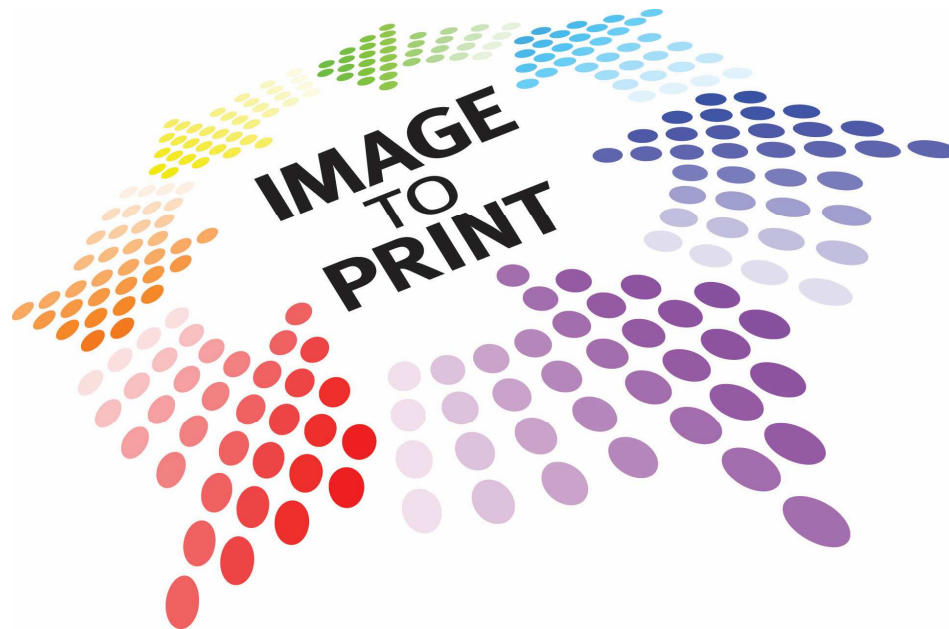


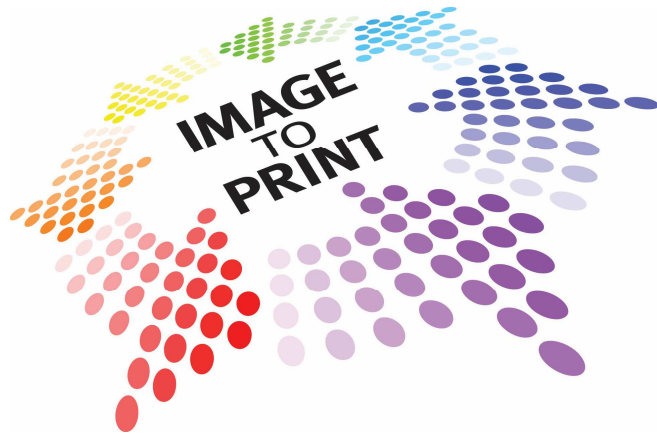
PRINTING TECHNOLOGY AND INNOVATION DAYS FOR FLEXIBLE PACKAGING

Image-to-Print | 19 April 2017
Ho Chi Minh City, Vietnam



**PRINTING TECHNOLOGY AND
INNOVATION DAYS FOR FLEXIBLE PACKAGING**

Image-to-Print | 19 April 2017
Ho Chi Minh City, Vietnam



**Trend & Innovations
in Flexible Packaging**

Rudi Weis-Schiff, Janoschka

Quick introduction to Janoschka



Headquarter in Kippenheim, Germany



Group Management, Strategy, Finance & Controlling, Research and Development

Janoschka Academy (internal and external trainings)

Production, all Technologies available (Gravure, Laser, Embossing, Graphics...)

Janoschka | the biggest Network in Europe with production sites in Asia (India, Singapore, Malaysia, Vietnam), and Latin America (Argentina, Mexico)



France, Spain, Portugal, Switzerland, Germany, Poland, Russia, Turkey

Products & Services

Janoschka is a service provider, focusing on 3 main products & services:

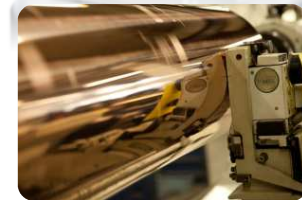
1. Graphic Services:

Artwork and Repro,
Brand Management



2. Printing tools:

Gravure cylinders, embossing cylinders
and Flexo Plates



3. Bases and Sleeves:

steel-bases (shafted, un-shafted),
Cylight®, Ecocyl, Aluminum bases,
DYNACYL® (new cylinder concept)



Key Figures*

- Revenues of + 120 Million €
- 1400 people
- 300 graphic operators
- Artwork & Repro 100.000 SKU's per year
- 220.000 gravure cylinder per year
- 80.000 cylinder bases per year
- 30.000 sqm of polymer plates
- 10.000 Elastomer Sleeves

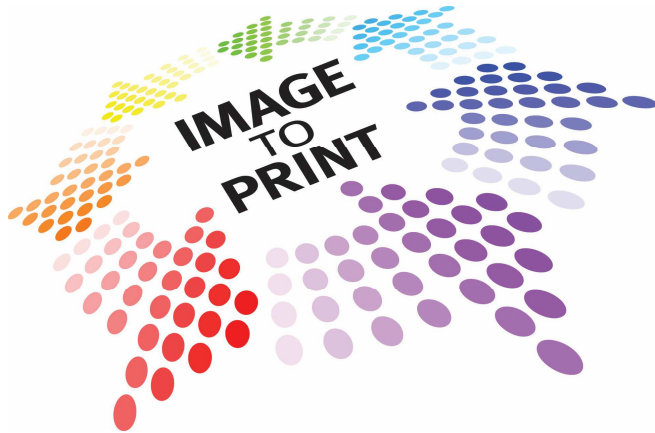
* Group figures 2016

Strategic Business Units



Trend & Innovations in Flexible Packaging

Rudi Weis-Schiff, Janoschka



Trends 2017

- 1.
- 2.
- 3.



What is Packaging?

Contains !

Protects !

Preserves !

Carries Information !

Eye-catcher...!

Makes the Brand...!

Makes the sale !

Packaging attires, Packaging is a marketing platform...



Packaging **reflects** the **quality** of the product

Packaging creates attractiveness...



Packaging has it's purpose...

