

# **Standards for document definition, communication and printing**

Recent developments

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# ISO TC130: Graphic technology

- Formal structure (see [www.iso.org](http://www.iso.org))
  - Secretary: Cord Wischhoefer (DIN)
  - Chair: Uwe Berthold of Fogra institute (Germany)
  - Participants: *Germany, Austria, Belgium, Brazil, China, Finland, France, Italy, Japan, Netherlands, Russian Federation, Spain, Sweden, Switzerland, Thailand, USA, Ukraine, United Kingdom*
  - Observers: *20 additional countries*
- Two meeting held each year:
  - First quarter meeting in Paris, France
  - Third quarter meeting in Amsterdam, Holland

# UK TC130 Technical Advisory Group

- Standards for print are the responsibility of ISO Technical Committee 130 (Graphic Technology)
- In the UK an ad hoc group was formed in 2006 to provide a point of contact between the ISO TC130 activities and UK groups and experts
- A part of the BSi PAI 43 group that mirrors ISO TC130
- Face to face meetings planned just before and just after ISO meetings
- Email discussion group:  
<http://groups.google.com/group/UK-TC130-TAG>

# Standardised print workflow

## Document design

- designer selects printing condition (ICC profile) and can see approximate colour result

## ICC profile

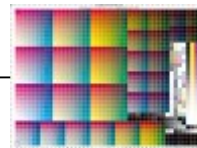
- basis for colour in most graphic arts image and document preparation applications

## Characterisation data

- CMYK to CIE Lab map
- data registration at [www.color.org/chardata](http://www.color.org/chardata)
- Europe, US and Japan data

## Printing condition

- typical printing press
- standard inks and solid ink colour aim
- standard paper type



## PDF/X document

- 'blind exchange' format
- family of standards

## Document proof

- monitor or print proof
- proof certification

## Proof approval

- who approved
- viewing conditions

## Actual printing

- press calibration
- proof to print comparison

# ISO TC130 working groups

- WG 1: Terminology
- WG 2: Prepress data exchange
- WG 3: Process control and related metrology
- WG 4: Media and materials
- WG 5: Ergonomics - Safety
- WG 6: Certified reference materials (with TC42)
- WG 7: Colour management (with ICC)
- Joint Working Groups with ISO TC 42: Photography

- Paper standardisation activity
  - originally a joint activity with ICC to identify a set of key parameters that could be measured to help identify whether two papers would have similar printing characteristics
  - joint working group with ISO TC6 (Paper, board and pulps) and involvement of industry groups (fogra, IDEAlliance, UPM...)
  - this is now considered an urgent matter by paper manufacturers as many buyers are demanding a solution

# WG3: Process control and related metrology

- ISO 12647-7: Proofing standard published
  - extension proposed for digital press
- ISO 12647: Review of series of standards
  - Changes proposed to reflect changing approach to print standardisation
- ISO 10128: Press calibration
  - tone value increase curves
  - near neutral scale
  - ICC device link profiles
- ISO 12646: Displays for colour proofing
  - Proposal to define new soft proof ‘certification’ standard
- Proposal to define an overall print certification methodology

# WG 2: Prepress data exchange

- ISO 15930: PDF/X-4 and PDF/X-5
  - PDF/X-4 based on PDF 1.6 supports live transparency and optional content groups
  - PDF/X-5 allows some content to be held externally
- ISO 16612: PDF/VT
  - variable and transactional data printing based on PDF/X
- ISO 28178: Colour exchange format
- ISO 12640: Standard Colour Image Data (SCID)
  - print (CMYK), monitor (sRGB, AdobeRGB), scene
- **New standard proposal for proof approval record**



# Calibration using tone value increase (TVI)

## Step 1: match solid ink densities

Reference press 

Actual press 

- Select inks (and paper type) to match those used on the reference press (ISO 12647).
- Adjust press ink key settings to ensure that  $L^*a^*b^*$  measurements of the solid patches are close to those achieved on the reference press.

