PDF/X Output Intents

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2. Output Intent

Whenever a document that will be printed is created, the designer should have a specific printing condition in mind so that images and specific tints such as those in logos can be correctly prepared. The idea of a printing condition encapsulates both the print technology to be used (sheet or web offset, flexo, gravure, etc), and the media that it will be printed on. It therefore includes data about tone value increase (TVI, or dot gain) and total area coverage (TAC), as well as the actual color that will be printed for any combination of the process inks. Common printing conditions include SWOP (CGATS TR001), Fogra27, etc.

If that document is submitted for printing as a PDF/X file the intended printing condition must be recorded in the file as an “output intent” structure.

An output intent contains a number of different pieces of information, of which the most important are:

2.1. Output condition identifier

The name of the output condition is defined by the “output condition identifier”. This name is often used to guide automatic processing of the file, or to inform the default settings in interactive applications. It should therefore be set carefully to ensure that it can be read unambiguously by applications.

2.2. ICC color profile

Under some circumstances the PDF/X output intent must include an ICC profile. It is required if the file includes any colors that are defined in device independent color spaces (such as ICC-tagged, or Lab). It is also required if the printing condition is not a standard one, included in the registry maintained by the ICC.

3. Usage of Output Intents

The output intent can be used for a variety of things:

3.1. Pre-flight

It clearly defines the printing condition for which the PDF/X file was created. That means it can be used in pre-flight by a printer or publisher to identify files that may cause problems in production because they have been prepared for the wrong printing condition. This is the primary use for output intents in PDF/X-1a files.

3.2. Proofing

The profile embedded in the output intent can be used as the emulation or simulation target for proofing. A proof produced in this way is likely to be a reasonable representation of the way that the print buyer saw colors in the file, and a comparison with a proof produced to emulate the printer's press can help to identify the cause of color difference problems.

3.3. Device-independent colors

If the file contains device independent colors, the embedded profile provides data defining how tone scale & gamut compression, black generation and undercolor removal should be performed.

This approach provides all the information required to ensure that the file can be printed consistently, even when device independent color data is used. In a sense, it means that all device independent data can be regarded as "virtual CMYK".

One consequence, however, is that two documents created for the same print condition may contain different ICC profiles. As an example, an advertisement may include a large, high-key image supplied as tagged RGB, and the creator may have deliberately selected a profile that uses very little black generation, so that it prints with a very short black, ensuring that the image does not print with a visible edge between black-only areas and other areas printed with CMYK rosettes. A second advertisement on the same page may have been created using a widely available 'general' profile for the same printing condition, one that deliberately selects a long black, or one that was created with a different profile making tool because the designer preferred the gamut compression approach used by that tool. An application that is used to render or color manage the file must therefore apply the appropriate profile for each advertisement individually.