Stop



Hold

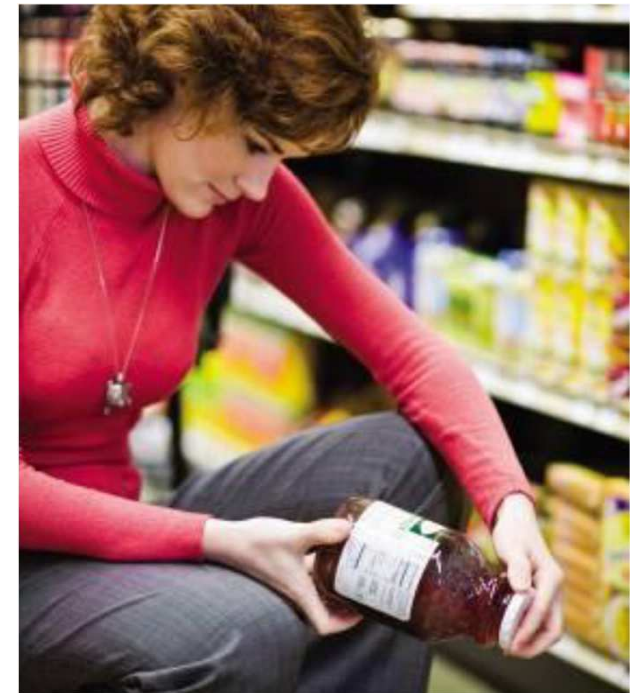


**Make
the
sale**

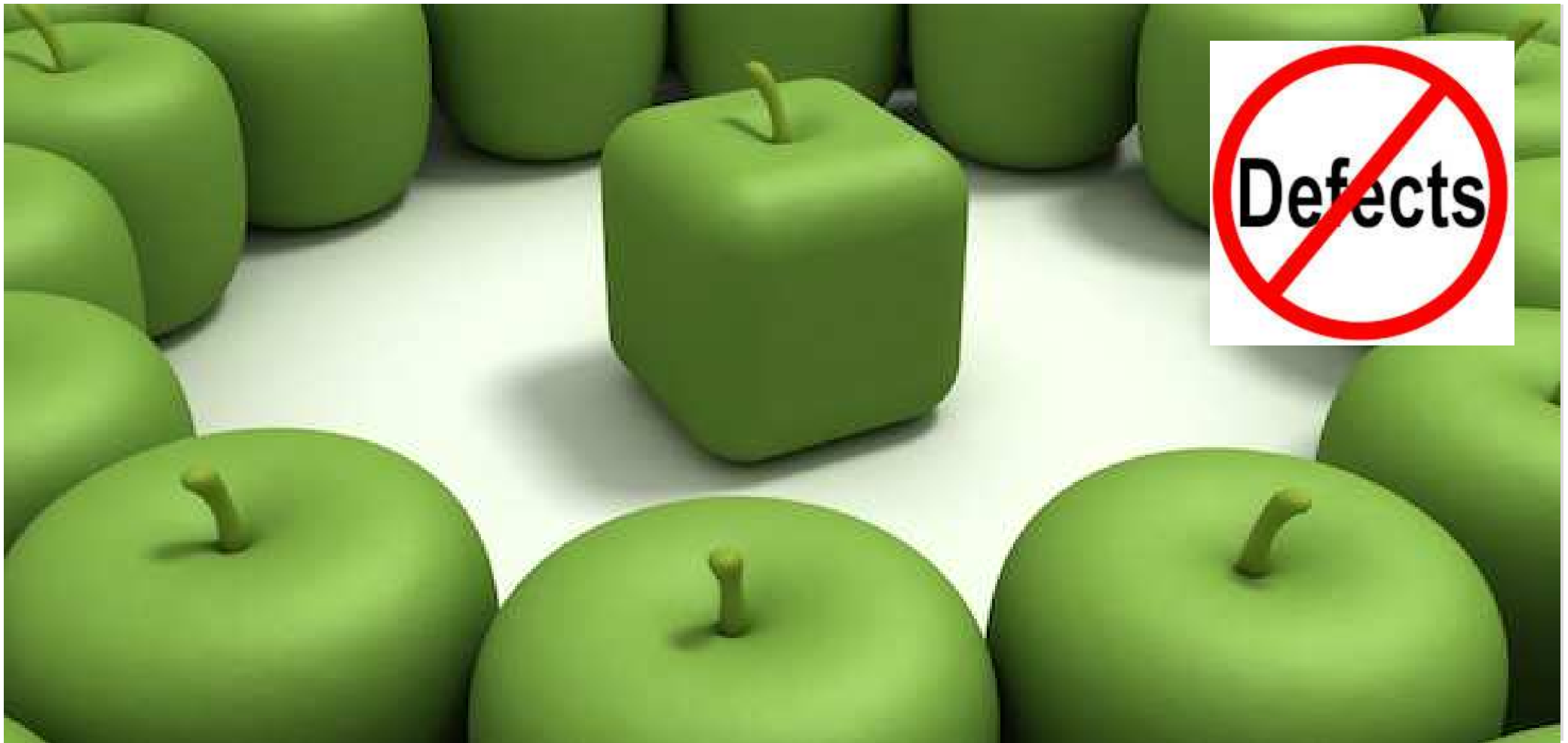
Disturbance
Eye attraction

Interest
look and feel
hand attraction

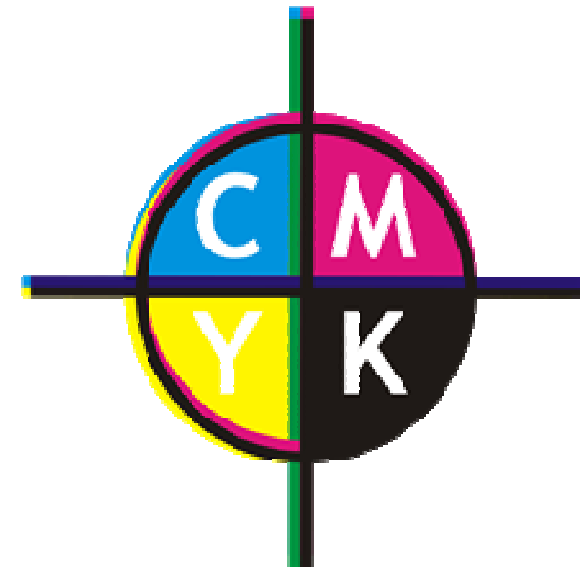
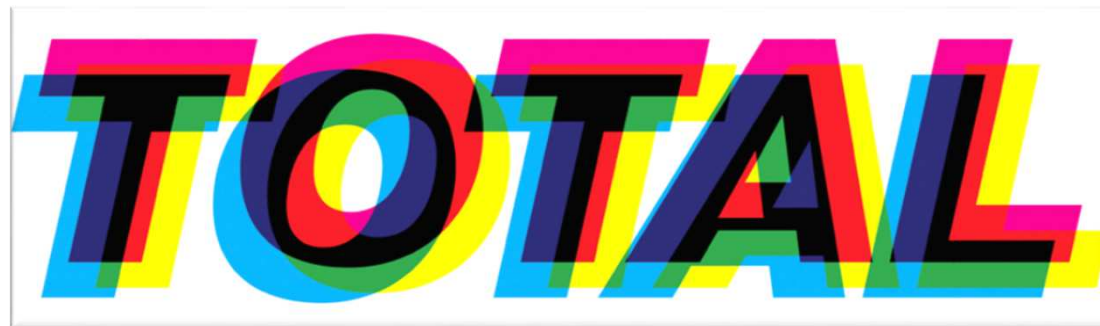
convinced



Seeing is believing...

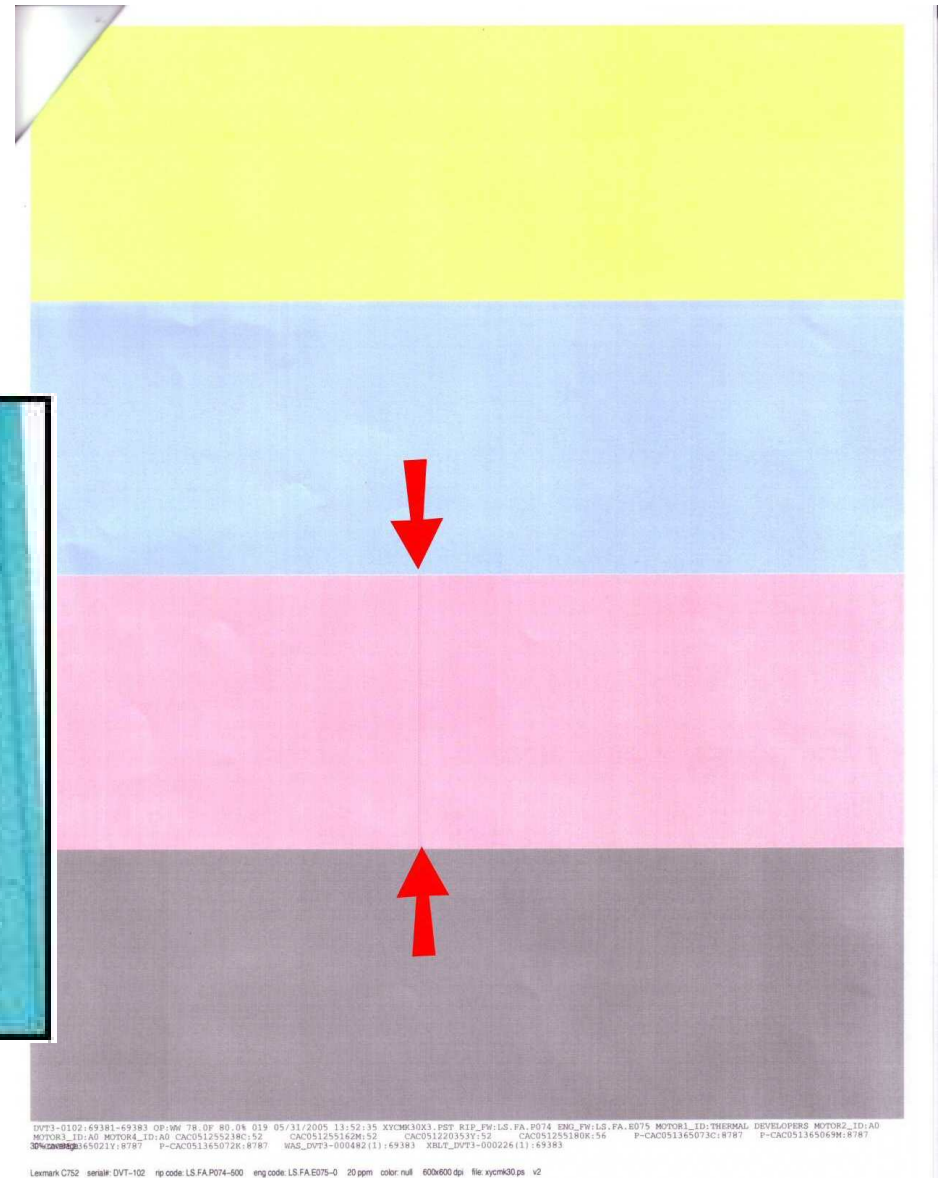


Detect quality defects: **Register** problems...



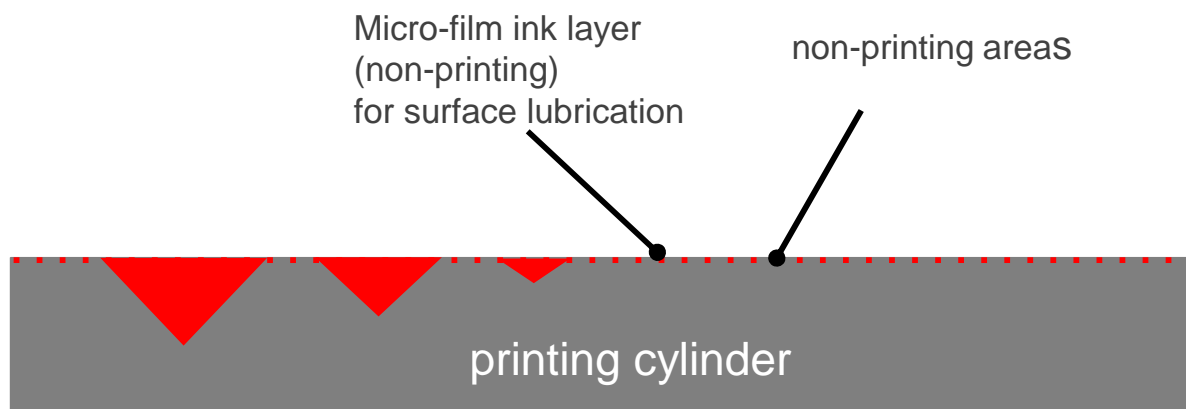
- ◀ this is what you want:
- 🕒 needs to look good
- 🕒 readability
- 🕒 legal aspects

Detect quality defects: **Doctor-blade** streaks...

