

Minutes
14th Meeting of
ISO TC 130 WG2 TF2 (PDF/X)

Ft. Worth, Texas, USA
 22 May 2009

1. Call to order / Introductions

The meeting was called to order at 9:00 a.m. by Martin Bailey, Chairman. The following were in attendance and introduced themselves:

Martin Bailey, Chair	Global Graphics	UK
Mary Abbott, Secretary	NPES	USA
Debbie Orf, Secretary	NPES	USA
Ray Cheydleur	X-Rite	USA
Tim Donahue	Kodak	USA
Dov Isaacs	Adobe Systems	USA
Paul Jones	Teclyn bv	Netherlands
Andreas Kraushaar	FOGRA	Germany
Heath Luetkens	CGS	USA
Karl Meineke	bvdm	Germany
Bruno Mortara	Prata da Casa	Brazil
Christoph Oeters	SOPHA gmbH	Germany
Craig Revie	Fuji Photo Film	UK
Danny Rich	Sun Chemical	USA
Leonard Rosenthol	Adobe	USA
Steve Smiley	FTA/Vertis	USA
Larry Warter	Fujifilm	USA
David Williams	Ricoh	USA

2. Review and approve agenda (N 309)

The committee reviewed the draft agenda and added the following items:

- Discussion of dates/versions of XMP and Adobe errata in ISO 15930-7 and ISO 15930-8
- Request nominations for TF2 chair

The agenda was approved as modified. The revised agenda is N 309(R) and will be kept on file by the Secretariat.

3. Review and approve minutes of the April 2007 meeting (N 297)

The committee reviewed the minutes of the 23-24 April 2007 meeting, held in Bangkok, Thailand. The minutes were approved as distributed.

4. Discussion of requests for additional PDF/X standards

The committee agreed that PDF/X-4 use is starting to grow, but that it is still far from commonplace.

4a Optional content workflows in which individual OCGs should be enabled

The Ghent PDF Workgroup's Packaging committee had submitted a request to TF2 to review the way in which optional content (layers) are encoded in PDF/X-4 files (TC130/WG2/TF2/N310).

PDF/X-4 defines the way optional content must be encoded into the file to allow the user to select one of a preset variants of that file (defined as OCCDs) and not to allow individual optional content groups to be

turned on and off. This was done to make it as hard as possible to print a wrong combination. However, there are some users that need more flexibility to address the needs of their workflows.

Revie provided an example in which a user turned on more than one language layer, resulting in text in 2 languages printing one on top of the other. With PDF/X-4, the user is unable to select multiple layers from within the content group (e.g. can select only one language). An X-4 files provides "pre-built" sets (OCCDs) for the user.

An example of a more complex workflow requirement is bringing in files that have a varnish plate over the files. There may be a need to view the file with and without that varnish. The same file may need to be viewed with and without other aspects, such as die-lines, crop marks, Braille, etc. The combination of all the different variants swiftly becomes unmanageable, leading to a desire to be able to control optional content groups individually rather than only as combined into OCCDs.

It was noted that at the time the earlier work on PDF/X was done, one of the goals was to be able to enable "blind exchange", although it was also recognized that some cases would require a little more interaction between the sender and receiver of the files (thus PDF/X-5). The need for an interactive approach to printing was not considered. However, the need for a new level of interactive control is growing.

The Ghent Workgroup (GWG) is developing best practices for the use of PDF for packaging, including such things as identifying "common names" for "common layers" to help address the needs for now. However, they are asking that we consider either modifying PDF/X-4 or developing a new version of PDF/X to address these needs.

It was agreed there appears to be a business need for a reliable way of exchanging data for print in which people would like to take advantage of other PDF features not currently handled smoothly by the current versions of PDF/X. Do we need a new version of PDF/X?

It was reported that the PDF/A committee (ISO/TC171/SC2/WG5) ran into a similar problem in that archivists need to be able to turn some things on and off. That committee has been discussing possible solutions, and it was suggested we may be able to build on some of the work done by that committee.

4b Addition of metadata around spot colours, such as spectral measurements

Smiley described the data he would like to be conveyed in a PDF file:

- Ink vendor name and ink identification
- Spectral data for the ink to enable a printer (and their ink supplier) to formulate an appropriate draw-down to print the job). Spectral data should be measured from prints on blank media and over process black.
- TVI values describing the print run from which the spectral data was measured.
- Lab colour measurements of tints of the spot colour that could be used by an advanced proofing system to better emulate tints of spot colours (current solutions typically have to assume a linear interpolation between media and solid spot because of the lack of data to support other approaches).

