From spectral data to SCTV

Unlock the potential of ECG

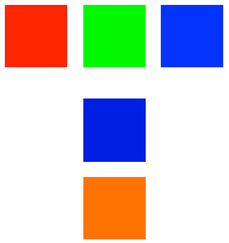
Yan Wei Phin
Head of Sales APAC
yan.weiphin@gmgcolor.com

Apple Ecosystem

Color Ecosystem

proof it

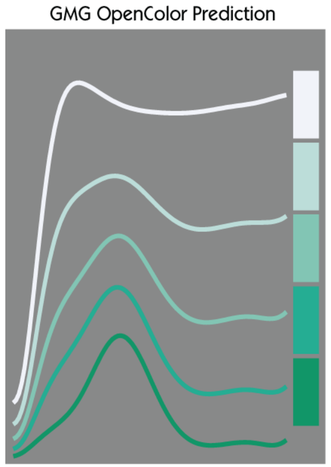
view it, edit it



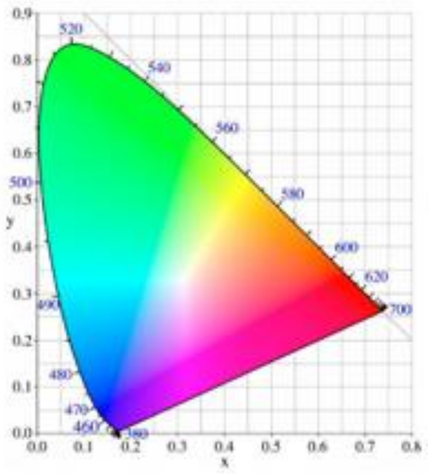
spectral data

convert it

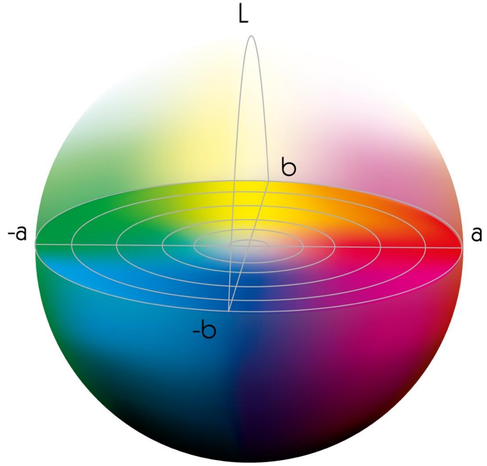
Why is spectral data better than Lab values?