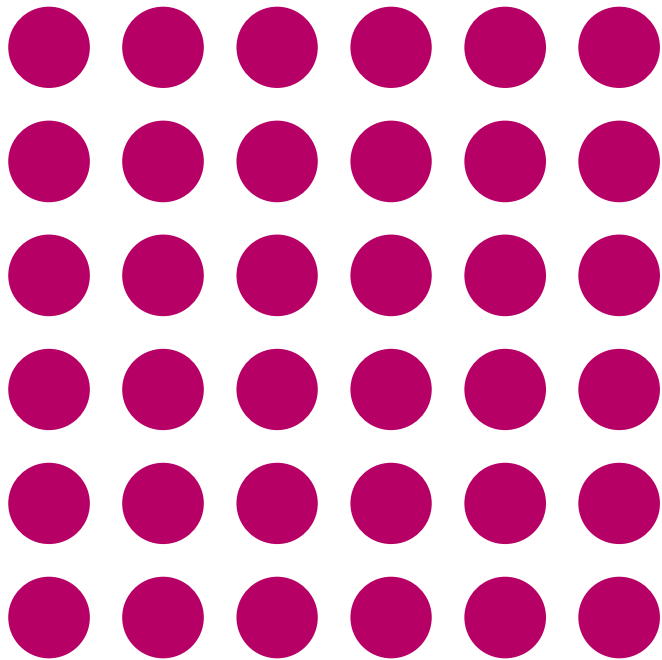


quality cylinders – high performance

- Perfect diameter of the cylinders to assure good register, especially at high speed
- Perfect and even surface roughness to prevent from hazing and scumming



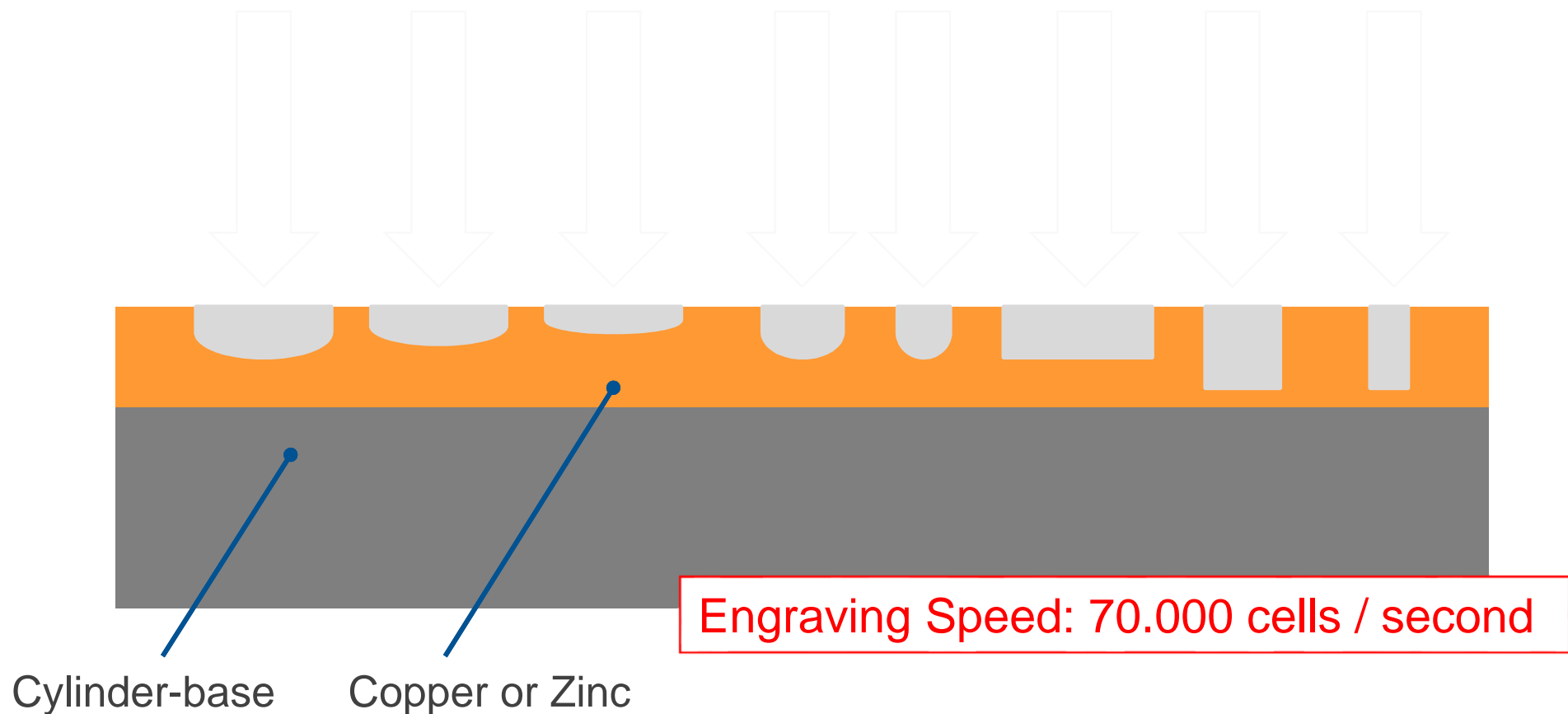
Detect quality defects: **Missing** dots...



🕒 dots are missing or
printing only partly...!



Laser technology for cylinder imaging

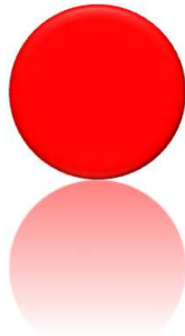


Laser technology is simply another dimension...

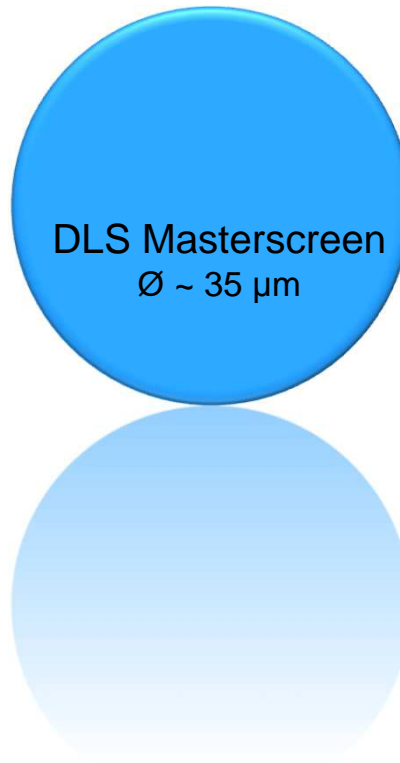
Exposition Laser
Think-Lab
 $\varnothing \sim 2 \mu\text{m}$



Laser direct
 $\varnothing \sim 10 \mu\text{m}$



DLS Masterscreen
 $\varnothing \sim 35 \mu\text{m}$

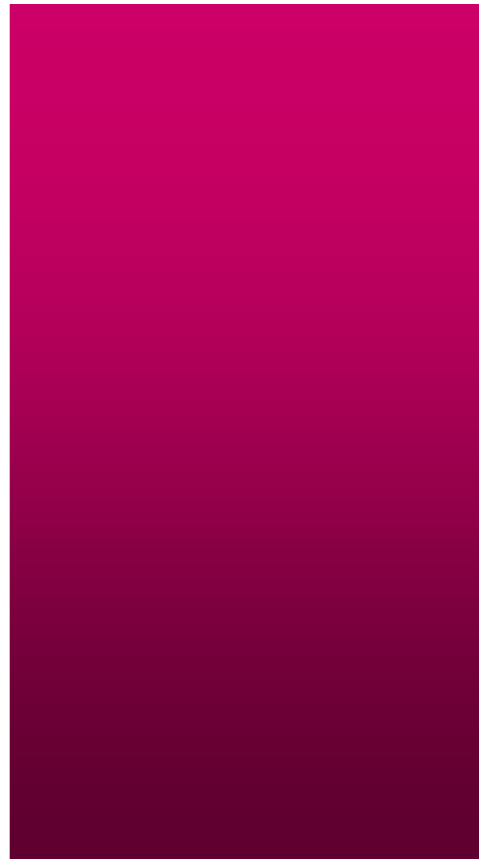


Human Hair
 $\varnothing \sim 100 \mu\text{m}$



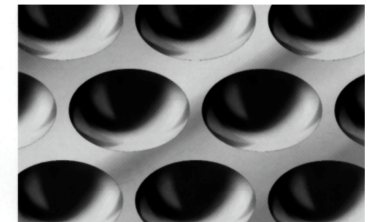
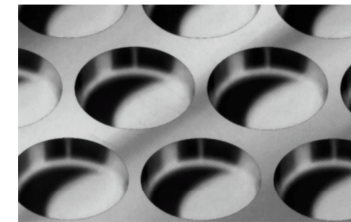
Advantages of Cell Geometry (round)

- Excellent printing results in half-tones and vignettes
- especially on rough substrates which are difficult to print

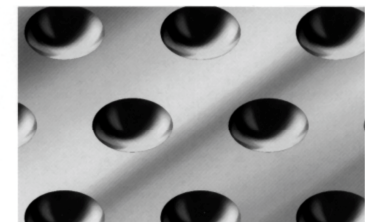
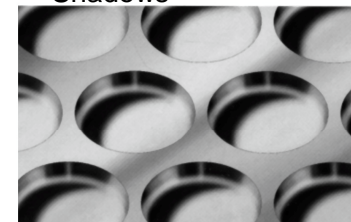


