

Main Focus

The colourful world of print – Standards at your service

by Dr. Uwe Bertholdt, Chair of ISO/TC 130, Graphic technology

Suppose that you are assigned the organization of a comprehensive media presentation for a new product to be launched worldwide. Not only are you expected to prepare the content and plan the campaign, but also to develop manuals, packages and advertising, select the media and manage all activities.

Media usage patterns for different regional markets and age groups can be found from media analyses. You might choose to spend locally, but nonetheless the entire media mix would normally be used. According to recent surveys, 72% of all consumers – regardless of age – read printed magazines.¹⁾ And the share of printed advertisements exceeds 45% of the total advertising market.²⁾

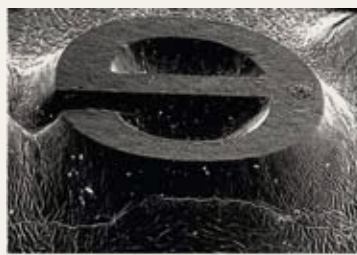
Since paper-bound information is still regarded as more reliable and often more convenient than online advertisements or the increasingly prevalent PDF documents, you would probably decide to use a significant share of the budget for printed matter.

A more detailed insight into the world of print shows that:

- The world print market was USD 610 billion in 2006 and forecast to grow to USD 721 billion in 2011
- China, Germany, Japan, United Kingdom and USA are and will be the top five players in that market, while China, India, Russia, Ukraine and Venezuela show the strongest growth.³⁾

Supporting your print job

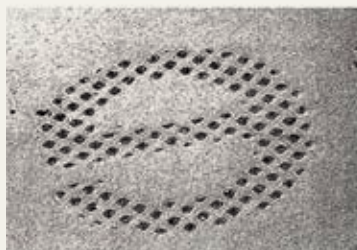
Such an international industry requires globally harmonized procedures and specifications, and it is for this reason that technical committee ISO/TC 130, *Graphic technology*, was created back in 1969. ISO/TC 130 is dedicated to developing International Standards for the benefit of the graphic arts industry.



Printing forme Letterpress



Printing forme Lithography



Printing forme Gravure



Printing forme Screen

Figure 1 – REM images of printing formes for different printing processes.

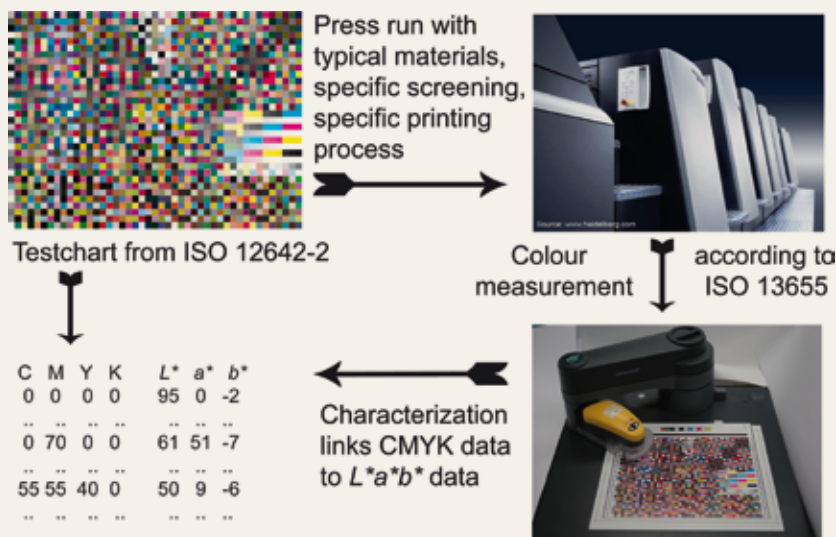


Figure 2 – Generation of characterization data.

These standards will be used to support the production of your print jobs in two ways: by making the work of the individual units of the production chain reproducible, and by defining interface requirements between them.

For example, using the standardized terms of the multipart standard ISO 12637 on vocabulary will ensure unambiguous communication within the value chain.

The characteristics of cameras and scanners are specified in ISO 12641:1997, *Graphic technology – Prepress digital data exchange – Colour targets for input scanner calibration*, while monitors are addressed in ISO 12646:2008, *Graphic technology – Displays for colour proofing – Characteristics and viewing conditions*.

The characterization of the colour reproduction capabilities for the various printing methods (lithographic, flexographic, gravure, screen or digital printing) is supported visually by the multipart standard ISO 12640 and colorimetrically by the two-part ISO 12642.

Throughout the process chain, colour reproduction quality must be checked, evaluated and adjusted. This can be performed both visually and colorimetrically.

1) "Are You Ready for the Future of Media?" *State of the Media Democracy Survey*, 2007, Deloitte.

2) *Online Advertising Spending Report*, 2007, Tomorrow Focus AG.

3) *World Wide Market for Print*, 2007, Pira International Ltd.

ly. The standard, ISO 3664:2000, *Viewing conditions – Graphic technology and photography*, defines specific illumination and visual evaluation conditions. Another standard, ISO 13655:1996, *Graphic technology – Spectral measurement and colorimetric computation for graphic arts images*, describes the requirements for colorimeters and the measuring conditions for colour measurement.

