



Print Color Management - Fingerprint & Profiling





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→ is a TASK !

✗ it is not a cost

✗ it is not a
waste of time !

PRINT COLOR MANGEMENT





What is PRINT COLOR MANAGEMENT ?

→ it handles
all processes
in context
with matching
of **COLORS**
between
Contract Proof
and Print-Run





COLOR

is one of the most important
Assets of a Brand !



signed Digital-Target-Proof

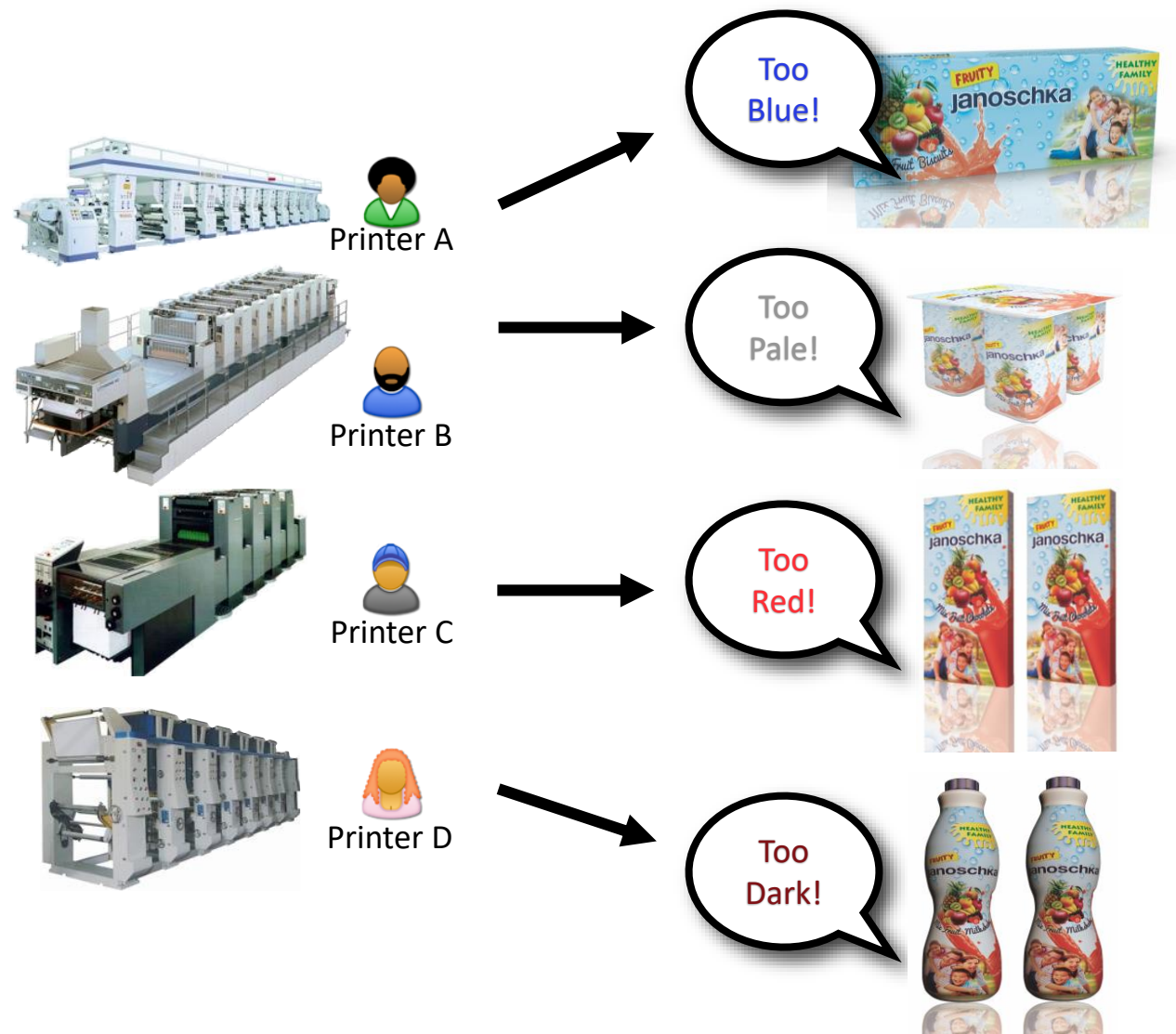


Printing-Result



and now just imagine:
that you have an entire product-family
and you want them all look the same...





Nothing looks like, what you wanted it to be !

- “The Artwork looked great, the print looks horrible...” !
- “This white is not white but grey...” !
- “The offset print looks great, why is it so bad in gravure...” ?
- “There is no uniformity within that range of product, each size looks different...” !



and then the discussion starts...

- “This is an offset repro and not made for gravure...” !
- “ I have to add red to my yellow to make it work...” !
- “ this is not calibrated...” !
- “ this proof is no good...” !

and: it is too late!