Conventional

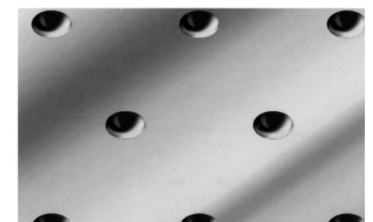
Halfautotypical



Shadows



Midtones



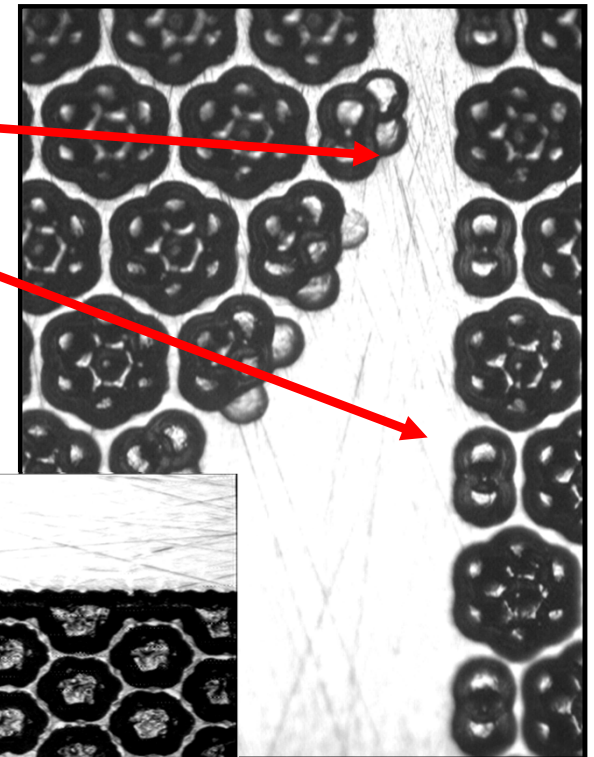
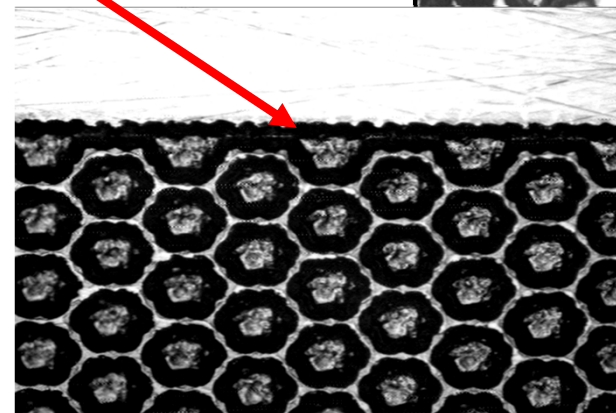
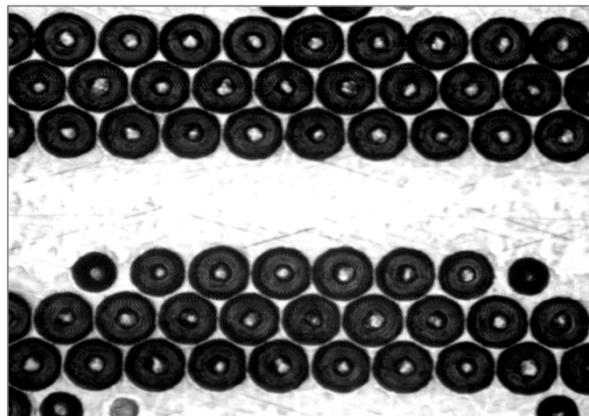
Highlights

Any cell shape is possible...

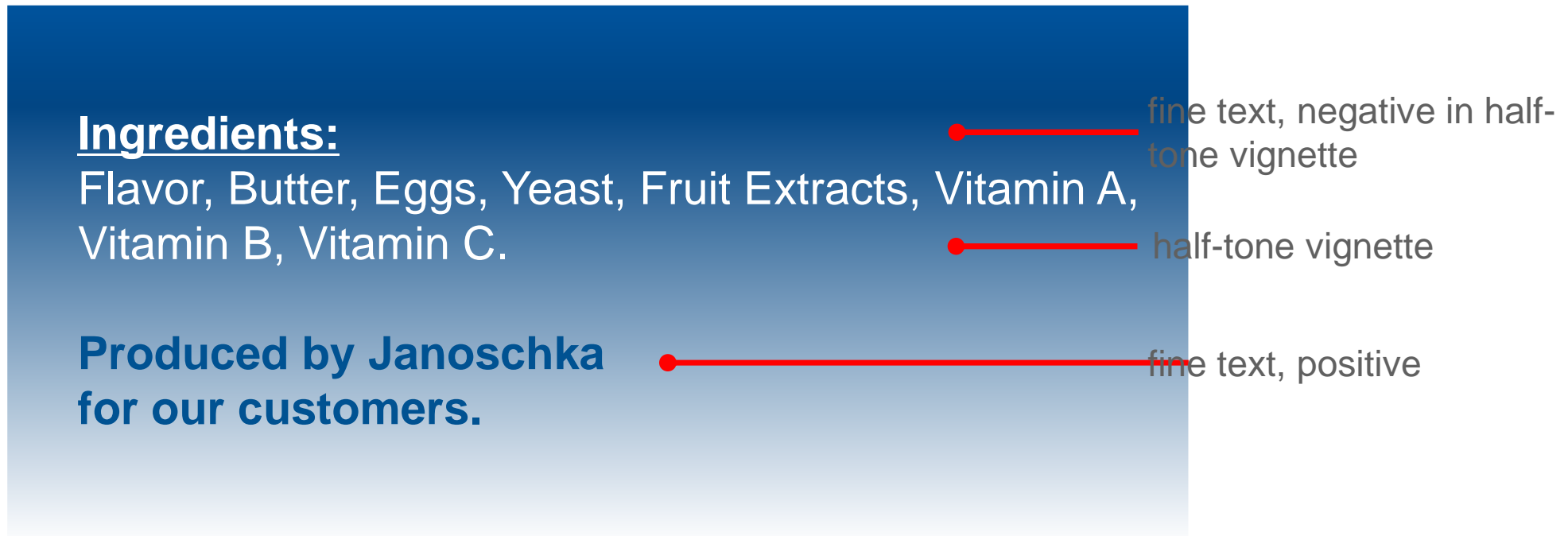
→ Text, forms and designs can be reproduced without limits and will print in excellent quality.

→ „Outlines“ can be produced as well, although they are not really needed...

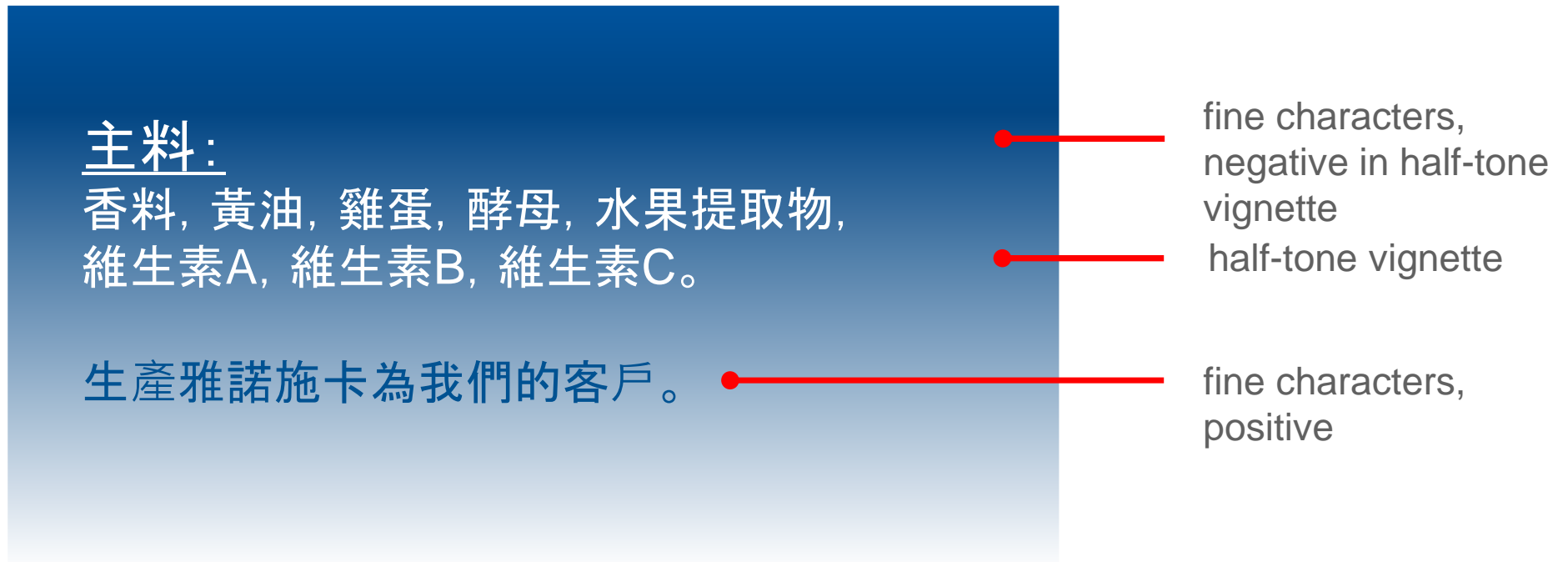
→ Offset-Quality with **Gravure Density**...