Spectral Data



XYZ Values

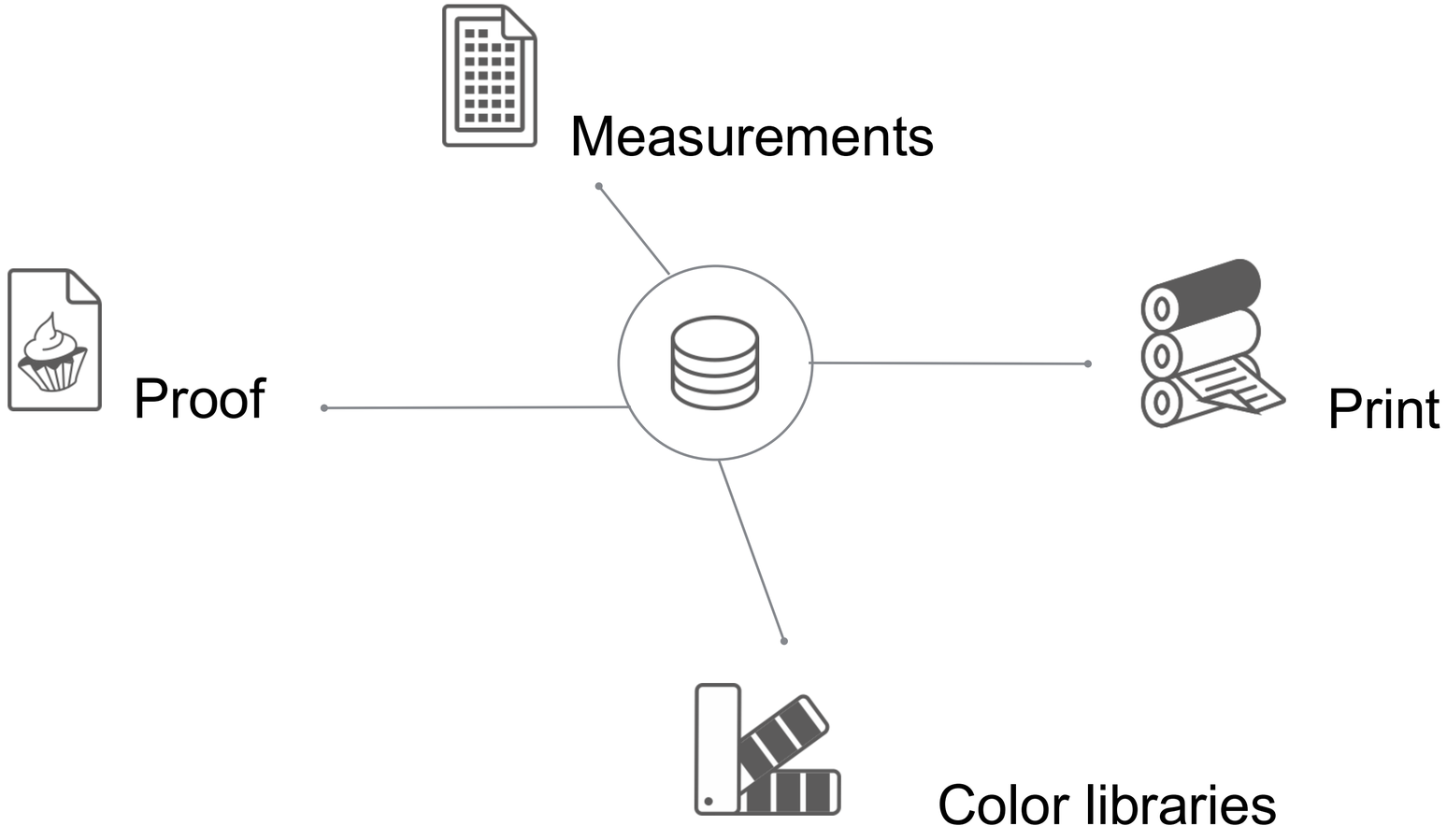


Lab Values

data loss

data loss

Spectral data

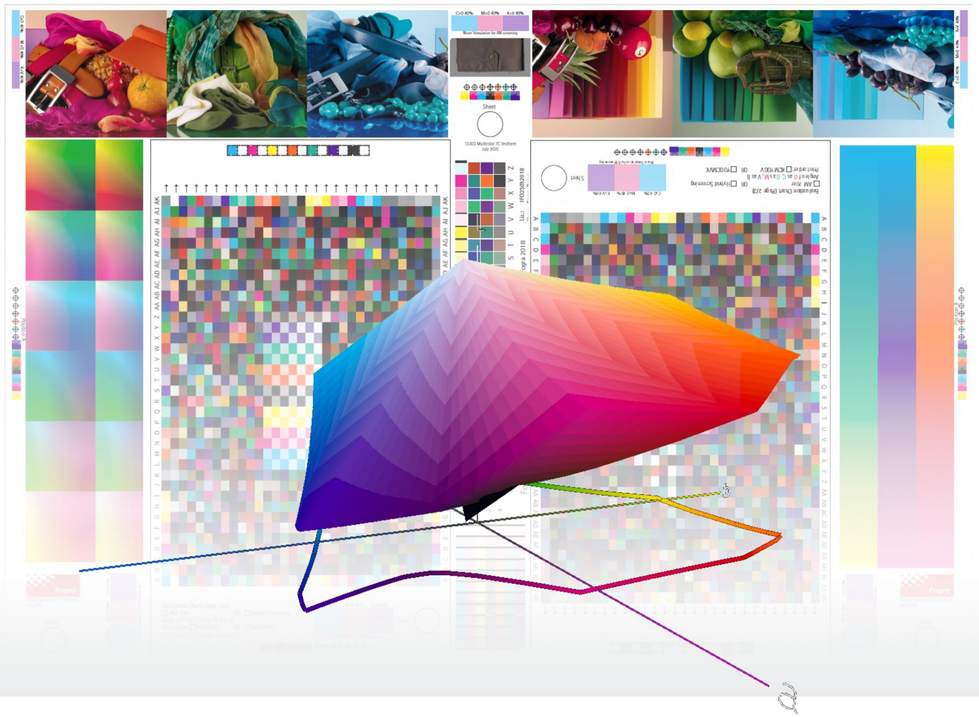


Implementation of ECG

characterization
calibration
conversion
control

1. Characterization

- using Fogra51 as based reference of CMYK, and OGV with SCTV
- using of Pantone ECG Guide, too bad, discontinued.
- alternative Colorbook
- separation analysis, to go or not to go

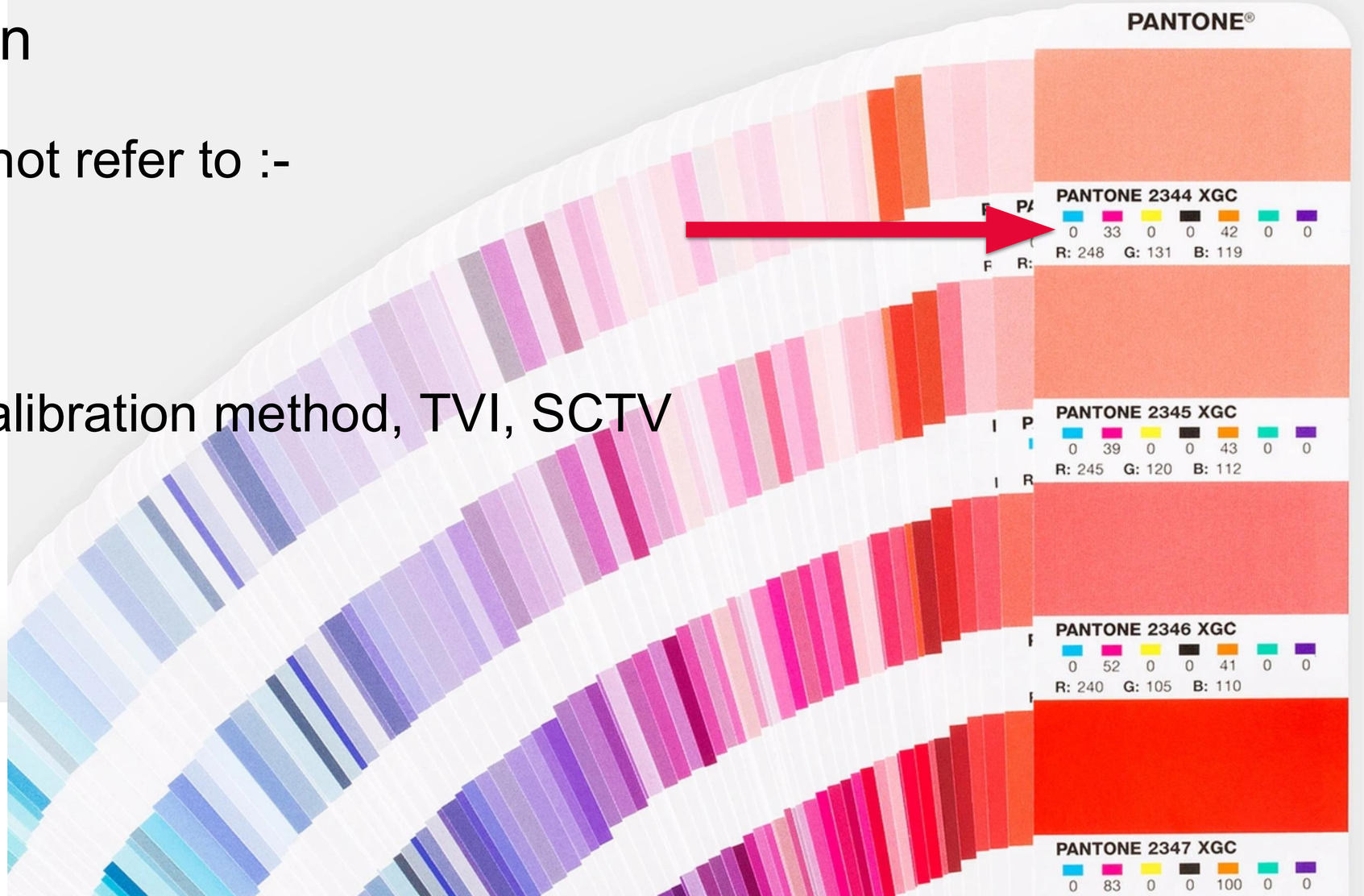


Pantone Extended Color Gamut Guide

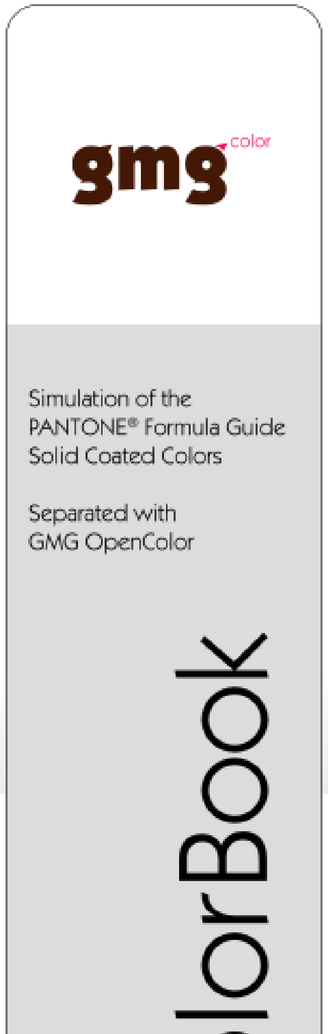
- product discontinued
- Separation table is not accurate anyway
- need to find a replacement