Revie presented a summary of a discussion that had been held earlier in the week relating to PDF support of spot colour inks. (See N 312.)

For the purpose of discussion, he split inks into process inks and spot inks. The process set of inks may be CMYK or an arbitrary set of inks; the printing sequence can change for each job; and an ICC profile must be generated for each set and lay-down order.

For spot inks, each ink is characterized individually; it's not usually practical to generate an ICC profile for all the combinations; for precise matching, spectral measurements of tints of each ink printed on substrate and on process black are used.

Revie proposed to extend the OutputIntent in PDF to allow the use of an Nchannel DeviceN colour space, which would include a MixingHints dictionary, which would contain a solidities dictionary, as well as ink lay-down sequence.

He also presented a proposal for an ink opacity model for PDF/X that would allow for a good simulation of the PDF/X document on a proofer.

Additional metadata for spot colours would facilitate the ink opacity model application. Data could be included in XMP in the PDF/X file. This data could be used in some sophisticated proofing or rendering applications. The ability to map to the TVI curve for the output intent would better enable blind transfer. It was also noted that some decisions about substrate and ink colours are made late in the process.

A sample current practice is to create a spot ink for a customer. The ink is then measured doing draw-downs over white and over black, and the spectral data is obtained. An Adobe exchange format with the colour in it is created to ensure it will work within PDF. However, this only contains the solids, not the ramps. It was felt the data needs to be in PDF/X file to allow accurate soft proofing.

The problem spans the complete job from creation through proofing and printing.

Rosenthal noted there are already many features in PDF that are not being used, including some things that would help address the issues raised. It was suggested that perhaps if these features were implemented, this would go a long way toward solving the problem. However, there would need to be some testing to see if this is the case.

It was noted that several companies are already using spectral data successfully by various means, including databases that can be accessed to pull out the metadata needed for the job. However, some would like to include the communication of the spectral data as part of the file.

If the file had a container that could hold opacity and Lab values, including the full ramp, this would provide all the pieces needed by an application to appropriately render the colour.

A distinction was drawn between metadata that could be included in a PDF file and, therefore, would be available to any application that reads that file and chooses to use it, and data that is included in the file with the explicit intent of it being used to inform the rendering process. If the former is sufficient, then the existing XMP metadata framework in PDF would be enough to encode the data. An XMP schema could be developed to embed the data required. Several of the committee felt strongly that metadata structures should not be used if an explicit method for using the data to change rendering were also defined. Even if we were to start by defining inclusion of metadata that was available to consumers that want to use it, it seems likely that there will be a move to formalise a mechanism for how that data is used in the future. It was therefore agreed that XMP should not be used for this data.

There is a work item in WG2 to define custom resources in CxF (ISO 17972) to provide a means to carry ink data, including spectral measurements. It was agreed it is likely that embedding the CxF work into a PDF file would be a good first step in this process.

It was suggested that any proposal to add that data should be forwarded to the ISO 32000 committee to create an extension to PDF, which would make it valid in all PDF/X files immediately as a "private extension", and to any future PDF/X standard based on ISO 32000-2 as a full citizen in the underlying format.

Action Item 09-01: Rosenthal will take the data elements needed for spot colour processing identified by Revie and Smiley (for WG2), and will develop a proposal for how that data should be encoded into a PDF file for ISO 32000.

Action Item 09-02: Abbott will circulate information resulting both the WG2 and WG2/TF2 Action Items relating to spot colour to both WG2 and WG2/TF2 Experts.

If it is assumed that we will embed CxF into PDF, the next question was what that did not address. It was felt that ink lay-down sequence (including both spot and process colours) and explicit opacity were not provided for in a consistent manner.

PDF currently provides a mechanism by which you can specify for any object any process colours you want using DeviceN colour space, but this is not allowed as an output intent.

PDF/X-5n allows output intent using non-standard colours, and even defines lay-down order, but only for those process colours. A combination of non-standard process colours plus spot is not covered.

Rosenthal proposed that a MixingHints hints dictionary could be added into the output intent. MixingHints carries ink strength/opacity, lay-down order (for all process and spot colours) and TVI curves. This would not violate any of the existing PDF/X formats, making it a backward-compatible solution. It would also avoid the need to add the DeviceN output space as an option for output intent which could require a major re-architecture of PDF rendering.