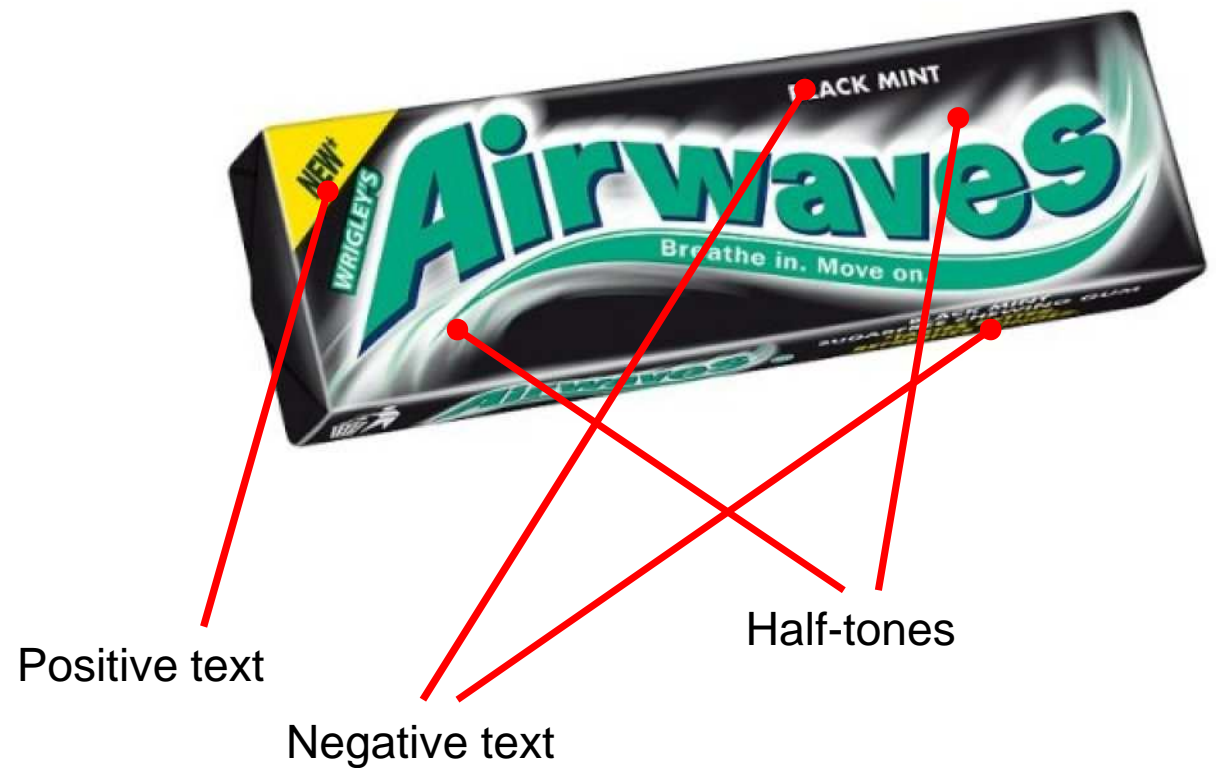
Combination of line-work and half-tone, all in 1 cylinder



Combination of line-work and half-tone, all in 1 cylinder,
and imaging the same with Chinese Characters...



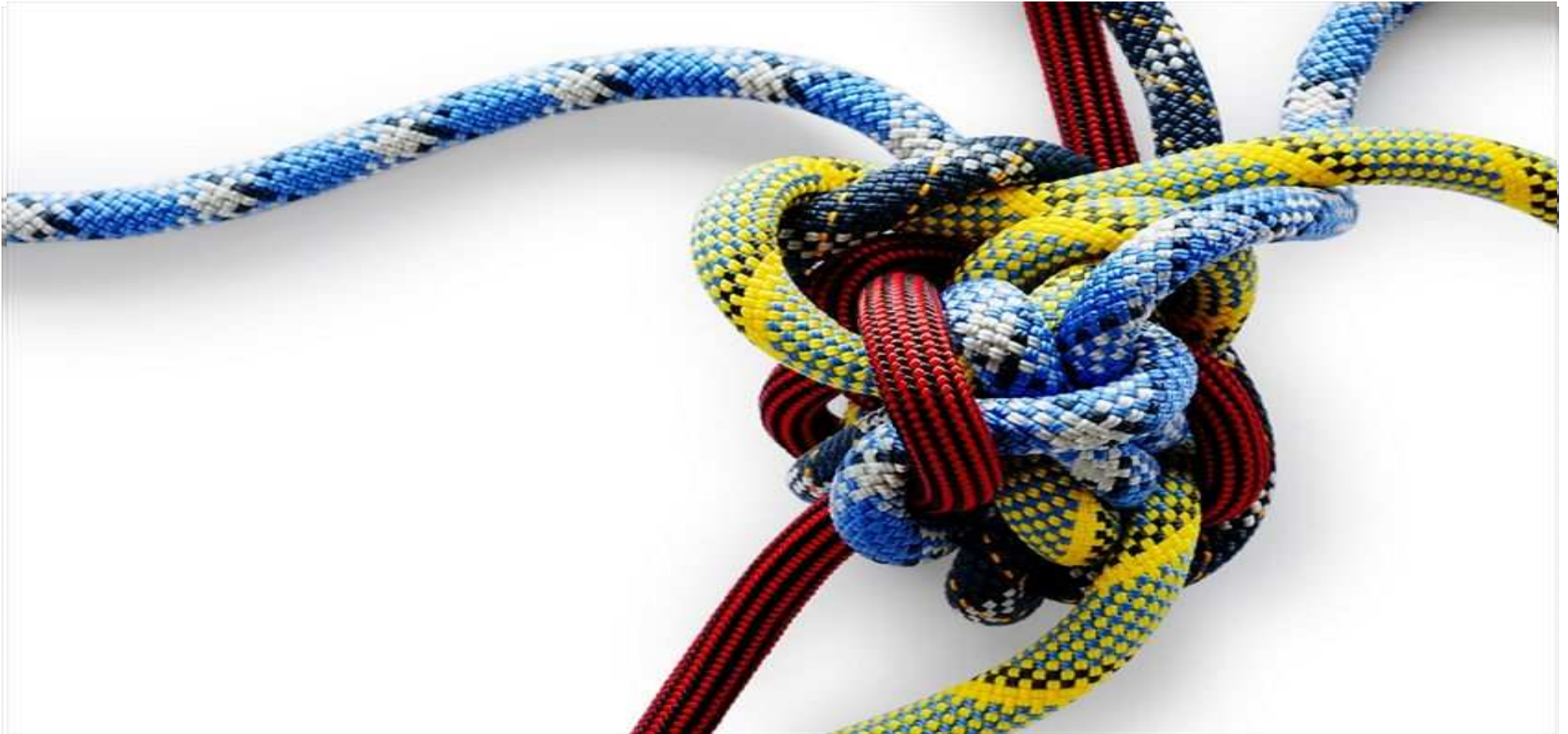
Direct Laser System - the benefits combination of line-work and half-tones...



It's all about colors...

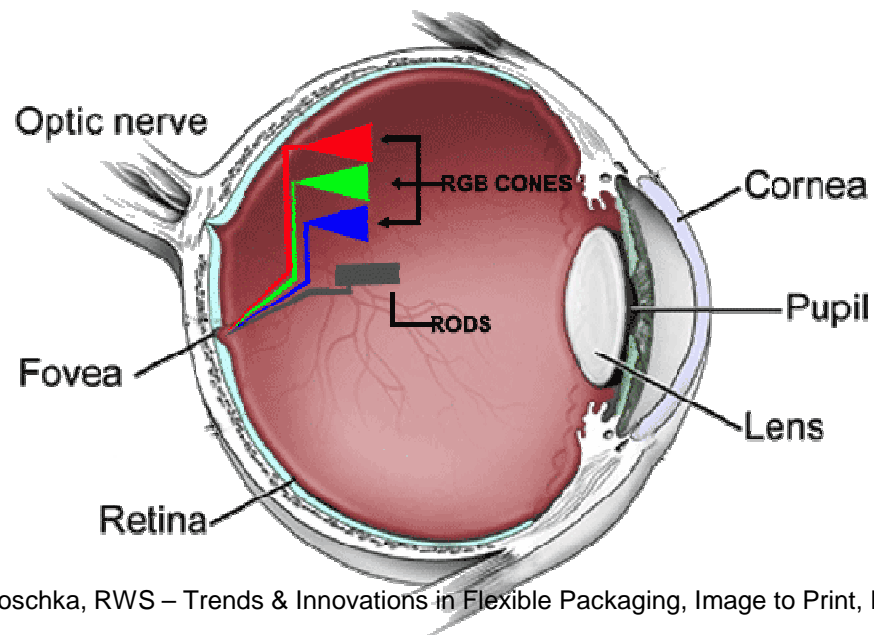
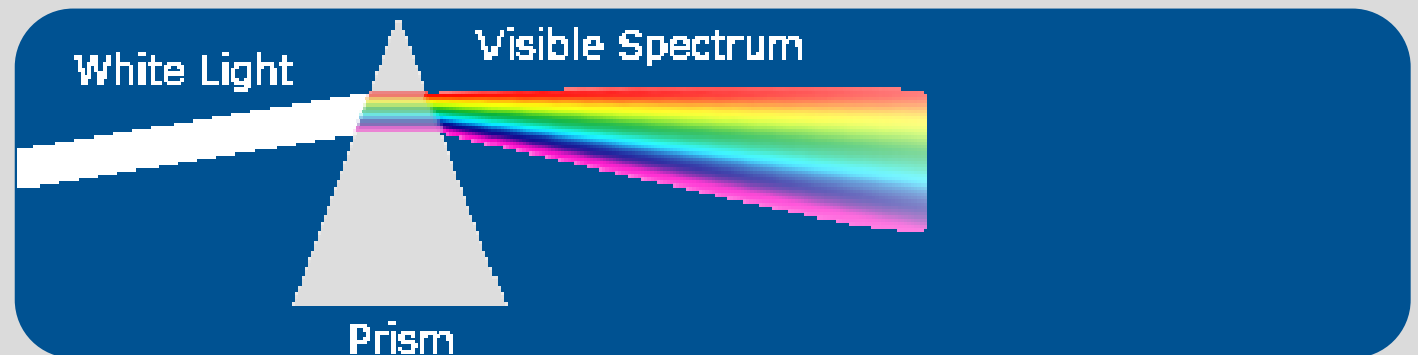


It's all about colors...