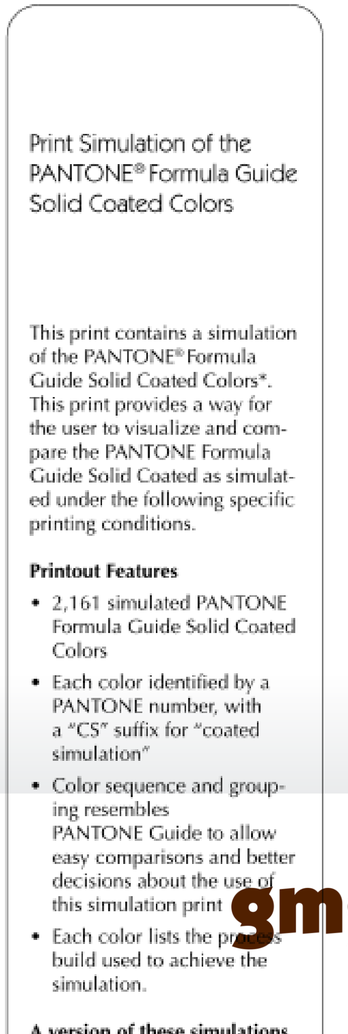
No Clear definition

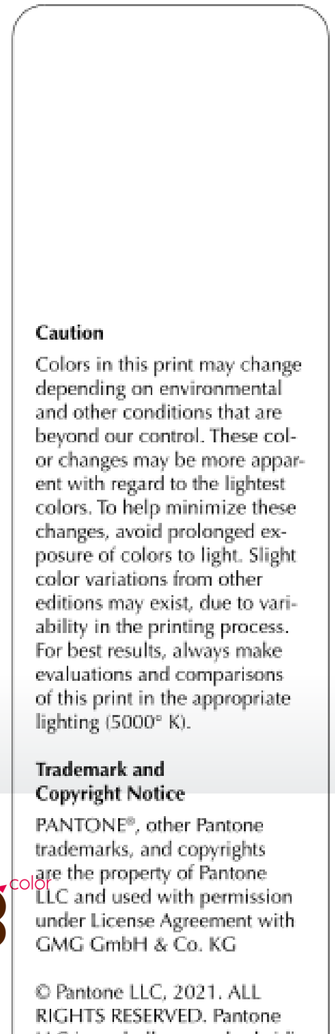
- separation table not refer to :-
- ink type
- substrate
- print process
- no clear define calibration method, TVI, SCTV

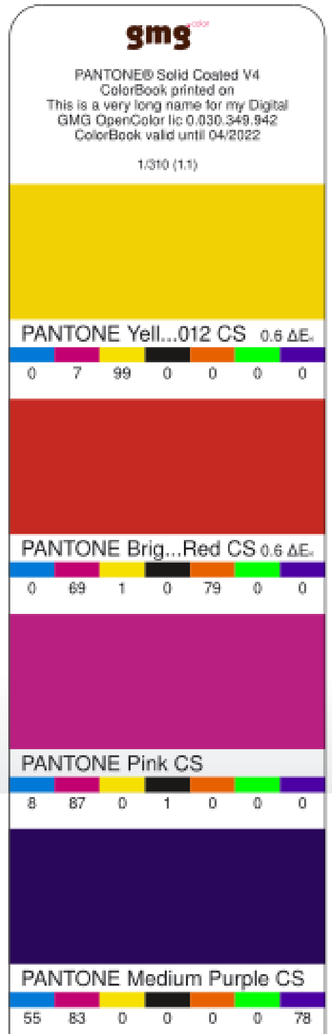


Alternative to Pantone Book - ColorBook

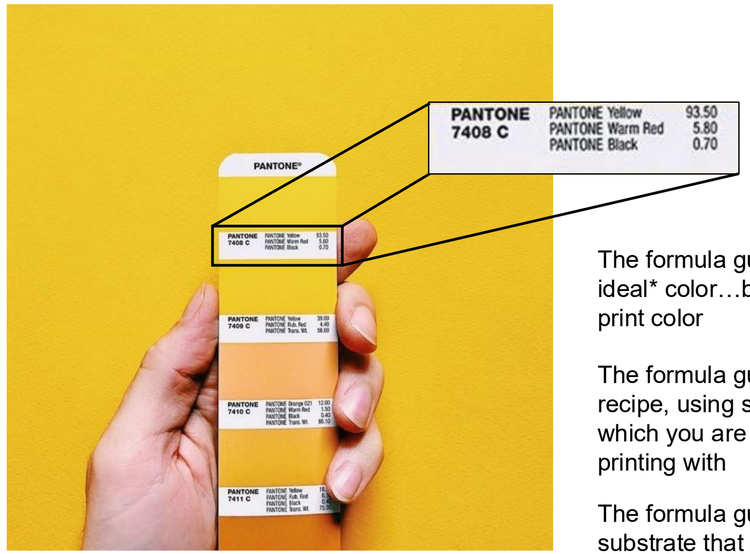








It looks a lot like a Pantone Formula Guide. Chances are, printers and brands are familiar with these guides



* Pantone Formula Guides are frequently used to set color expectations but are intended for use only as “guides, not references”

The formula guide shows the ideal* color…but not the expected print color

The formula guide shows a color recipe, using special Pantone inks, which you are probably not printing with

The formula guide is printed on substrate that is most likely different than the substrate you are printing on.

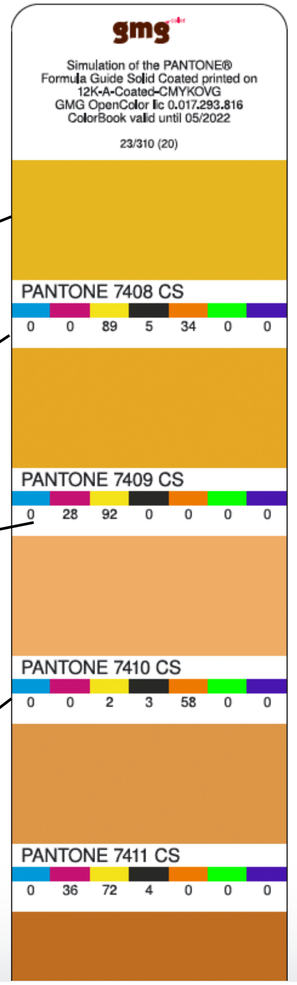
But, it’s different.

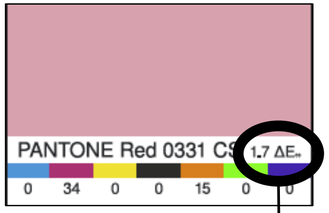
GMG ColorBook shows the color your are going to print because… well… you just printed it!

