2, *Multimedia systems and equipment — Colour measurement and management — Part 2-2: Colour management — Extended RGB colour space — scRGB*. The balloting at the DIS stage for both documents resulted in approval in IEC and disapproval in ISO. In follow-up meetings the technical conflicts were resolved, but procedural issues around dual balloting had to be resolved before final balloting of these documents, and their approval as ISO/IEC dual logo standards, could occur.

**JWG 23, Extended colour encodings**, is charged with the development of ISO 22028 *Photography and graphic technology — Extended colour encodings for digital image storage, manipulation and interchange*. This is intended to be a multi part standards where Part 1 is subtitled *Architecture and requirements*. Part 1, which has just entered DIS balloting, describes a reference image-state-based digital imaging architecture and introduces the concept of scene space and rendered space. Subsequent parts will define at least one scene-referred extended-gamut colour encoding and at least one output-referred extended-gamut colour encoding.

**WG18, Electronic still picture imaging**, is involved in the development of a number of standards.

In the area of scanners, ISO 16067-1, *Photography - Electronic scanners for photographic images — Spatial resolution measurements — Part 1: Scanners for reflective media*, is at the FDIS stage and will soon be com-

pleted. Work is well underway on *Part 2: Film scanners* which is currently in CD ballot. In addition ISO 21550, *Photography - Electronic scanners for photographic images - Dynamic range measurements*, is also in CD ballot.

WG18 is also developing a multi-part standard to help define methods of estimating image quality, ISO 20462, *Photography - Psychophysical experimental method to estimate image quality* and includes *Part 1: Overview of psychophysical elements*, *Part 2: Triplet comparison method*, and *Part 3: Quality ruler*

*method*. All three parts are expected to be available for CD ballot before the end of this year.

It was reported that ISO 12231, *Photography — Electronic still picture imaging — Terminology*, is about to enter its second DIS ballot and that ISO 15739, *Photography - Electronic still picture imaging - Noise measurements*, had been approved and final text is in preparation for publication.

A proposed new item of work called "Picture Archive Initiative" was presented and WG18 agreed to request a new work item for this topic

under a slightly revised title of "Picture Storage and Electronic Album". It was suggested that the scope of work in this area could be divided into five categories (a) file system organization, (b) file access rules (c) advanced file access (d) formats for longevity (e) security, privacy, intellectual property of images in archive.

For suggestions for future updates, or standards questions in general, please contact the author at [mcdowell@nps.org](mailto:mcdowell@nps.org) or [mcdowell@kodak.com](mailto:mcdowell@kodak.com)

## 2002-2003 IS&T Visiting Lecturer

Reiner Eschbach received his M.S. and Ph.D. in physics from the University of Essen, Germany, in 1983 and 1986 respectively. He is a Xerox Reseach Fellow and Fellow of the Society for Imaging Science & Technology (IS&T).

From 1986 to 1988 Reiner was a Visiting Scholar at the University of California, San Diego. He joined Xerox in 1988 where he became a Pricipal Scientist at the Xerox Digital Imaging Technology Center in 1994 and a Research Fellow in 2000. He is currently a Project Leader in the Color and Digital Imaging Systems Lab.

His research interests include color image processing, digital halftoning and compression. He is the IS&T's 2003 Visiting Lecturer. He is also the former Editor of the Recent Progress Series of the IS&T as well as past Secretary and Publications Vice President of the IS&T Board of Directors. Patents

Currently more than 50 US Patents in the areas of Automatic Image Enhancement Compression Halftoning Resolution Enhancement Technology Scanning Systems

Publications

20 publications in peer reviewed journals like:

- Journal of Electronic Imaging
- IEEE Trans. On Image Processing
- Computer Vision, Graphics and Image Processing
- Optics Communication
- 50 conference presentations

Books

Editor of the „Recent Progress“ Series, Society for Imaging Science & Technology ( IS&T ), 7 books in