## Step 3: print using plate curves

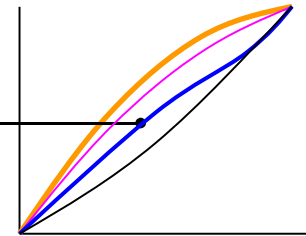
- Monitor solid ink density.
- If needed adjust solid ink density in order to ensure that an acceptable print is achieved.

## Step 2: create plate curves

Reference press



Actual press



- Measure TVI for actual press for each primary scale and compare with the reference.
- Calculate plate curves for primary scales so that the actual press matches the reference.



# Calibration using neutral print density (NPD)

## Step 1: match solid ink densities

Reference press 

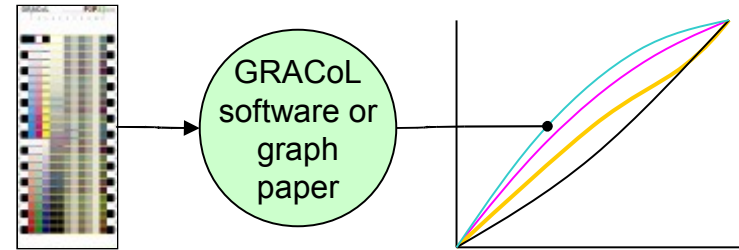
Actual press 

- Select inks (and paper type) to match those used on the reference press (ISO 12647).
- Adjust press ink key settings to ensure that  $L^*a^*b^*$  measurements of the solid patches are close to those achieved on the reference press.

## Step 3: print using plate curves

- Monitor mid-tone grey patch.
- If needed adjust solid ink density in order to ensure good grey balance. When printing to a standard ensure that when adjusted grey balance remains within tolerance.

## Step 2: create plate curves



- Print and measure GRACoL grey balance chart.
- Use GRACoL compliant software or graph paper to calculate plate curves that will ensure neutral balance of CMY scale (and possibly matching black tone scale).

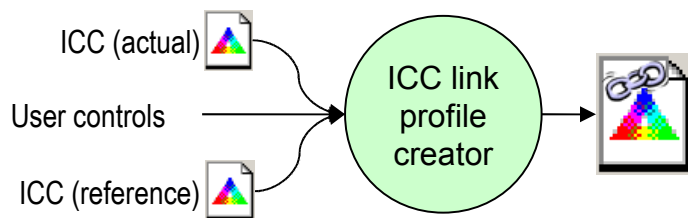


# Calibration using ICC profiles

## Step 1: set repeatable printing condition

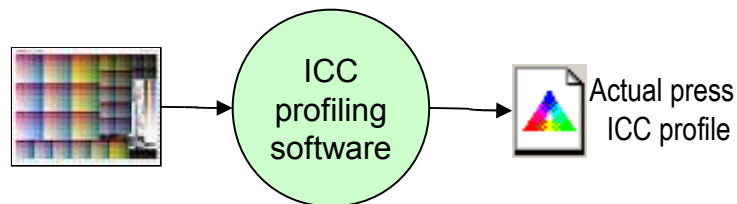
- Select inks and paper – this method supports the use of custom paper and inks.
- Perform a first stage calibration using TVI or grey balance method **OR** set repeatable printing (for example using 'linear' plates).

## Step 3: create ICC device link profile



- Use reference printing condition profile and press profile.
- Select additional user controls to be used when generating link profile (preserve primaries, TAC etc).