GMG ColorBook shows the exact ink combination (color separation) used to reproduce the spot color

GMG ColorBook is printed on the actual production substrate, so you can see how color will look relative to the real paper white point

GMG ColorBook is printed with actual production inks (yes… those are the real ink colors)





If the spot color reference color value* is out of gamut, GMG ColorBook tells you… and by how much.

*Pantone Solid Coated V4 digital reference color libraries are published by Pantone®.

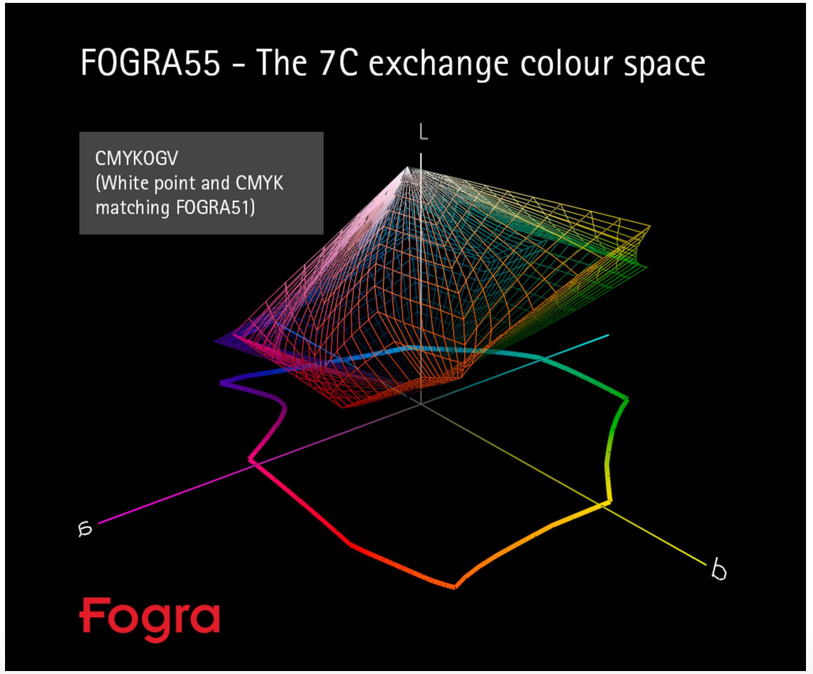
Note: GMG ColorBook uses DE-2000, which is the best practice for expressing color difference

Psst...

By the way… you can make GMG ColorBooks for both Pantone Coated and custom spot color libraries

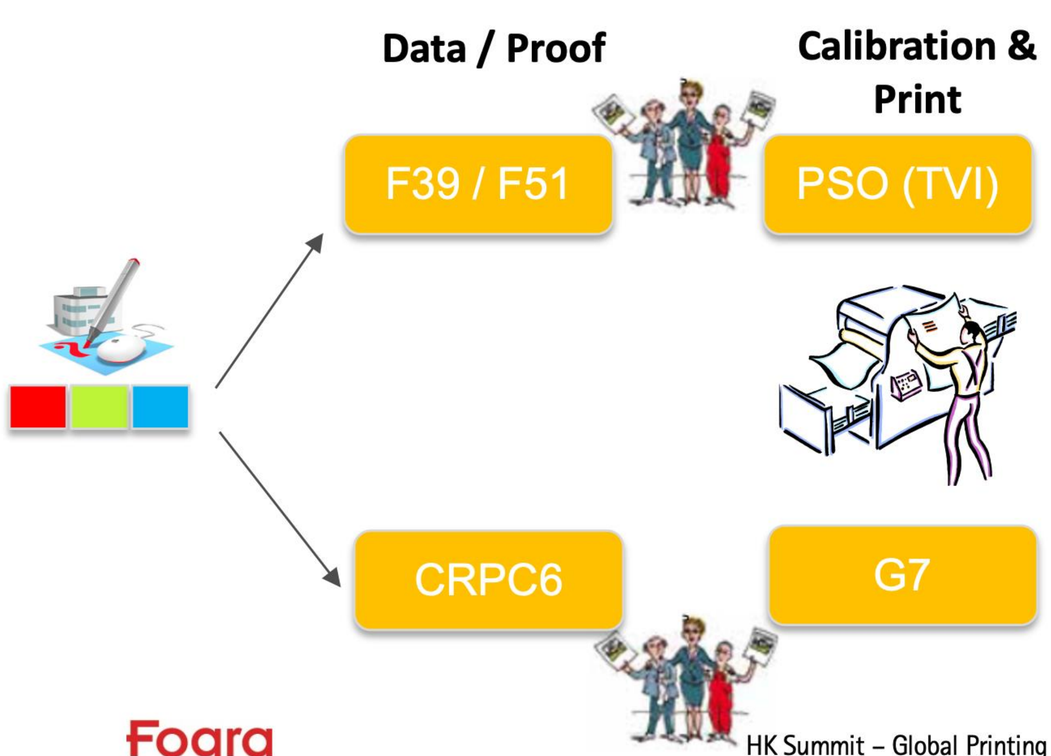
2. Calibration

- aligning the press and proof towards industry standard, example FOGRA55
- calibration process with SCTV method for better handling on spotcolor
- proof-press alignment with spectral data calibration to match each other