- we have lost time !
- **and money !**

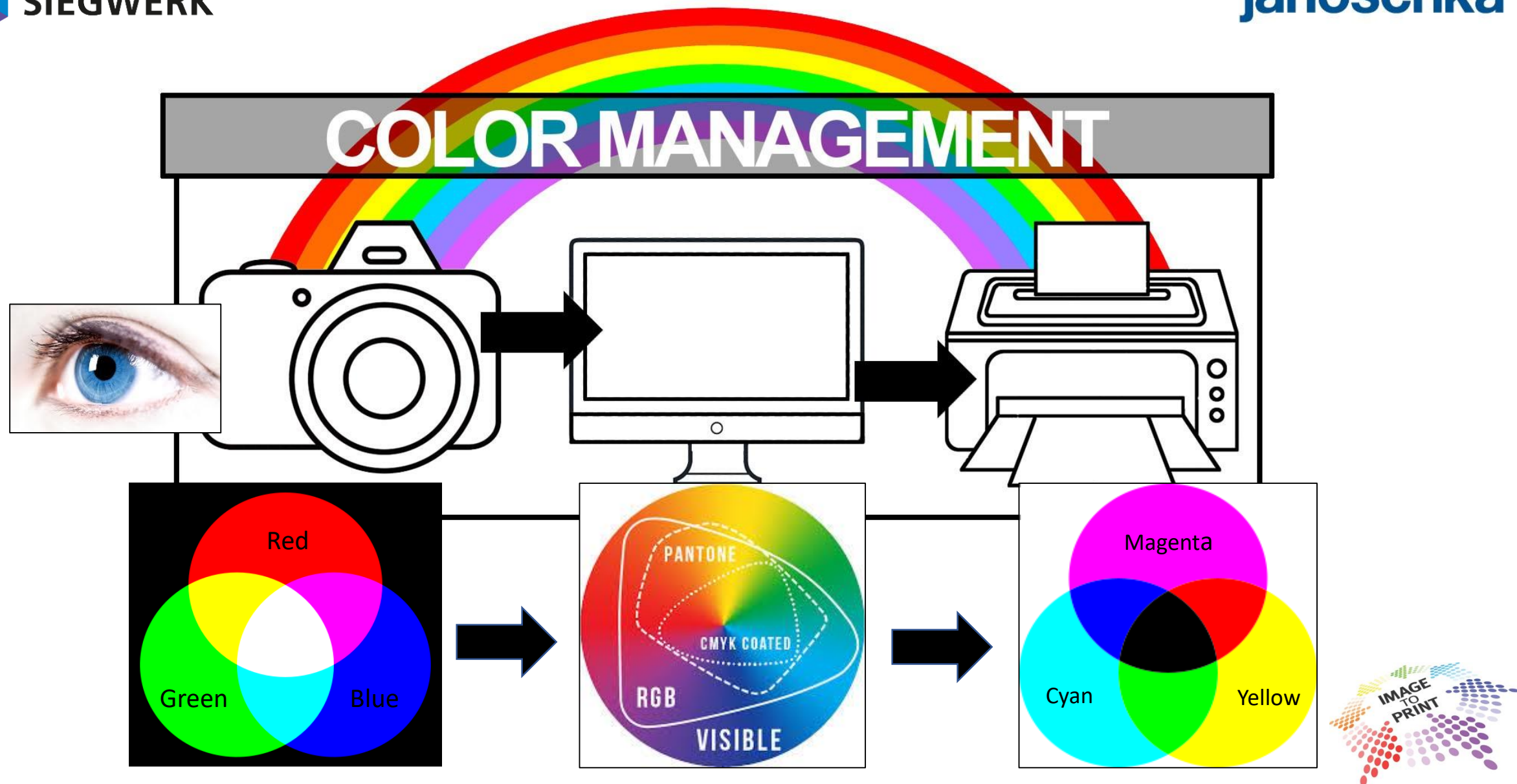




Why do we need PRINT COLOR MANAGEMENT ?

1. Reducing setup-time and waste
2. Simulate the final printing result
= secure color-match
3. **SAVE MONEY**







Topics:

1. Color space
2. Tooling (plates, cylinders)
3. Fingerprinting
(machine settings)
4. Profiling
5. The result

PRINT COLOR MANGEMENT





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PRINT COLOR MANGEMENT



Colors are not visual effects anymore, today, colors:

- are defined values
- are measurable

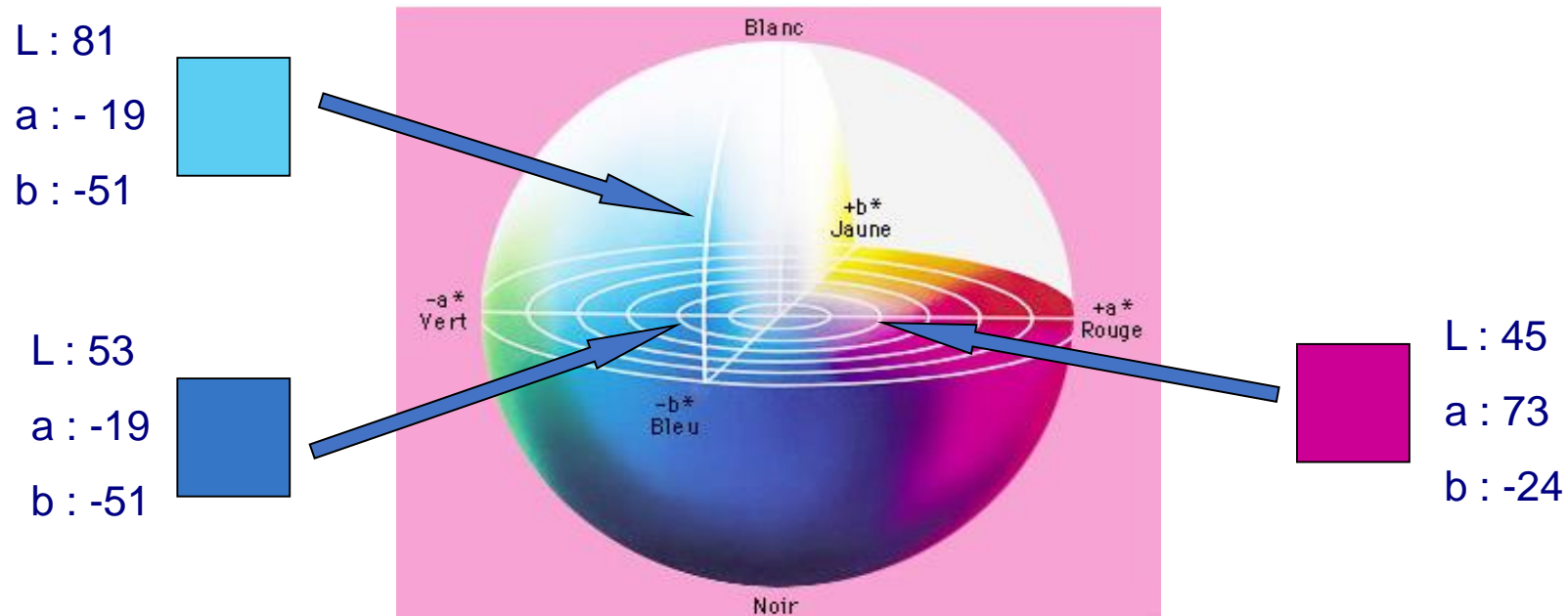


Color can be measured - CIELAB

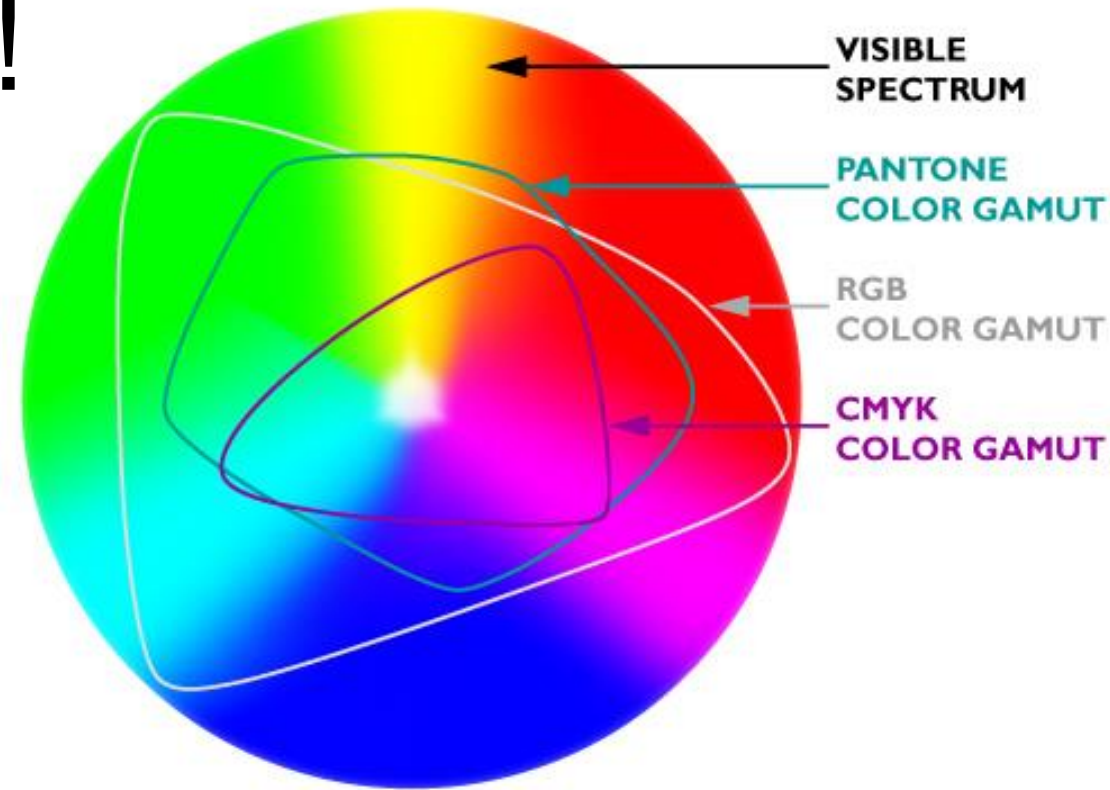
The International Commission of Illumination (CIE) defined the CIELAB Color-Space in 1976.