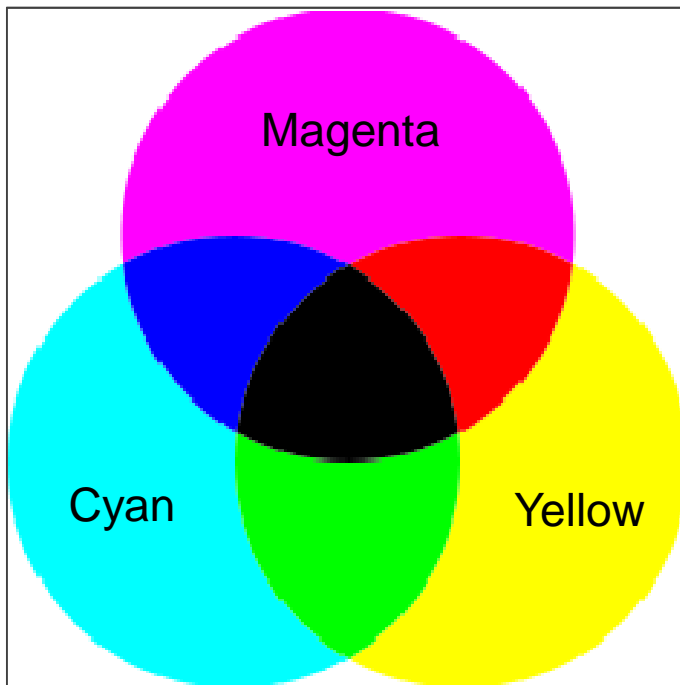


The elements of perception

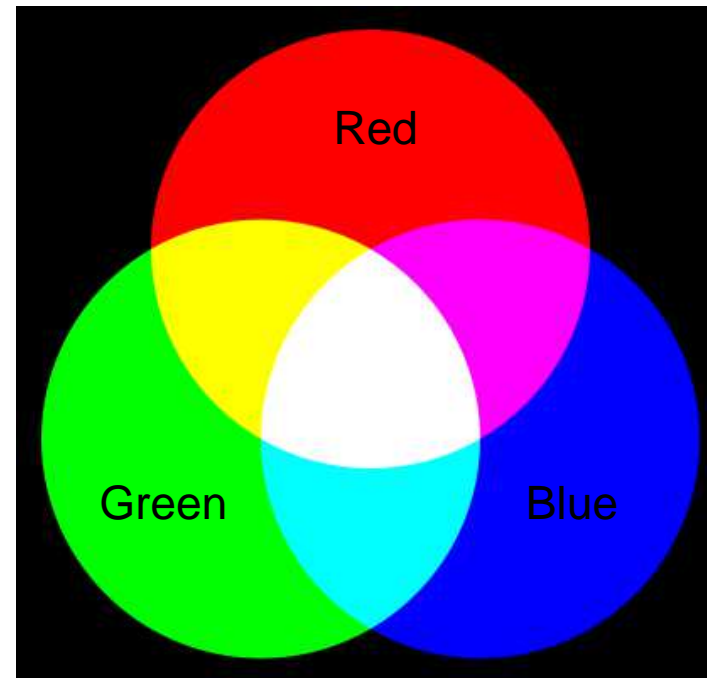
- Light
- Substrate
- Receptor



Colors...



PRIMARY COLORS
Subtractive synthesis (CMY)



PRIMARY COLORS
Additive synthesis (RGB)

Human limitations...

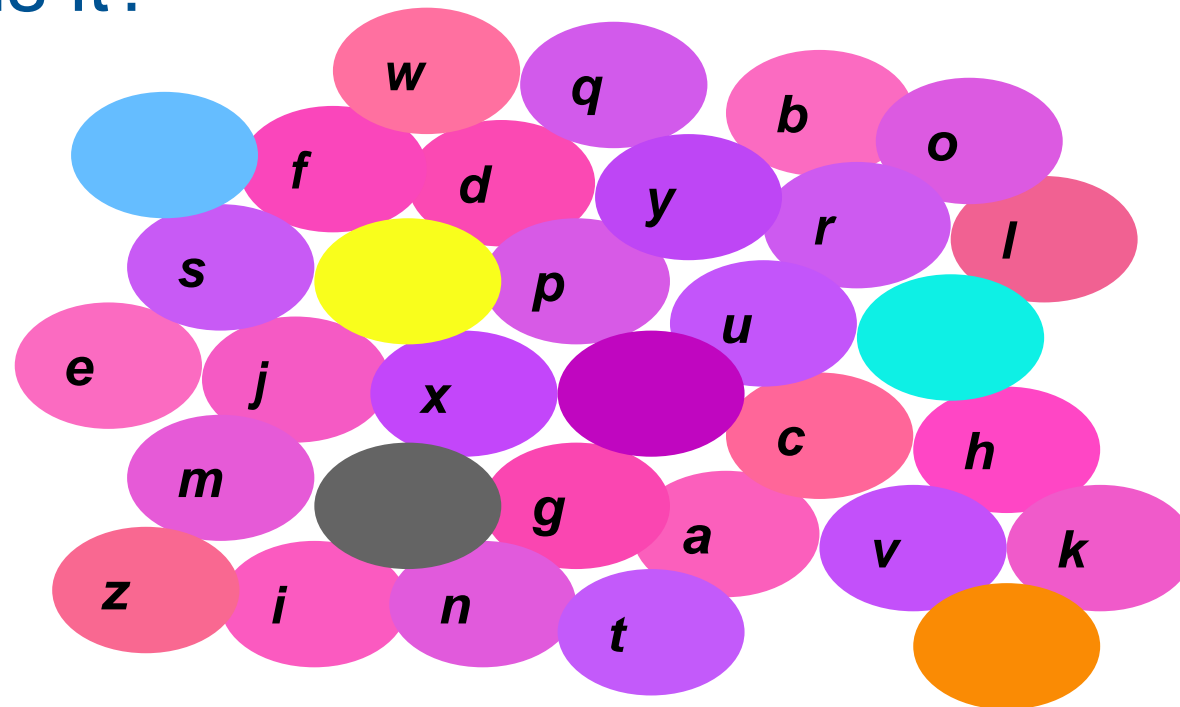
- 10 millions colors
- It is not possible for human beings to memorize colors