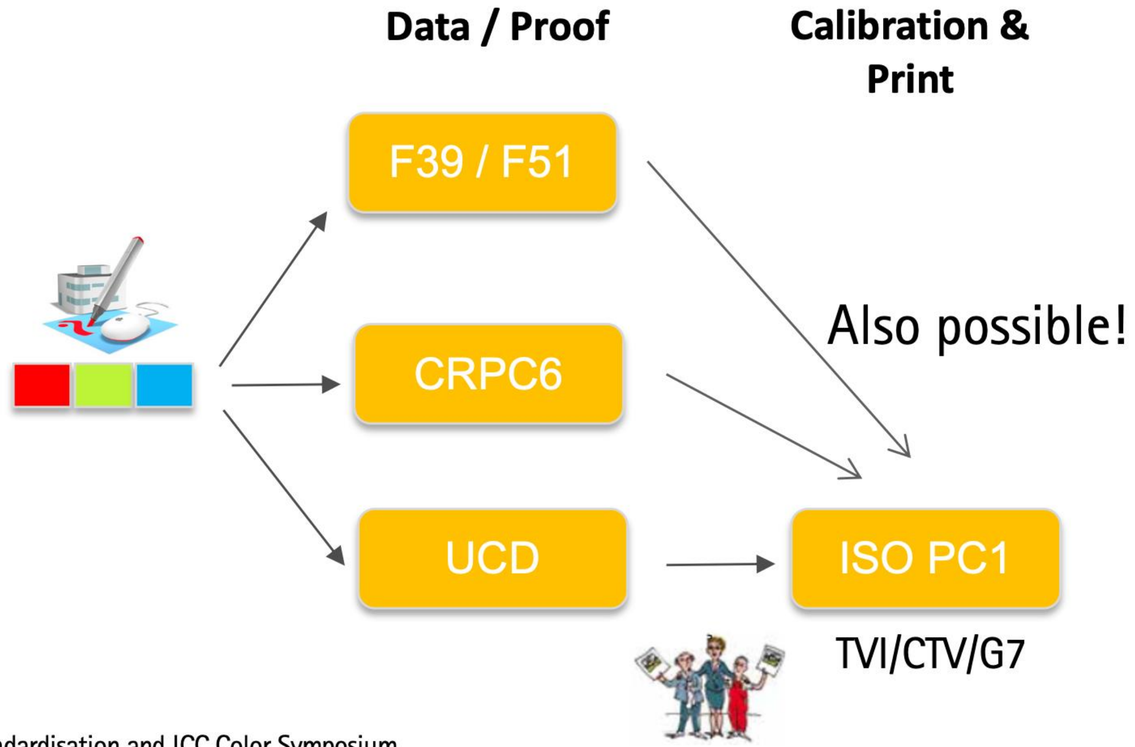


PrintService Provider can serve „both worlds“

Workflow – Today



Workflow – Tomorrow

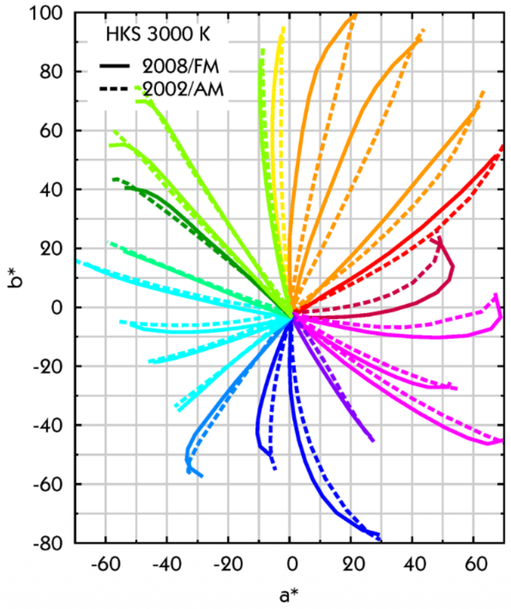


Facts when reproducing spot colours

Influence on screening

Influence of screening (1)

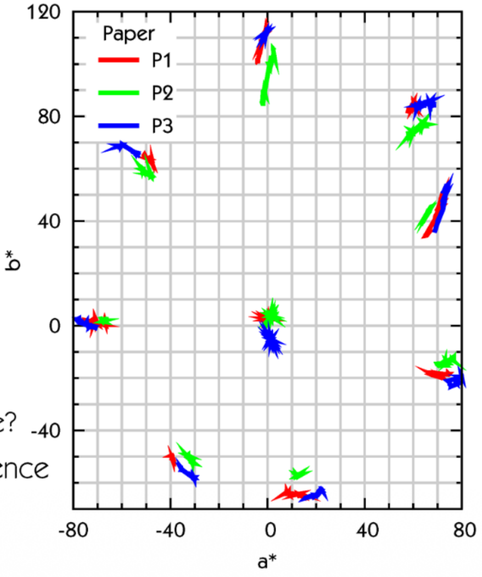
- HKS 3000 K swatchbook, measured tints
  - old (2002): AM screen
  - new (2008): FM screen
- All kinds of differences
  - sometimes small…
  - sometimes up to 10 ΔE
  - mainly in hue angle h*
  - difference in L* is not shown here



Effect on substrate

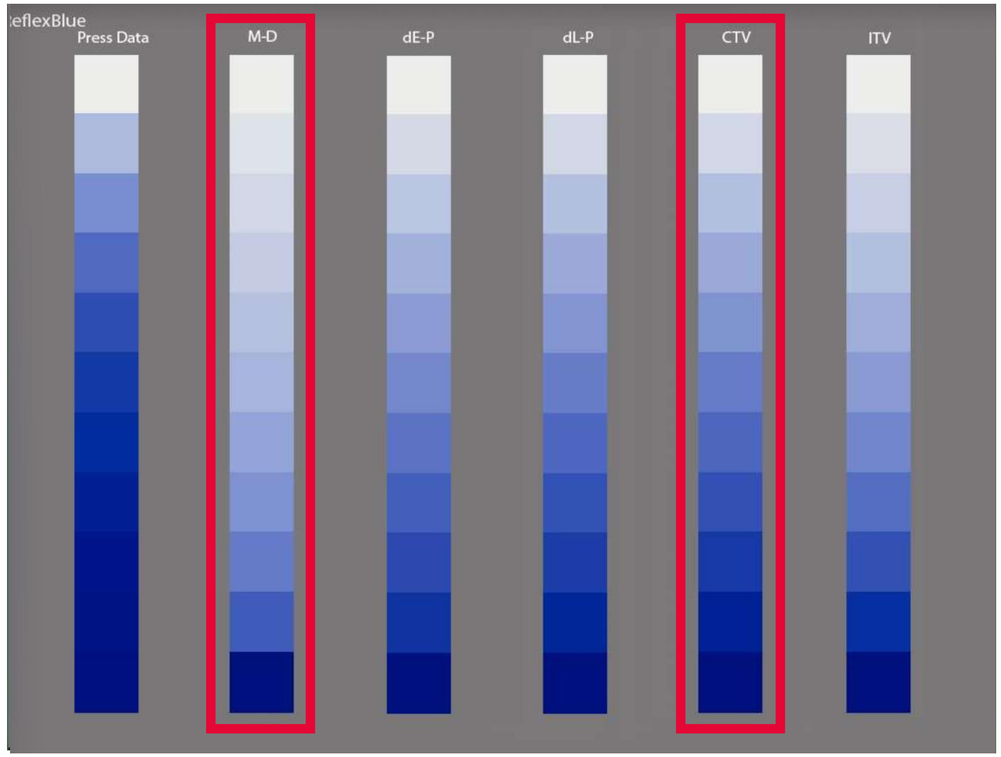
Effect of the substrate on solid inks

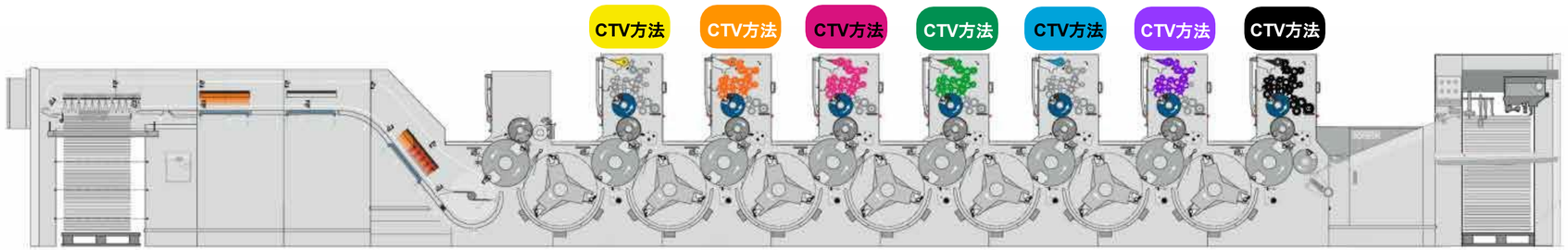
- Offset printing
  - 8 spot colors
  - on 3 papers
  - variable ink thickness
- P3: Bluish paper
  - solids not shifted
  - reachable by inking
  - printer has no problem
- P2: Greenish paper
  - solids are shifted
  - printer needs adjusted recipe?
- Surface roughness has big influence