All colors are identified by 3 coordinates

L = Light A = Axe Green - Red B = Axe Yellow - Blue



What we can see – versus what we can make !

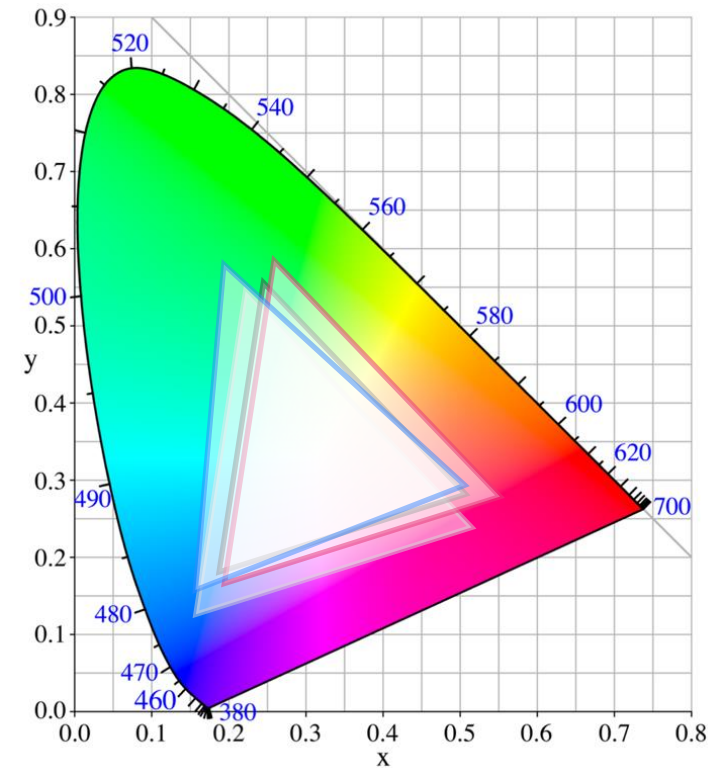


Color Gamuts

Color Gamuts vary, influenced by:

- Different printers
- Different printing technologies

Fingerprint enables to know their different Color-Gamuts and to align them



Printer A



Printer B



Printer C



Printer D





Topics:

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(machine settings)
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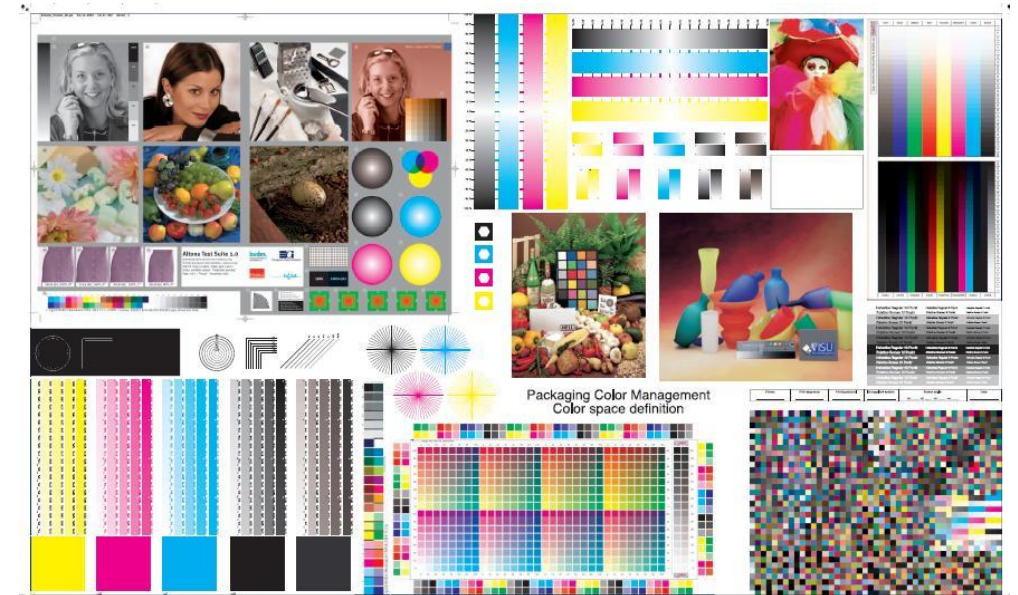
PRINT COLOR MANGEMENT



Tooling (cylinders, plates)

Define a fingerprint test-form which should contain:

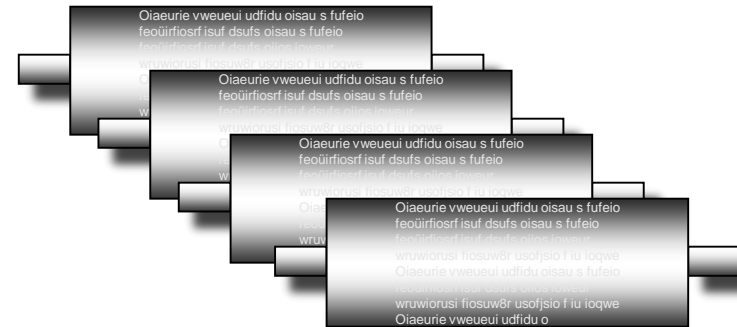
- Color-chart ECI-2002
- Pictures, product images for visual control of print quality, reflecting printers customer base and market
- Tone-scales, color balance
- Control elements, EAN, fine type (pos./neg.)
- Fogra media-scale
- Background at 30% (all colors)
- Company Logos



Engrave Cylinders or Flexo-Plates



YMCK



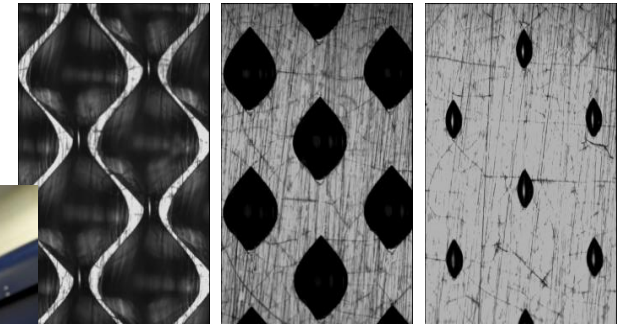
YMCK



Engrave Cylinders or Flexo-Plates

Cylinders according to:

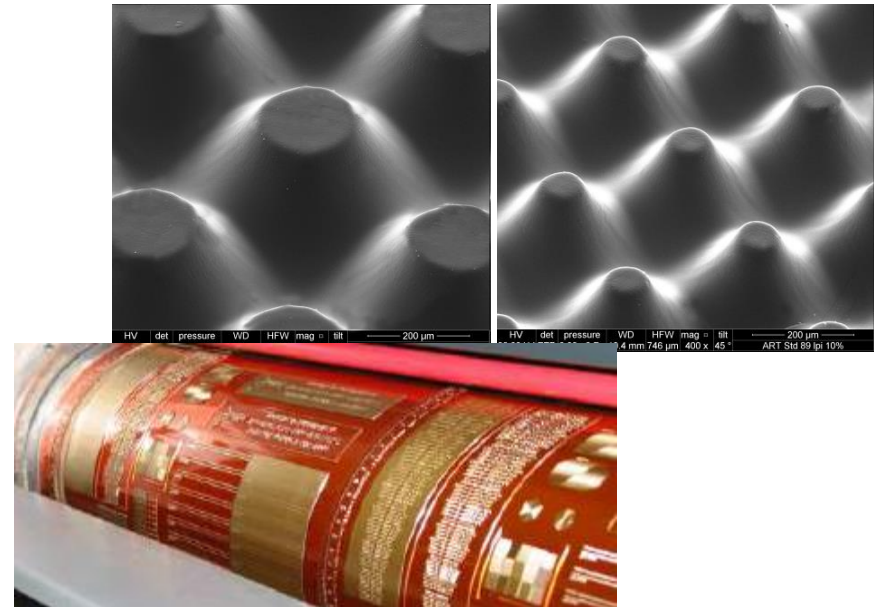
- Standard engraving parameters
- Surface roughness and structure according to specification
- Defined line/cm, angle, stylus
- Engraving technology (EM, Laser)
- Minimum tolerances
- All parameters need to be documented (pictures & values)



Engrave Cylinders or Flexo-Plates

Flexo plate-making according to:

- Corresponding plates parameters
- Screens, angles, inking rollers
- Minimum tolerances
- All parameters need to be documented (pictures & values)





Topics:

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(machine settings)
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PRINT COLOR MANGEMENT



Many items have impact on the printing result...

Each printing process and almost each job requires specific technical parameters and expertise:

- ➔ Different Printing Machines
- ➔ Different Substrates
- ➔ Different Printing Inks
- ➔ Environment: Temperature & Humidity
- ➔ People



Printing machines...

But also different printing machines, processes and different machine settings have big influence on the printing result...