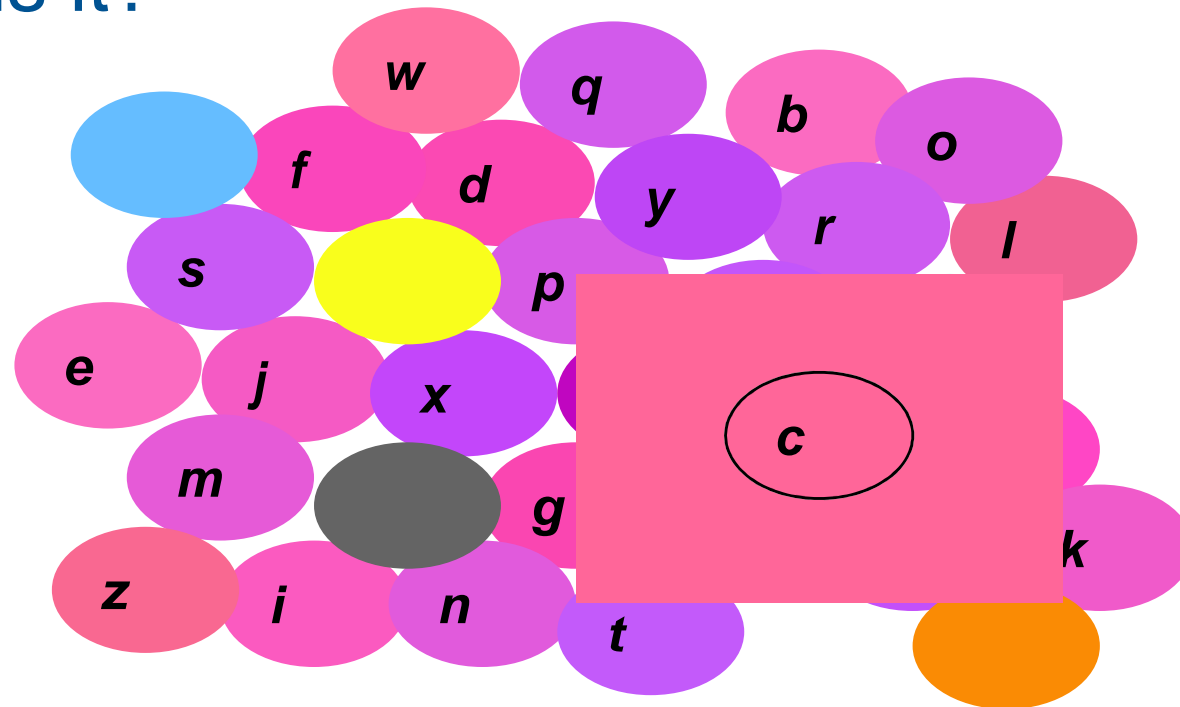
Identify this color



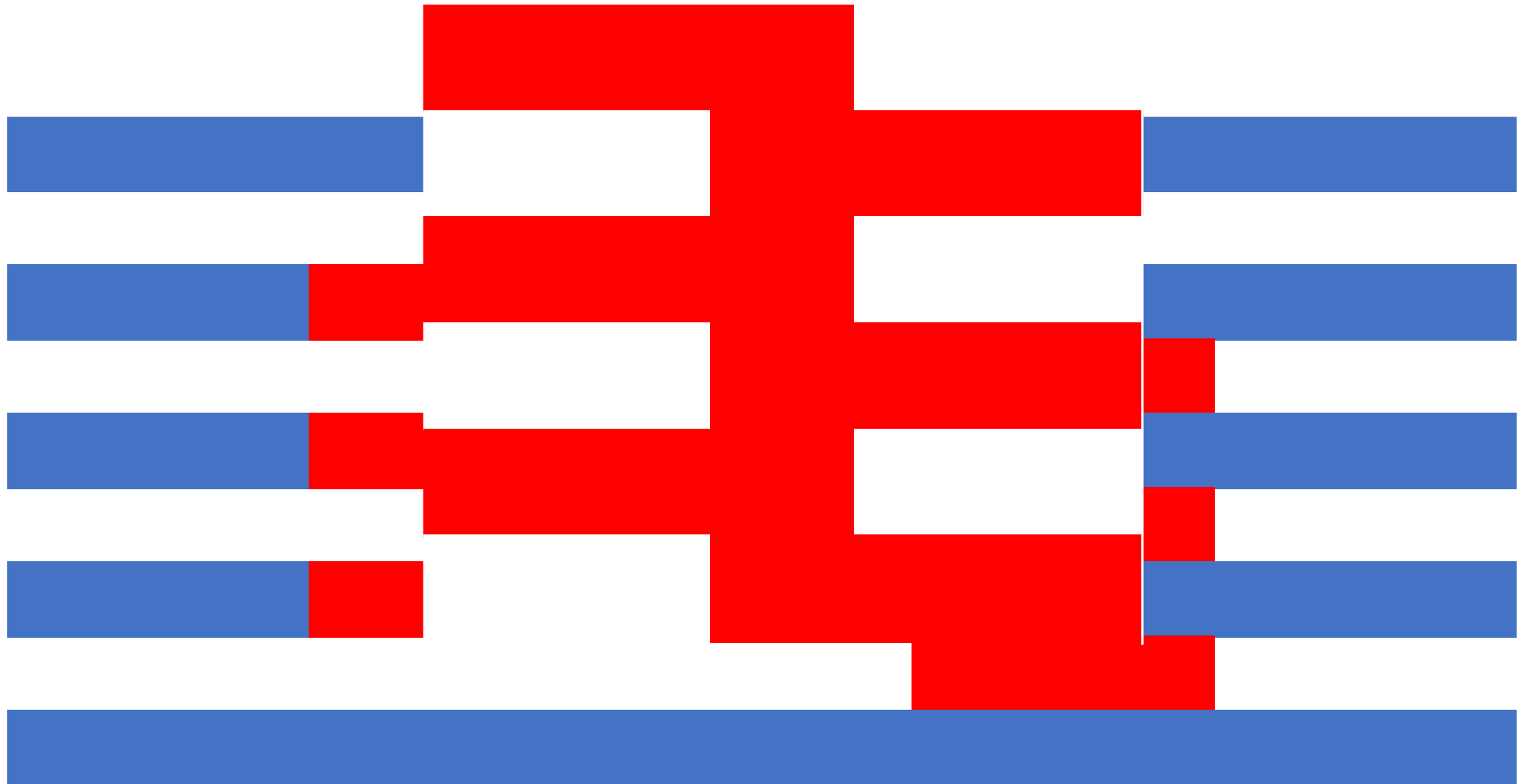
Which color is it?



Which color is it?



















- How much can you trust your brain?



- How much can you trust your brain?

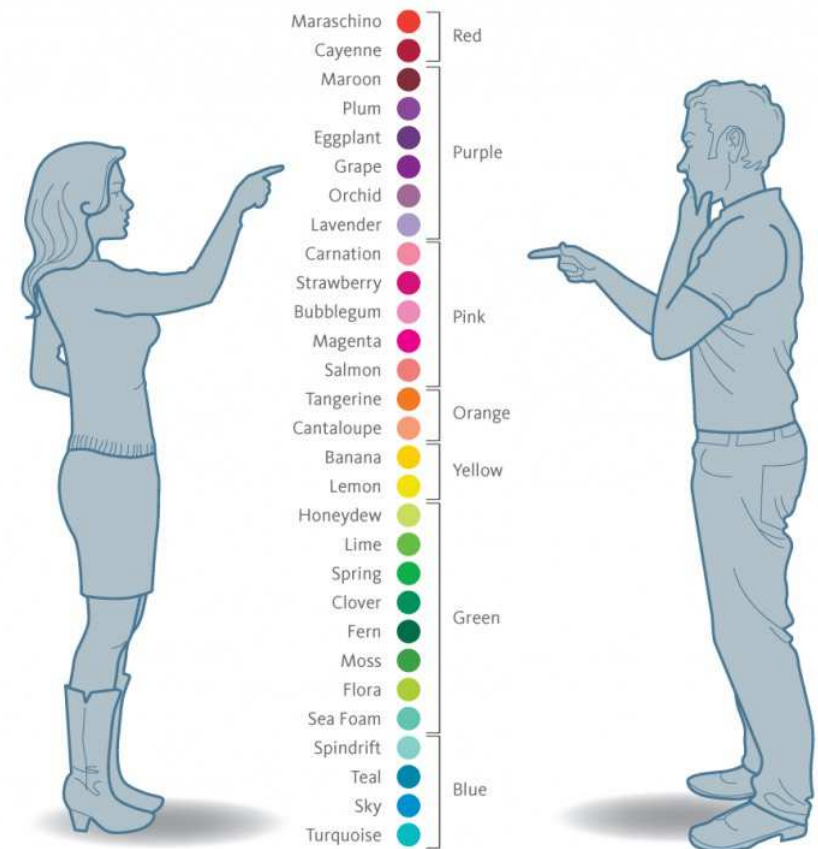


Color blindness

NORMAL				
PROTANOPIA				
DEUTERANOPIA				
TRITANOPIA				

- 8 out of 100 are color-blind
- Generally genetically
- But also stress, tiredness...

• Battle of the genders



Example...



the secret of colors...

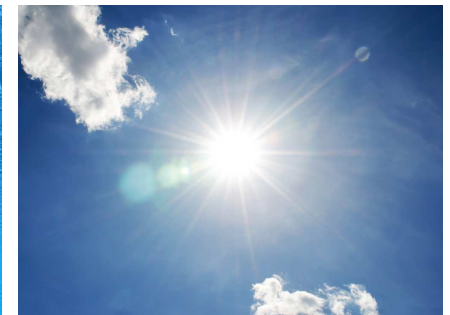
- Environmental aspects



temperature



humidity



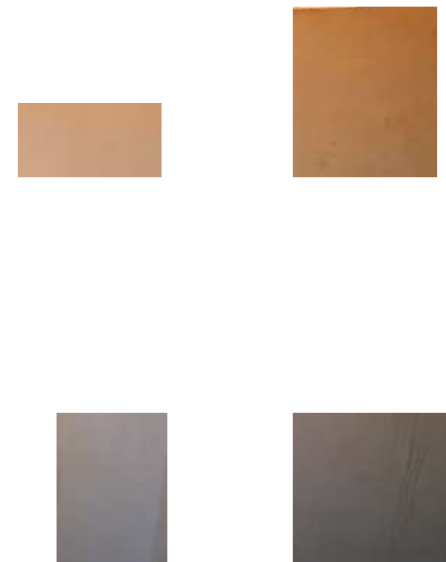
sunlight



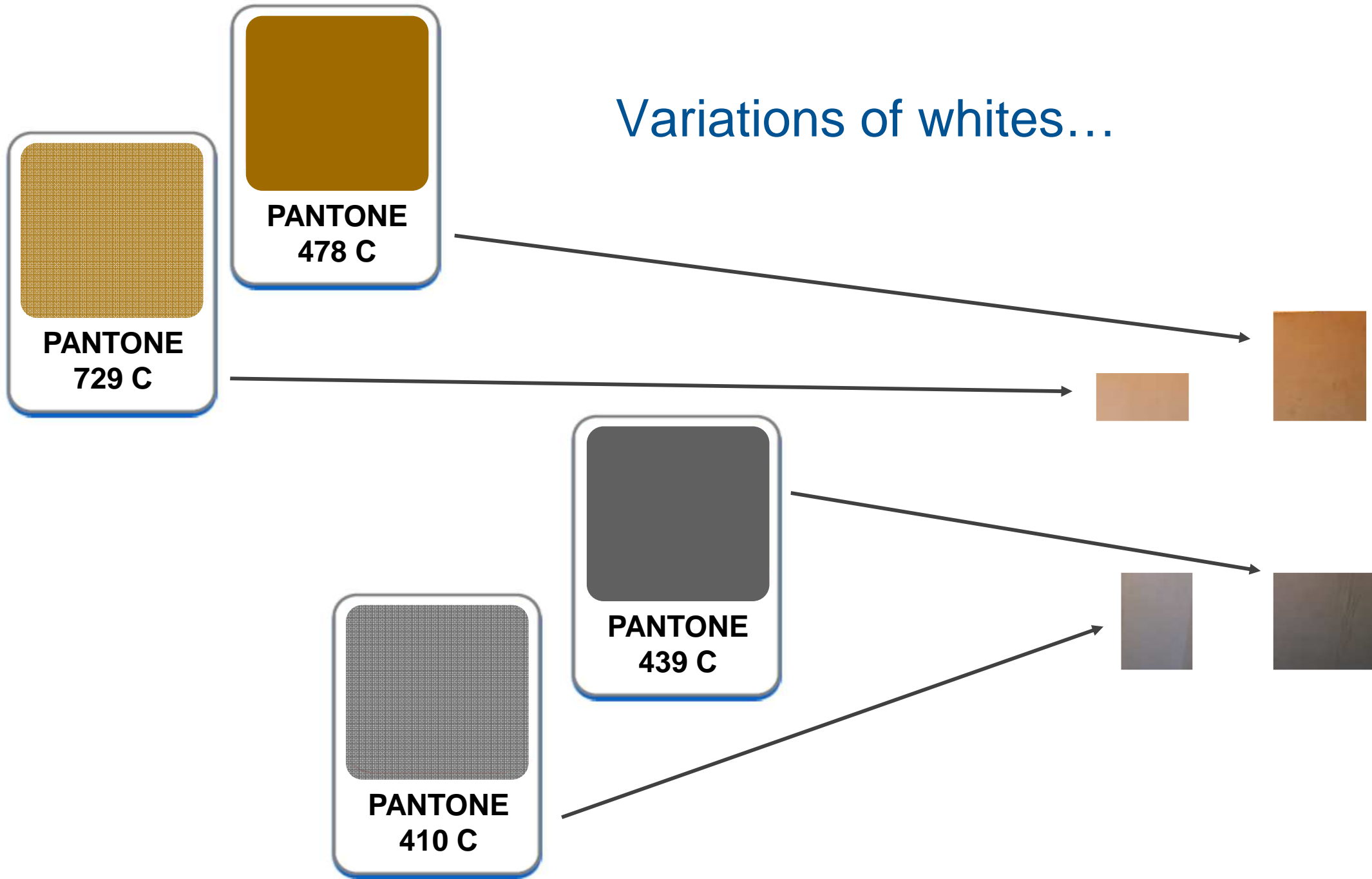
Subjective terminology...