Spot Color Tone Value (SCTV)

- Murray Davis vs SCTV

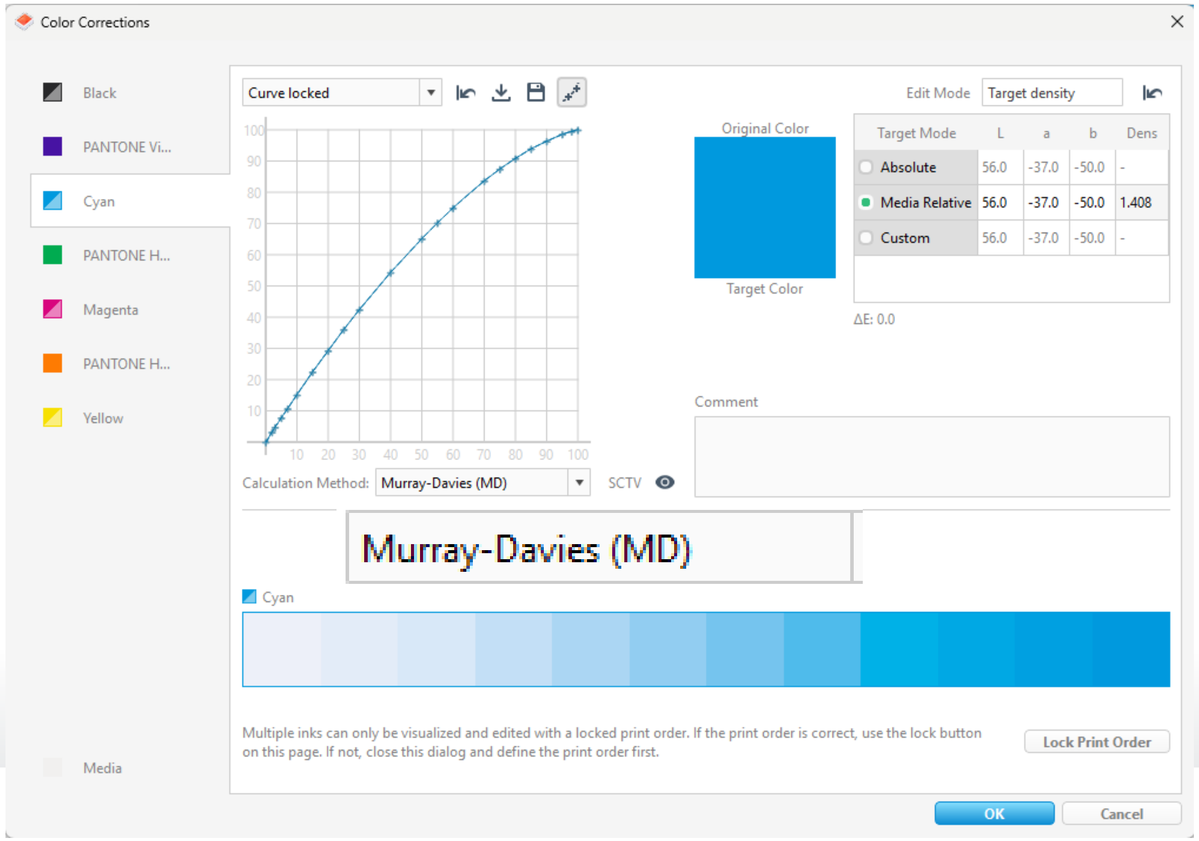


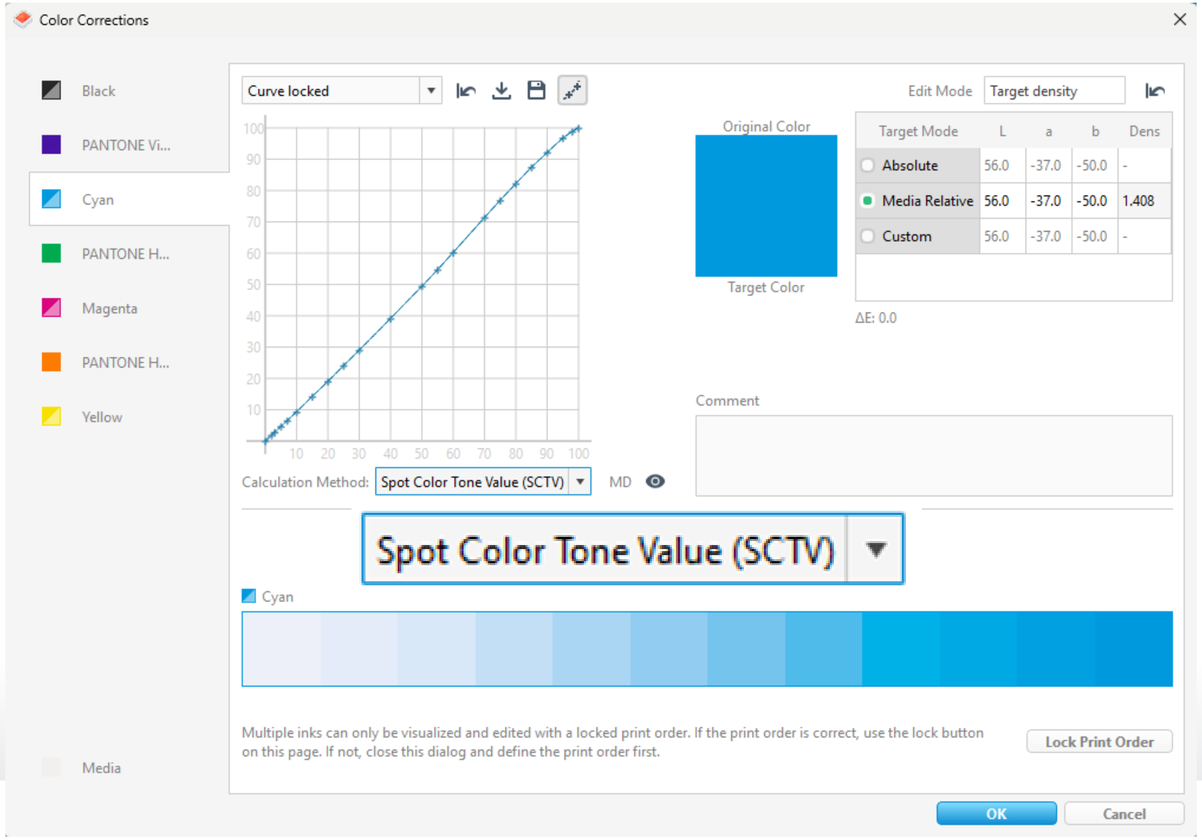


ISO 20654

- Measurement and calculation of spot color tone value
- switch your spectrophotometer from Murray-Davies, Yule Nielsen to SCTV in the Tone Value option

