



The new ISO 19302

Colour conformity of printing workflows

Bruno Mortara, Ph.D. WG13 convenor



TC130 – Graphic Technology - WG13

Printing conformity assessment requirements

- ISO 19301, ISO 19302 and ISO 19303-1 are published
- China, Brazil, USA, Italy, Danmark, UK and France are members participants
- With help from TF3 we maintain a list of certified printing companies around the world



ISO 19302 is in revision

Workflow centric

- Printed colour reproduction quality depends on printing workflow operation
- Printing workflow operation is made up of:
 - Colour definition (what colour to specify)
 - Process colour reproduction requirements (what to control)
 - Colour conformity (verify the outcome of the process)

ISO 19302

Workflow centric

- a) conditions and test methods for file generation conformity
- b) conditions and test methods for file colour separation conformity
- c) conditions and test methods for spot colour and/or composite colour conformity
- d) conditions and test methods for soft proofing conformity
- e) conditions and test methods for hard proofing conformity
- f) conditions and test methods for viewing conditions conformity
- g) conditions and test methods for the evaluation of process, print and colour conformity with respect to specified Reference Printing Conditions (RPCs)

19302

2 fundamental terms

reference printing condition

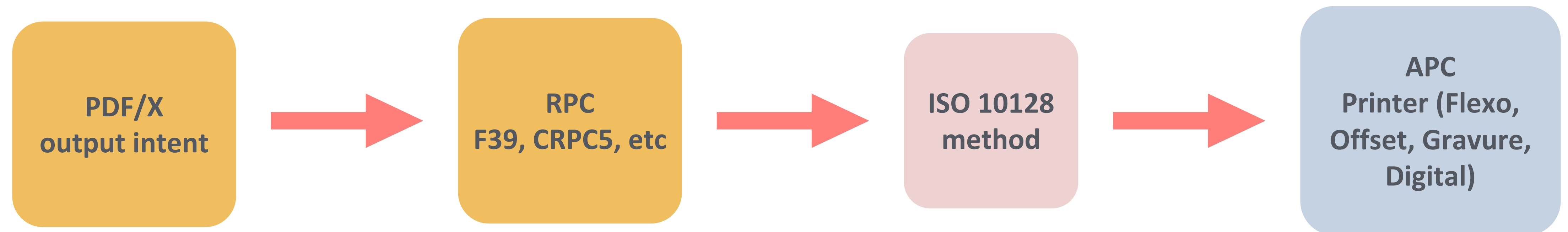
RPC

aim printing condition for the job

actual printing condition

APC

printing condition of the actual printing device or printing process



Printing workflow requirements

Colors definition in file

- PDF/X-4 or PDF/X-4p
- Sometime in future PDF/X-6n (**NEW**)
- Spot colors defined colorimetrically or spectrally
 - CxF/X-4 using SCTV for halftone and MI for assessment (**NEW**)
- N-colors provision:
 - No provision for embed n-profiles in PDF
 - So, PDF/X-4p or PDF/X-6p

Job
colour definition

Design
PDF generation,
proofing



Printing workflow requirements

Prepress

- Prepress
 - Adapting Reference Printing (RPC) condition to Actual Printing Condition (APC) by ISO 10128 methods?
 - ISO 10128 is not prepared for multicolor conversion (**NEW**)
 - Printing form preparation
 - Process control (printing device control/calibration **without** a 12647 part for Multicolor!) (**ISSUE**)



Printing workflow requirements

Printing colour conformity

- Data set conformity shall address the following:
 - Need for new datasets, with various processes, substrates, inks, F55, APTEC Coated (**NEW**)
 - Dataset shall be public to become Reference Printing Condition (**NEW**)
 - Challenge: RPC with known Datasets should preferably come **AFTER**:
 - 1) definition of inks (ISO 2846, ISO 19313 and one for Flexo?)
 - 2) **AFTER** standard for print control, aka ISO 12647 part

Printing workflow requirements

Printing colour conformity

- Data set conformity shall address the following:
 - colour deviation: Δ between aims values and measured values
 - colour deviation for Spots: how much is a **good** tolerance?
 - within-sheet uniformity: deviation between different patches with the same device or colour values
 - colour variation: tolerances for variation of the printing process during the production run

Printing workflow requirements

Printing colour conformity

- Schemas for ranking CMYK (+ Spot)
 - Process colour reproduction (based on ISO 12647-2:2013)
 - Product colour conformance with levels (based on CGATS TR016:2014)
 - Suggested Color Control
 - We need **NEW** schemas or additions for **converted Spot Colors**

Printing workflow requirements

Product colour conformity

- Sampling schemas:
 - size of production to sample
 - expected quality level and tolerances
 - printing process capability related to purchaser requirements
- Sampling can be normal, relaxed or stringent depending on:
 - printing process stability
 - criticality of defect
 - accepted error rate

Printing workflow requirements

Challenges for CMYKOGV

- Lack of public datasets CMYKOGV
- Primary colors CMYKOGV CIELAB (ΔE_{00}) acceptance tolerance (**NEW**)
- Converted Spot color CIELAB (ΔE_{00}) acceptance tolerance (**NEW**)
- Converted Spot color MI: Metamerism Index (Illuminants? D50+?) (**NEW**)
- Disturbance in CMYK behavior with 7 colors (Process control, color sequence) (**NEW**)
- AM+FM, AM+Hybrid or all FM? legislate or not? (**NEW**)



Thank You!

Bruno Mortara, Ph.D. TC130/WG13 convenor