Moving through the prepress stage

The different printing conditions (as characterized by both the process and substrate) possess individual colour gamuts, which differ from those of cameras and monitors. To ensure visually consistent colour transformation to printed pictures, colour management procedures as defined in ISO 15076-1:2005 – a joint development with the International Colour Consortium – have to be applied. The final data should be in PDF/X files with embedded formats and fonts.

If all details of the printing conditions are known in advance, ISO 15930-4:2003 – one of the series of standards on prepress digital data exchange using PDF, in this case PDF/X-1a – may be applied. If the final data preparation is left to the printer, files compatible with ISO 15930-6:2003 (PDF/X-3) or ISO 15930-7:2008 (PDF/X-4) should be delivered. If variable data are to be exchanged, ISO 16612-1:2005 should

be implemented. If all information that is necessary is already available at the prepress stage, then ISO 12639:2004 (Tag image file format for image technology – TIFF/IT) may be used as the file format for direct preparation of printing formes. This standard adapts the TIFF format for use in the graphic arts.

The prepress stage of your job usually terminates with the delivery of colour reliable (contract) proof prints as

in the multipart standard ISO 2846. For the laboratory testing of these and other inks, test print procedures are given in the multipart standard ISO 2834, and additional testing methods are defined in ISO 2836:2004 (resistance against various agents), ISO 12040:1997 (resistance against light), ISO 12634:1996 (tackiness) and ISO 12644:1996 (rheology).

The process control and colorimetric aims of the printing processes them-

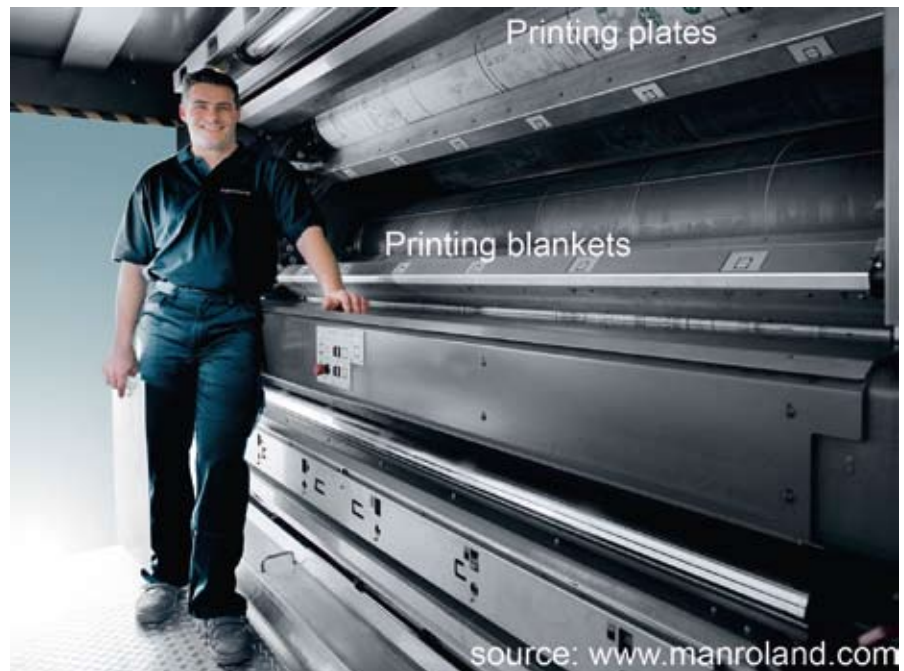


Figure 3 – News press printing unit.

the means to simulate the final printed job. If these are printed digitally, ISO 12647-7:2007, addressing proofing processes working directly from digital data, needs to be applied.

Getting ready for production

In a traditional printing method, the printing formes have to be produced after the digital information has been prepared. For the most popular lithographic printing process, the printing plates specified by ISO 12635:2008 should be prepared in accordance with ISO 12218:1997 (process control, offset plate making) and ISO 11084-2:2006 (register pin systems for plate making).

Additional consumables are blankets for offset printing, specified in ISO 12636, and printing inks. The colours of the four-colour printing ink sets are defined

selves are specified by the multipart standard ISO 12647. This primarily defines the interface between prepress and production, but also provides guidance for the press run. The standards ISO 14981 and ISO 13656, both published in 2000, help to control the achievement of the process control goals by densitometry and colour measurement. Aspects of work safety are the focus of the multipart standard ISO 12643.

High-quality result

The aim of standardization efforts in print is to ensure a consistent, reliable and repeatable quality of printed work, independent of the time and location of the various parts of the print production chain. So, in the context of your assignment, this will also help you to use high-quality printed matter to support your products worldwide. ■

About the author



Dr. Uwe Bertholdt is the Chair of ISO/TC 130, *Graphic Technology*, and the Convenor of its working group WG 4, *Media and Materials*.

Dr. Bertholdt spent almost six years as the technical manager of a small German ink manufacturer and is today the head of the Materials Department of Fogra Graphic Technology Research Association, the research institute based in Munich, Germany. His main focus is the interaction of ink and paper.