OpenColor support SCTV





3. Conversion

- RGB
- CMYK
- Spotcolor

- Adobe application can’t handle any ECG conversion !
- ColorPlugin is require to do the conversion to Extended Color Gamut (ECG)
- or ArtPro+ or PACKZ

Selected PSO Coated v3 (51) + PANTONE PLUS (2171)

Lab Filter | Search

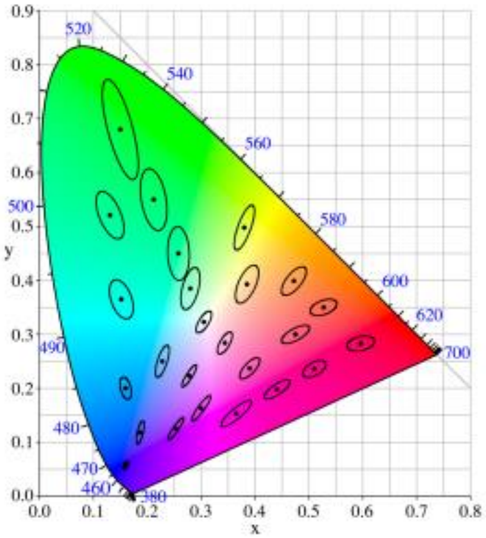
Spot Colors: 2171 In Gamut: 99.17% Spot Colors with ΔE > 1: 0.83% Avg. ΔE: 0.13

Spot Colors	Output Inks							Target			Current			In Gamut
Input Colors	Cyan	Magenta	Yellow	Black	Orange	Green	Violet	L	a	b	L	a	b	ΔE 00
PANTONE 7408 C	0.00	0.00	78.39	3.13	23.28	0.00	0.00	80.68	12.43	83.37	80.72	12.44	83.47	0.03
PANTONE 7409 C	2.38	30.00	79.22	0.00	0.00	0.00	0.00	77.58	16.51	73.82	77.61	16.51	73.72	0.03
PANTONE 7410 C	0.00	19.63	34.85	0.00	24.18	0.00	0.00	77.50	26.45	41.50	78.50	26.45	41.49	0.00
PANTONE 7411 C	6.37	38.64	60.63	0.00	0.00	0.00	0.00	73.59	21.15	47.10	73.65	21.13	47.01	0.05
PANTONE 7412 C	15.17	57.28	74.32	0.00	0.00	0.00	0.00	62.77	27.59	44.50	62.81	27.59	44.32	0.07
PANTONE 7413 C	0.00	50.32	71.50	9.79	0.00	0.00	0.00	64.84	32.27	57.13	64.88	32.24	57.10	0.04
PANTONE 7414 C	21.82	61.06	86.46	0.00	0.00	0.00	0.00	55.37	30.82	58.03	55.40	30.75	57.94	0.04
PANTONE 7415 C	5.52	30.42	27.62	0.00	0.00	0.00	0.00	79.38	16.22	15.63	79.41	16.20	15.62	0.02
PANTONE 7416 C	0.00	67.01	55.12	5.34	0.00	0.00	0.00	60.92	50.43	37.52	60.97	50.56	37.56	0.06
PANTONE 7417 C	0.00	56.87	0.00	9.02	71.22	0.00	0.00	55.48	59.93	45.74	55.52	59.83	45.66	0.05
PANTONE 7418 C	15.81	74.36	49.82	0.00	0.00	0.00	0.00	53.30	50.21	23.55	53.31	50.23	23.54	0.01
PANTONE 7419 C	28.91	76.07	50.08	0.00	0.00	0.00	0.00	46.69	42.93	14.48	46.73	43.09	14.47	0.07

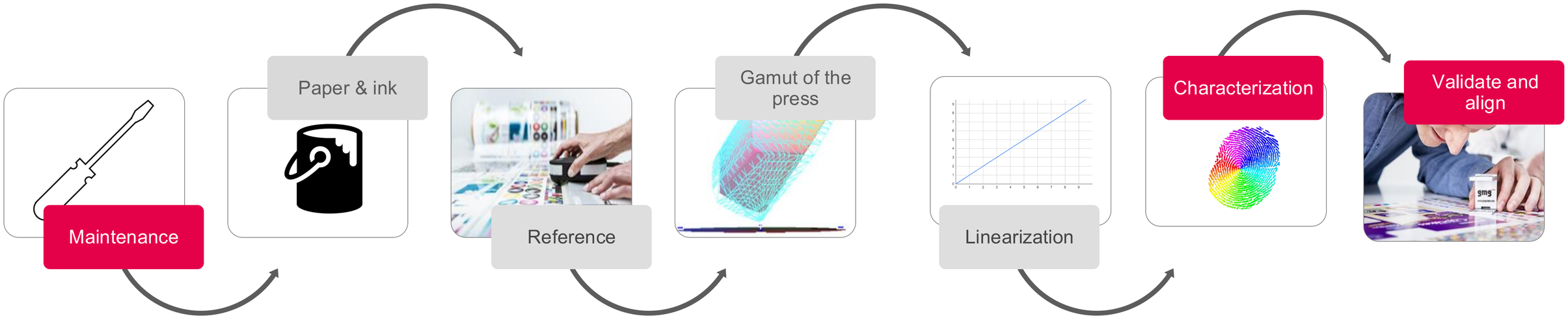
Color Conversion vs digital proof
need to be very close, **<dE0.3 or lower**
talk to your vendor