As a first proposal the following requirements and means to achieve them are as follows:

- improve proofing (via expansion of OutputIntent to include MixingHints and CxF)
- deliver data to printer to formulate appropriate inks (via CxF)
- communicate dot gain aims to the printer (via MixingHints)

If someone wanted to define a separate specification or standard to be layered on top of PDF/X to deliver these mechanisms, that could be done. Alternatively, we could create a new part of PDF/X to address it. The committee felt that, if there is a real business need for the items requested, then the work should be done as part of PDF/X.

4c Compatibility with ISO 32000-1 (or 32000-2)

Two items have already been proposed for 32000-2 that are relevant to graphic arts and could be of value in a new PDF/X standard:

- addition of a key to control black point compensation in colour management;
- support for multiple output intents within a single file.

4d Others

A number of minor technical faults have been discovered in the published PDF/X-4 and PDF/X-5 standards, such as an incorrect year in a reference to the XMP specification. If no other work on PDF/X were being proposed we might have considered issuing a technical corrigendum to address these.

Proposed approach

It was questioned whether OCG would require a new PDF/X standard or if it could be handled via a corrigendum. The committee determined that addressing this as a corrigendum is inappropriate because:

- The technical changes required do not fall within the ISO requirements regarding corrigenda.
- There was some feeling that the current PDF/X-4 requirements are the most appropriate solution for some classes of user because they make it as hard as possible to print the wrong thing. The fact that other users may need more flexibility should not weaken the standard for the original target audience.

As a result, the minimum response would need to be an amendment to PDF/X-4. One item for discussion in development of that would be whether the existing PDF/X-4 rules should be changed, or whether a new conformance level (perhaps PDF/X-4o for ‘optional content’) should be added. Clearly additional conformance levels add complication, but they also simplify instructions to a buyer from a print service provider, and enable creation tool vendors to offer clearer and simpler user interfaces (just choose “PDF/X-4” or “PDF/X-4o” as opposed to “PDF/X-4 with mutually exclusive optional content variants” or “PDF/X-4 with flexible access to optional content groups”).

Clearly, all of the requests could be addressed by producing a new PDF/X standard, possibly based on ISO 32000-2. It’s unlikely that such a standard would be available for at least 2-3 years, however, and it seems likely that an amendment to PDF/X-4 could deliver the support for flexible optional content configuration requested by the GWG more rapidly.

The solution to the spot colour data requests would appear to be more involved than for optional content. It would ideally require cooperation with TC171/SC2/WG8 for ISO 32000, and raises the possibility of changes to the PDF rendering model. The committee’s initial assessment was, therefore, that it would be inappropriate to try to include that in an amendment, but to define a new PDF/X standard to address that.

Therefore, the committee's outline plan is to develop two or three work items:

- a) An amendment to ISO 15930-7 (PDF/X-4) to address the optional content issues. Minor errors would also be addressed in this.
- b) An amendment to ISO 15930-8 (PDF/X-5) to take advantage of the PDF/X-4 amendment, if it is felt to be required based on the changes made in PDF/X-4.
- c) A new PDF/X standard to address the spot colour requirements. That might be based on ISO 32000-2, and therefore be able to inherit BPC and multiple output intents.

Action Item 09-03: Bailey will prepare a letter to WG2, WG2/TF2 and the GWG describing the potential for an amendment to PDF/X-4; either to change OCGs in PDF/X-4 or to add a new conformance level. That letter should mention additional minor errata to be covered in that amendment and a future standard to address spot colour data. It will request feedback and propose discussion on the PDF/X revision Yahoo group (http://groups.yahoo.com/group/pdfx_revision).

Action item 09-04: Abbott will distribute that letter to WG2, WG2/TF2 and the GWG.

5. Other business

Bailey confirmed to the task force that he is stepping down as chair. Nominations for a new chair should be submitted to David McDowell as convenor of WG2.

The committee unanimously:

RESOLVED, that it thanks Martin Bailey for his long-standing and excellent leadership of TC130/WG2/TF2.

6. Date/location of next meeting

TF2 will meet for 2 days at the autumn 2009 TC130 meeting in Beijing. The TC 130 Secretary will be asked to schedule the meetings to begin no earlier than Wednesday. If necessary 1½ days may be enough, such as ½ day Wednesday and a full day Thursday.

7. Adjournment

The committee thanked NPES for hosting the meeting and dinner. They also thanked NPES and IDEAlliance for providing lunch, and Mrs. Abbott for her invaluable assistance in developing the PDF/X standards over many years.

There being no further business, the meeting was adjourned.