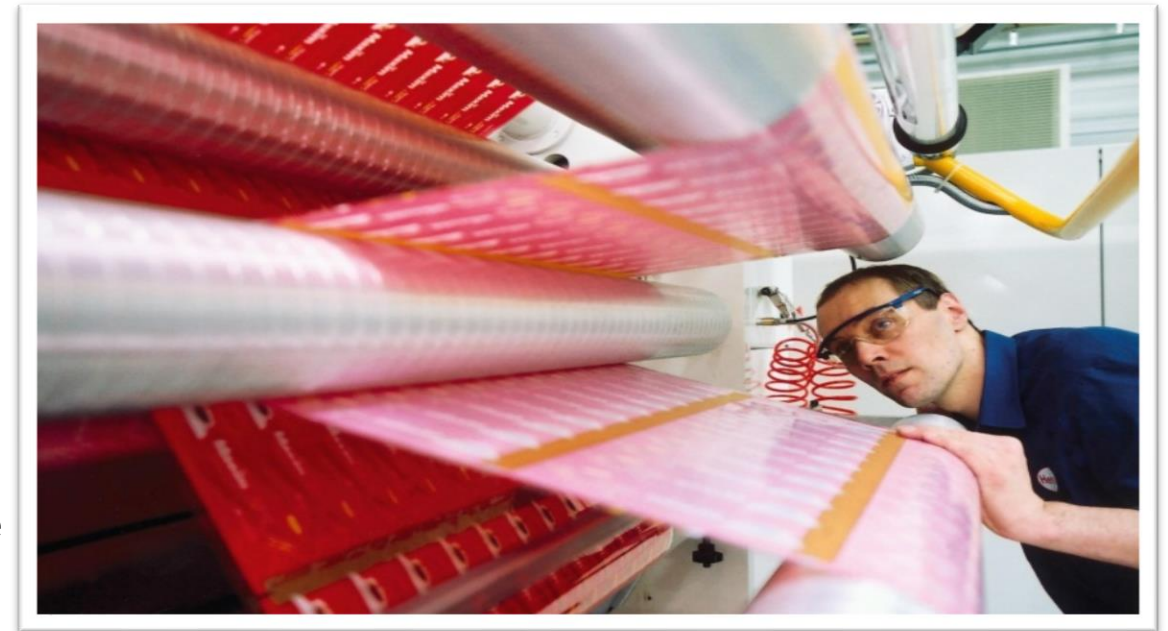
- Type of machine
- Number of Colors
- Printing Speed
- Impression Rollers / Pressure
- Viscosity of the inks
- Doctor-blade setting
- Temperature, Humidity
- etc.



Fingerprinting (example: gravure)

Printing-press settings according to:

- ✓ Optimum production conditions
- ✓ Optimum printing speed
- ✓ Set ink-viscosity to standard
- ✓ Set ink-density to standard
- ✓ Check ink temperature
- ✓ Optimum doctor-blade angle and pressure
- ✓ Optimum pressure (pressure-roller)
- ✓ Check environment conditions (temperature, humidity)



Fingerprinting (example: gravure)

Printing quality:

- ✓ Perfect register !
- ✓ Check tone-values / grey-balance
- ✓ Check tonal value for flooding
- ✓ Measure and document dot-gain in 75% - 50% - 25% 5% values
- ✓ Is 5% tone printing stable
- ✓ Is print streak-free
- ✓ No scumming, no hazing
- ✓ No repel, dissolution or break-off
- ✓ Fingerprint “**quality approval**” by printer, tool-maker and ink-supplier



and bear in mind...

FINGERPRINTING
« is not a
beauty contest...! »



and bear in mind...

Do not try to bend the printing machine settings to get a good looking sample:


- print as under “normal” or “relaxed” production conditions
- which can be repeated every day




Documentation:

Documentation of all cylinder parameters:

- Type of cylinders (shaft/shaft-less)
- Face-width / circumference
- Roughness
- Printing direction
- Surface / reverse print
- Color sequence
- Engraving parameters and specifications





Fingerprinting Specification Gravure

Printer

Cylinder Specs

Cyl. Manufacturer: _____

Type of Cylinder: ☐ Shaft ☐ Shaftless

Way of print: ☐ Surface ☐ Reverse

Facewidth: _____

Circumference: _____

Roughness: _____

Internal Job No.: _____

Customer service _____

Janoschka No. _____

Engrav. Machine: _____

Seq	Colour	Screen	Angle	Stylus	Cellwidth	Depth	Gamma		Remarks
1									
2									
3									
4									
5									

Printing machine: _____

Printing Speed: _____

Substrate: _____

Ink Manufacturer: _____

Ink System: _____

Viewing conditions: ☐ 5000 K ☐ 6500 K

Corona Treatment: _____

ESA: _____

Lacquer: _____

Retarder: _____

Backing material: _____
special backing material which needs to lay underneath a fingerprint / job

Seq	Colour	Visco*	Density**	Solvents	Retarder	Pressure	gain 25%	gain 50%	Doctor Blade	
									Angle	Pressure
1										
2										
3										
4										
5										

recommended densities: K 1.80 - 2.00; C 1.50 - 1.70; M 1.35 - 1.50; Y 1.35 - 1.45

* Viscosity measured with _____

** Density measured with settings/filter : DIN / PAP / NO

*** Lab measured with settings/filter : D50 / 2° / ABS / NO

Machine Specs

Ambient temperature: _____

Rel. Humidity: _____

Inking roller: _____

Other process steps to be taken into account: _____

Type Doc blade: _____

Overlap blade: _____

Hardness of impression rollers: _____

Cylinder proof done by: _____



Date: _____

Approved by: _____

Documentation:

Documentation of all printing parameters:

- Printing-machine
- Printing speed
- Substrate
- Doctor Blade / overlap-blade / angle / pressure
- ESA
- Corona treatment
- Hardness of pressure-roller and pressure
- Inking roller
- Temperature / Humidity