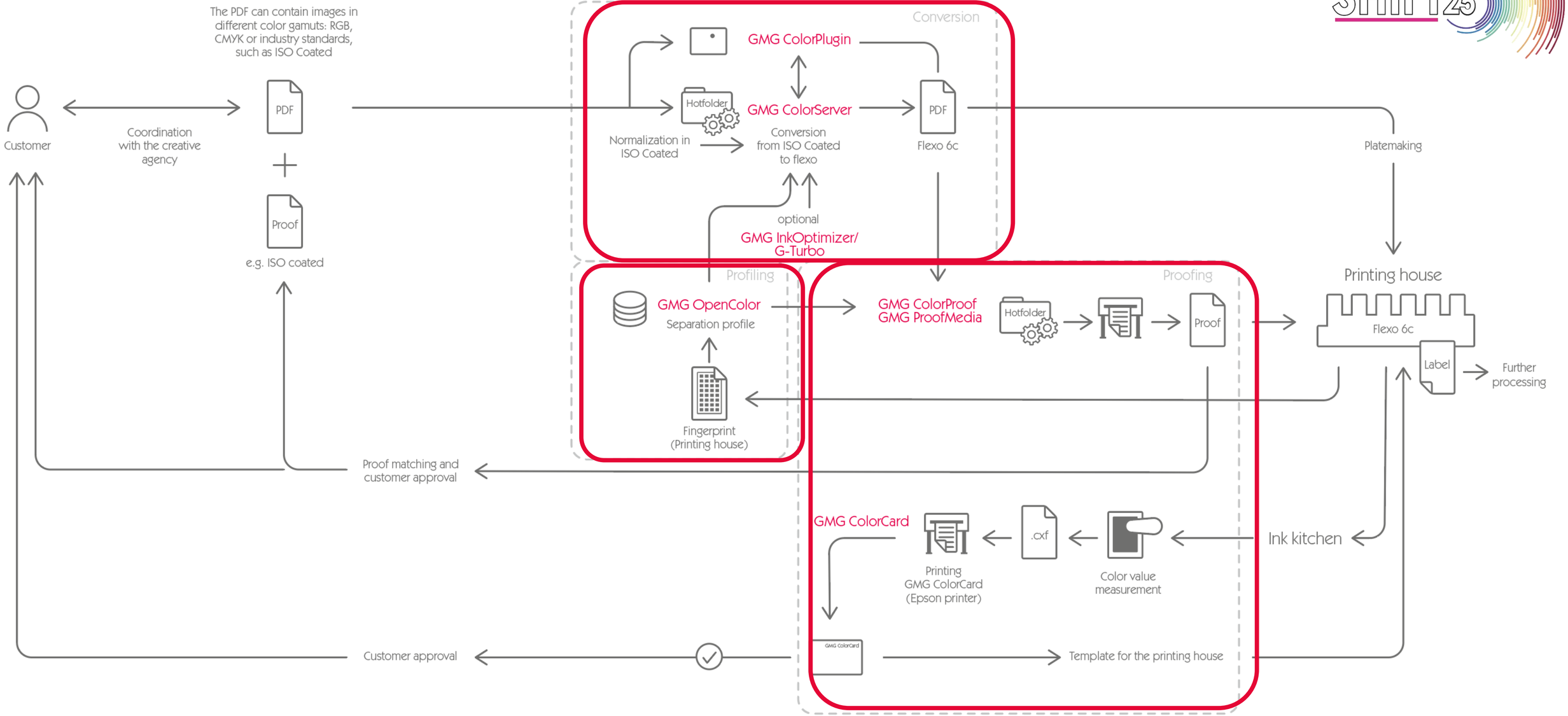
4. Control

- maintaining consistency across print runs
- measurement must be in dE00, compare to dE76
- our mini-strip can replace the entire ECI2002 measurement



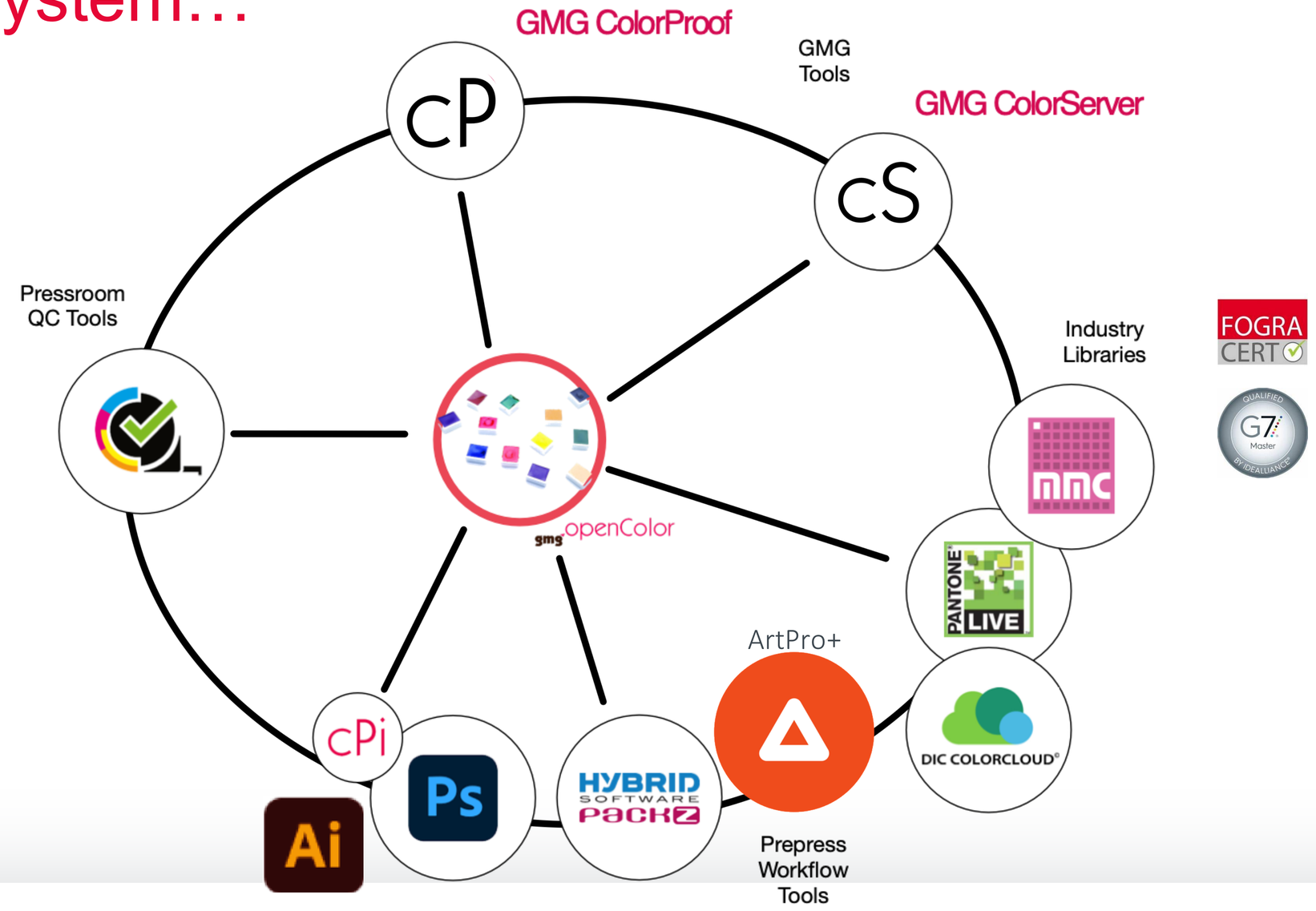
How can I ensure the consistent conditions





Our way of ecosystem…

Our ecosystem…



gmg color

Wherever a color goes
it stays that color