## Step 2: create ICC profile for press

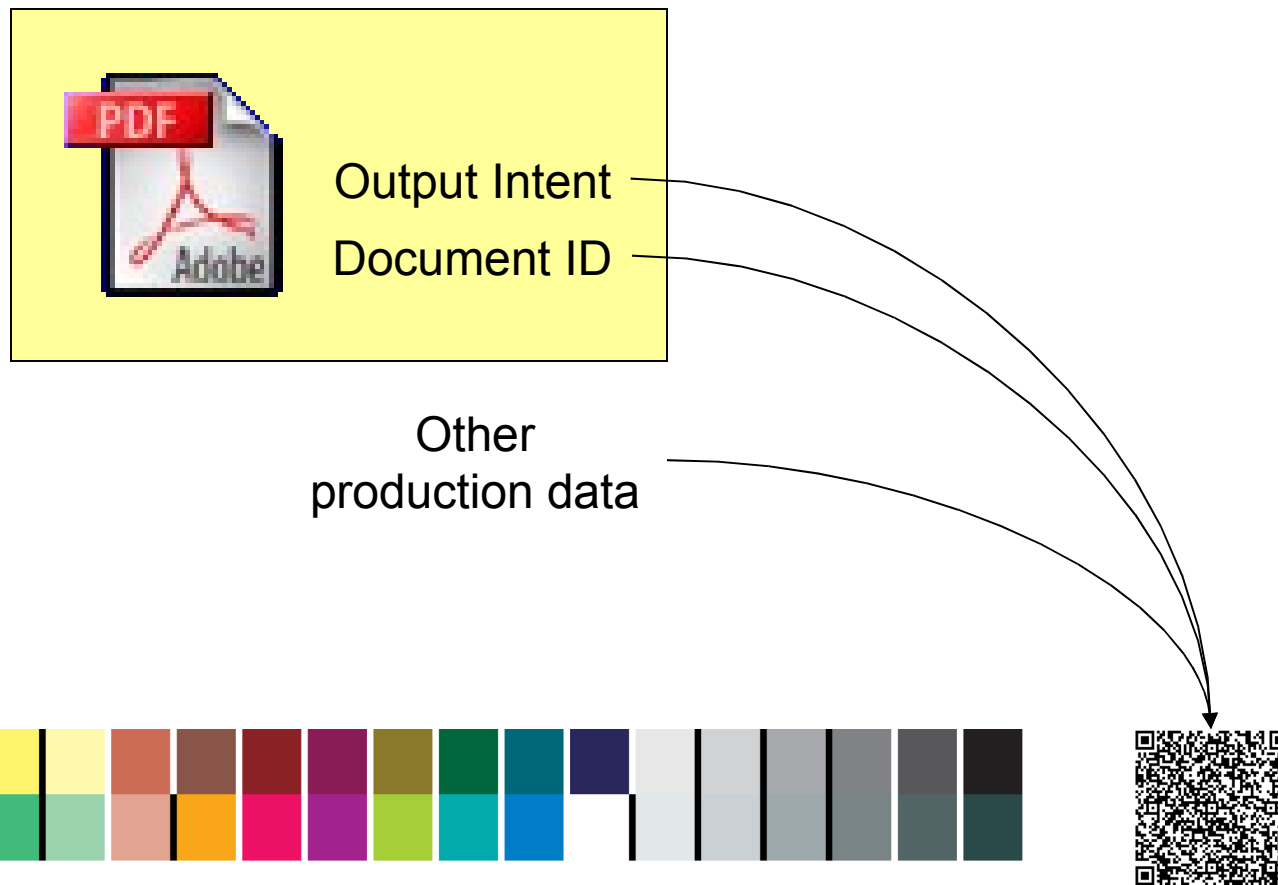


- Print and measure profiling chart – ideally averaged from multiple sheets.
- Create actual press ICC profile using profiling software.