Fingerprinting Specification Gravure

Printer

Cylinder Specs

Cyl. Manufacturer: _____

Type of Cylinder: ☐ Shaft ☐ Shaftless

Way of print: ☐ Surface ☐ Reverse

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Machine Specs

Ambient temperature: _____

Rel. Humidity: _____

Inking roller: _____

Type Doc blade: _____

Overlap blade: _____

Hardness of impression rollers: _____

Other process steps to be taken into account:

Cylinder proof done by: _____


Date _____

Approved by: _____

Documentation:

Documentation of all ink parameters:

- Ink Manufacturer
- Ink System
- Viscosity
- Density
- Solvents
- Retarder
- Varnish / Lacquer



Fingerprinting Specification Gravure

Printer

Cylinder Specs

Cyl. Manufacturer: _____

Type of Cylinder: ☐ Shaft ☐ Shaftless

Way of print: ☐ Surface ☐ Reverse

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Circumference: _____

Roughness: _____

Internal Job No.: _____

Customer service: _____

Janoschka No.: _____

Engrav. Machine: _____

Seq	Colour	Screen	Angle	Stylus	Cellwidth	Depth	Gamma		Remarks
1									
2									
3									
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5									

Engraving Specs

Printing machine: _____

Printing Speed: _____

Substrate: _____

Ink Manufacturer: _____

Ink System: _____

Viewing conditions: ☐ 5000 K ☐ 6500 K

Corona Treatment: _____

ESA: _____

Lacquer: _____

Retarder: _____

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Inking roller: _____

Other process steps to be taken into account: _____

Type Doc blade: _____

Overlap blade: _____

Hardness of impression rollers: _____

Cylinder proof done by: _____


Date: _____

Approved by: _____

Documentation:

and don't forget:

- Viewing conditions (5000 K – 6500 K)
- Backing material
(ex.: if printed material is laminated)
- ... /



Fingerprinting Specification Gravure

Printer

Cylinder Specs

Cyl. Manufacturer: _____

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Way of print: ☐ Surface ☐ Reverse

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Topics:

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PRINT COLOR MANGEMENT

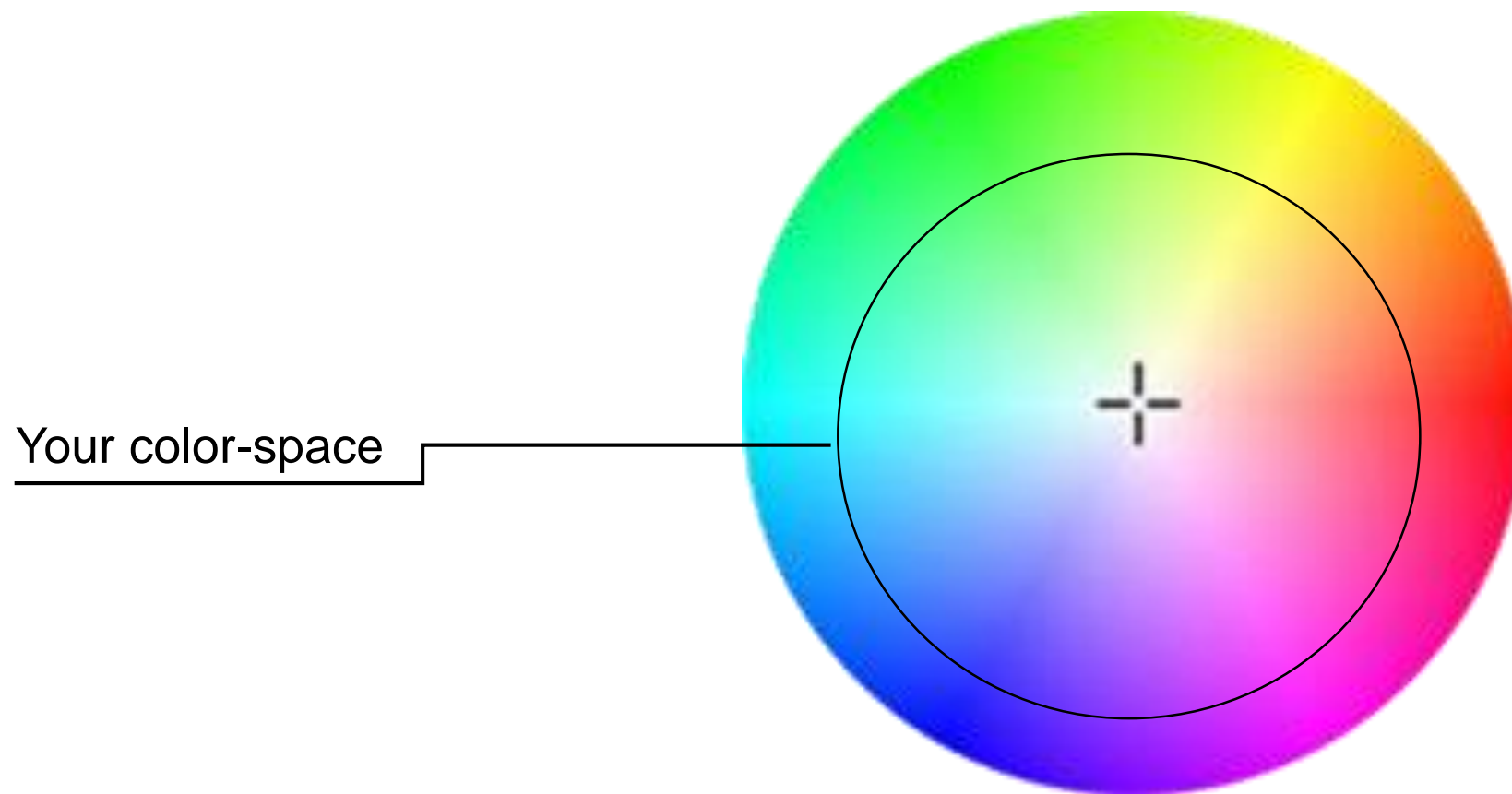




Pick-date / information:



Define your color-space:



Fingerprinting and Profiling:

bring "essential components" together...

Fingerprinting and Profiling:

BUT KEEP IN MIND:
If one or several relevant parameters change,
the Print-Color-Management will not work
properly any longer.

bring "essential components" together...

Profiling:

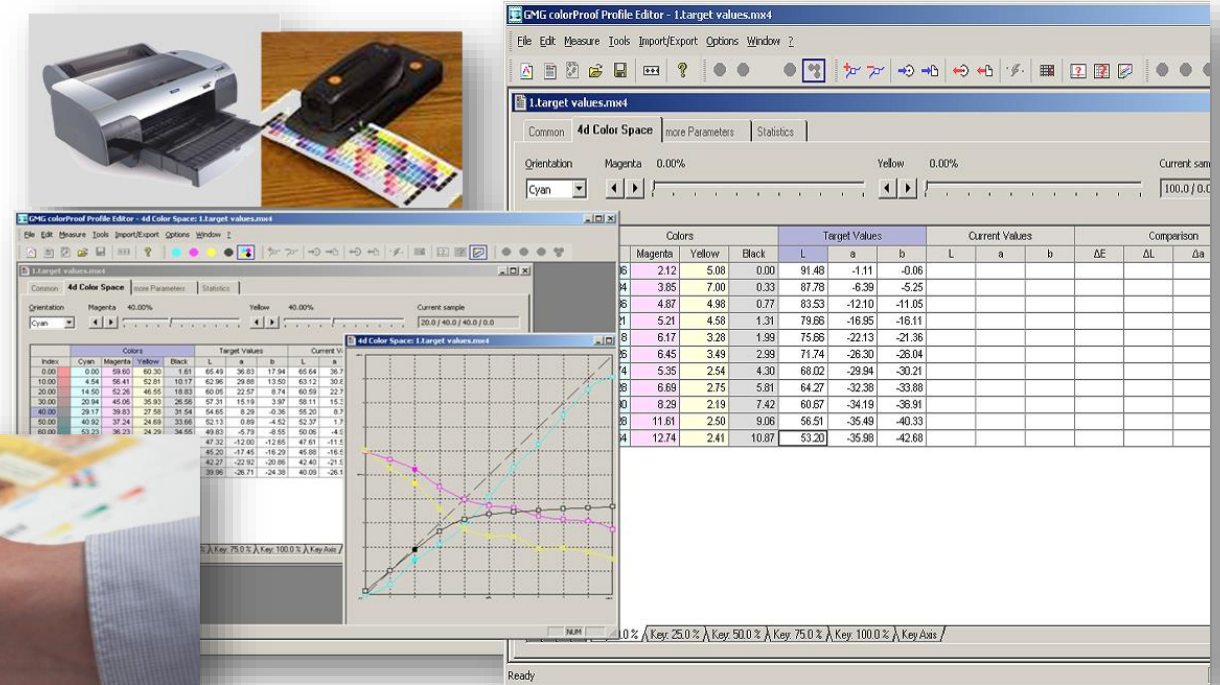
Fingerprint sample produced under the BEST conditions:

- Printed test chart is the color-target
- read-in by automatic Spectro-photometers
- Profile calculation - seeking $\Delta E: 1$
- Selective / visual corrections or fine-tuning carried-out by experts is possible



Printer Specific Profile:

→ Pre-Press / Color Separation will be done with the application of these profiles



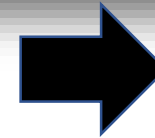
Printer Specific Profile:



Digital-Proof



Barrel-Proof



Print-Run

All will Match !



Topics:

1. Color space
2. Tooling (plates, cylinders)
3. Fingerprinting
(machine settings)
4. Profiling
5. **The result**

PRINT COLOR MANGEMENT





signed target-proof



Final printing-result



Consistency and uniform quality:

Regardless:

- Where and when it is printed
- What printing technology used
- Which Inks or Substrates used



Print-Color Management:

- Efficiency improvement !
- Less Waste !
- Saved Money !
- **Happy Customers !**