## Step 4: Apply ICC device link profile before making plates (or cylinders)

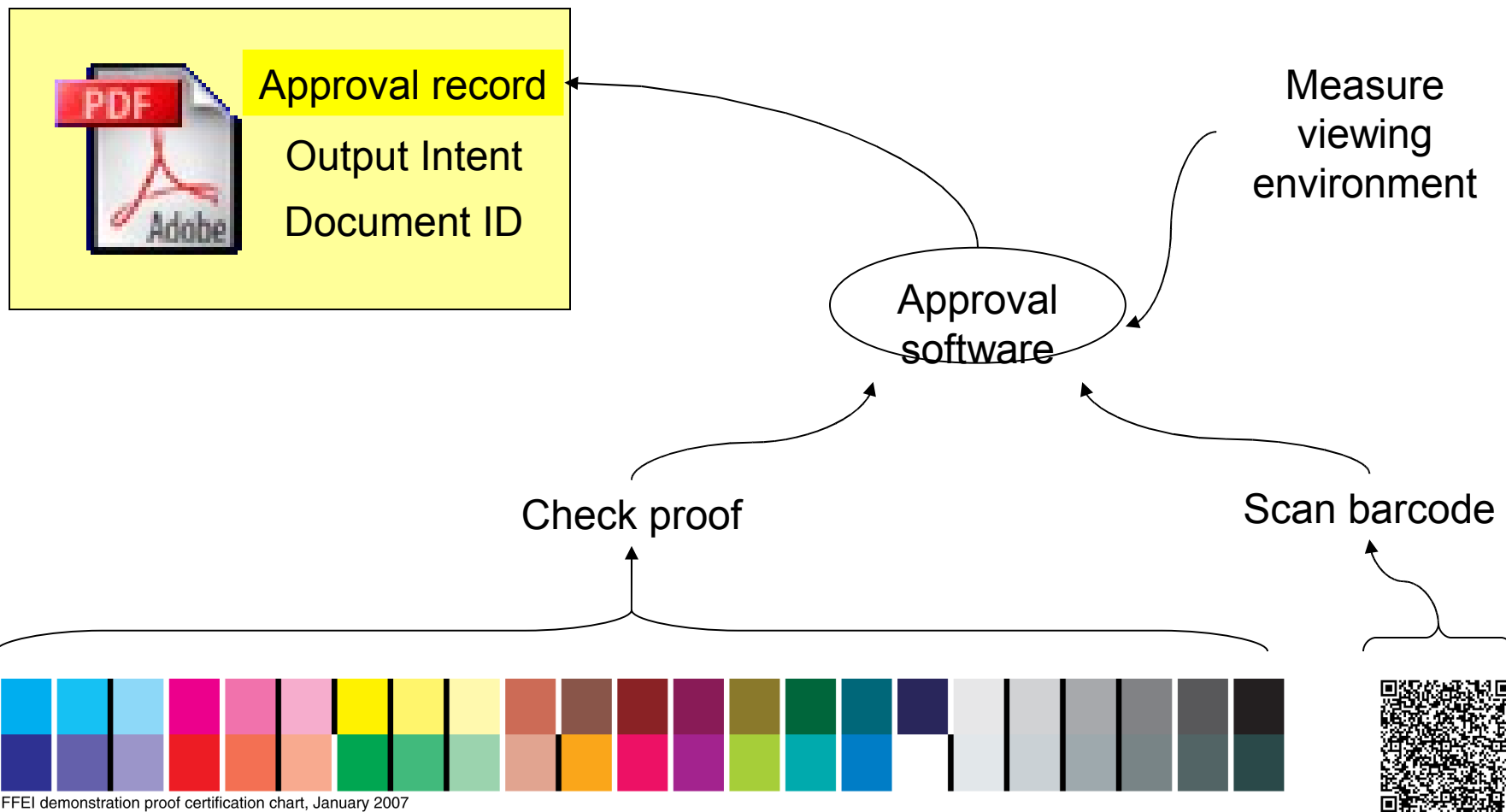
- Ensure press remains calibrated according to the first stage calibration choice in step 1.
- For each job use the device link profile to create separations.
- If needed adjust solid ink density in order to ensure good printed result.

# Hard copy approval: printing



FFEI demonstration proof certification chart, January 2007

# Hard copy approval: approval



FFEI demonstration proof certification chart, January 2007

Questions?