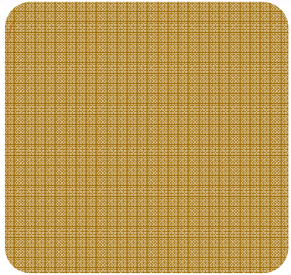




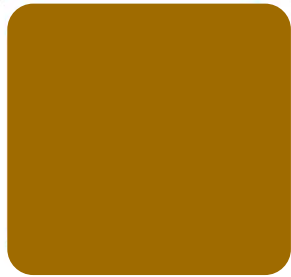


Variations of whites...

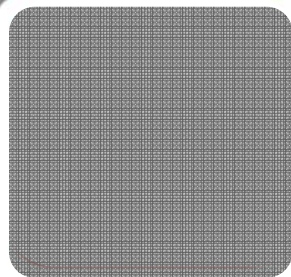




**PANTONE
729 C**



**PANTONE
478 C**



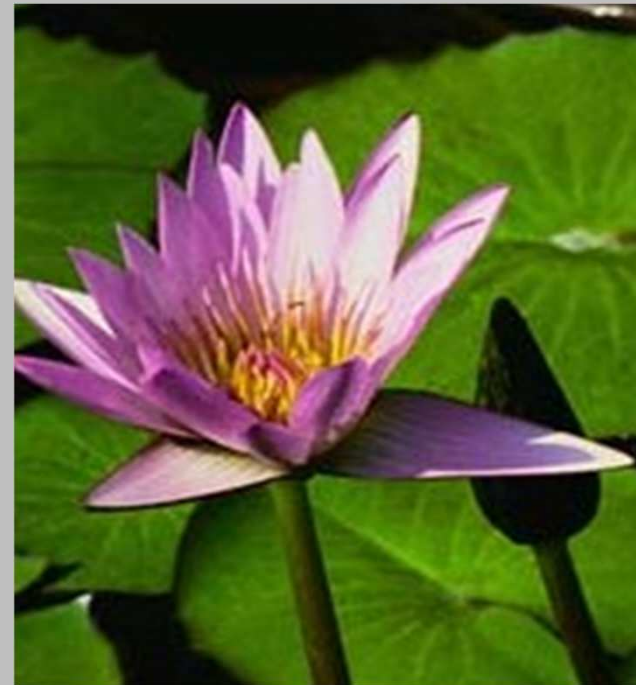
**PANTONE
410 C**



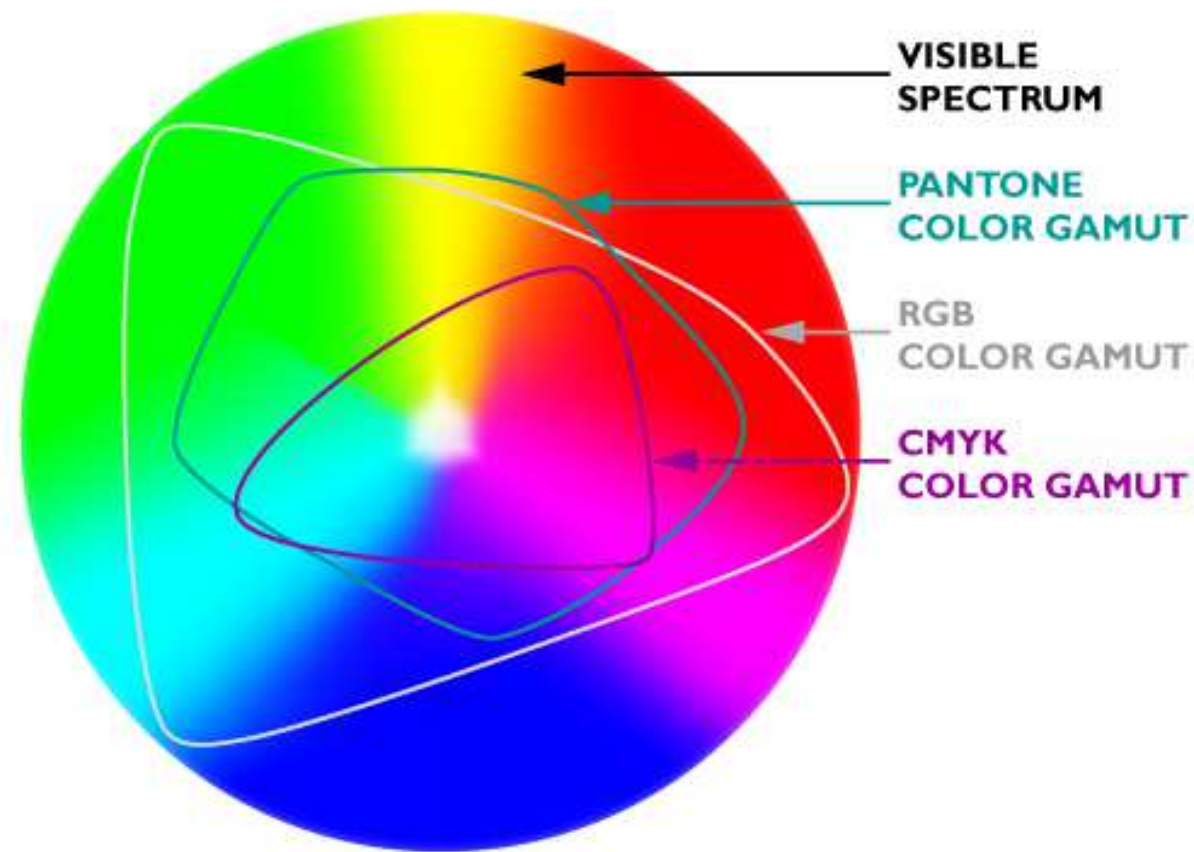
**PANTONE
439 C**



What we can see versus what we can make



What we can see versus what we can make



Color can be measured - Cie LAB

The international light commission defined the standard CIE LAB.

All colors are identified by 3 coordinates

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

L : 81

a : -19

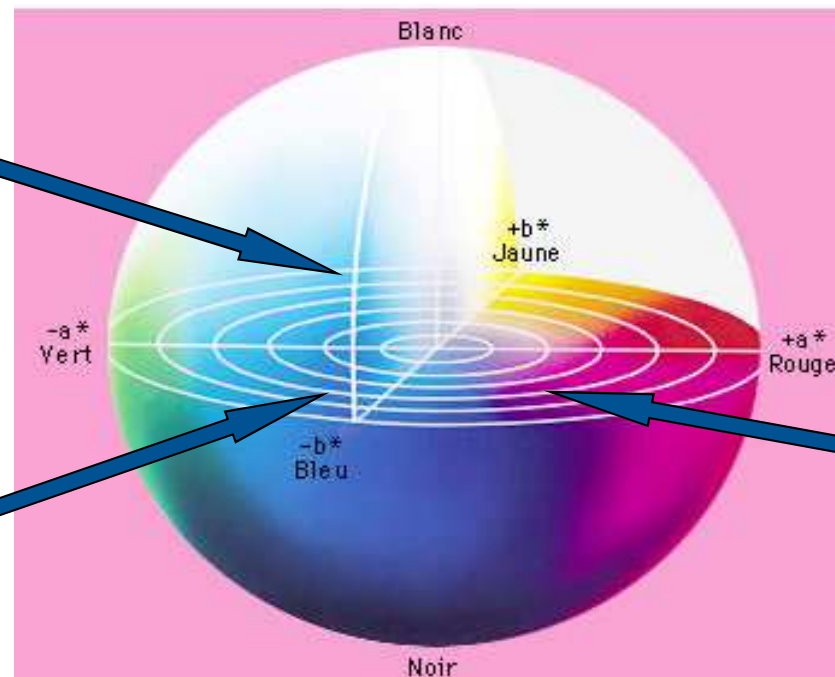
b : -51



L : 53

a : -19

b : -51



L : 45

a : 73

b : -24



Detect quality defects: **inconsistency...**

CONSISTENCY
IS



Inconsistency creates a perception among consumers

- a product has been on shelf too long
- can raise doubts about the quality of the product itself
- the product is not authentic



Automatic web inspection...



Some facts

- The same color separation file, printed with **different combinations** of inks and in different processes may therefore produce a **different visual result** each time.

– Target



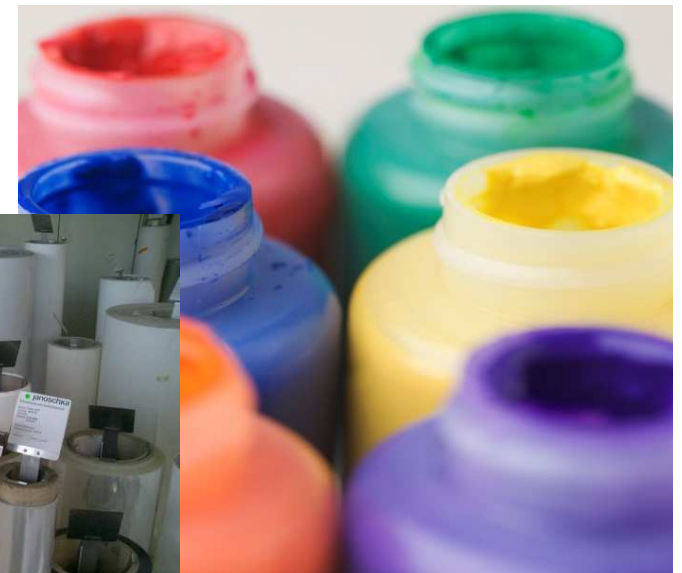
– Result



Many items have impact on the printing result...

Each printing process and almost each job requires specific technical parameters and expertise, taking recognition of substrates, laminates and printing inks.

- ➔ Different Printing Machines
- ➔ Different Printing Inks
- ➔ Different Substrates
- ➔ People



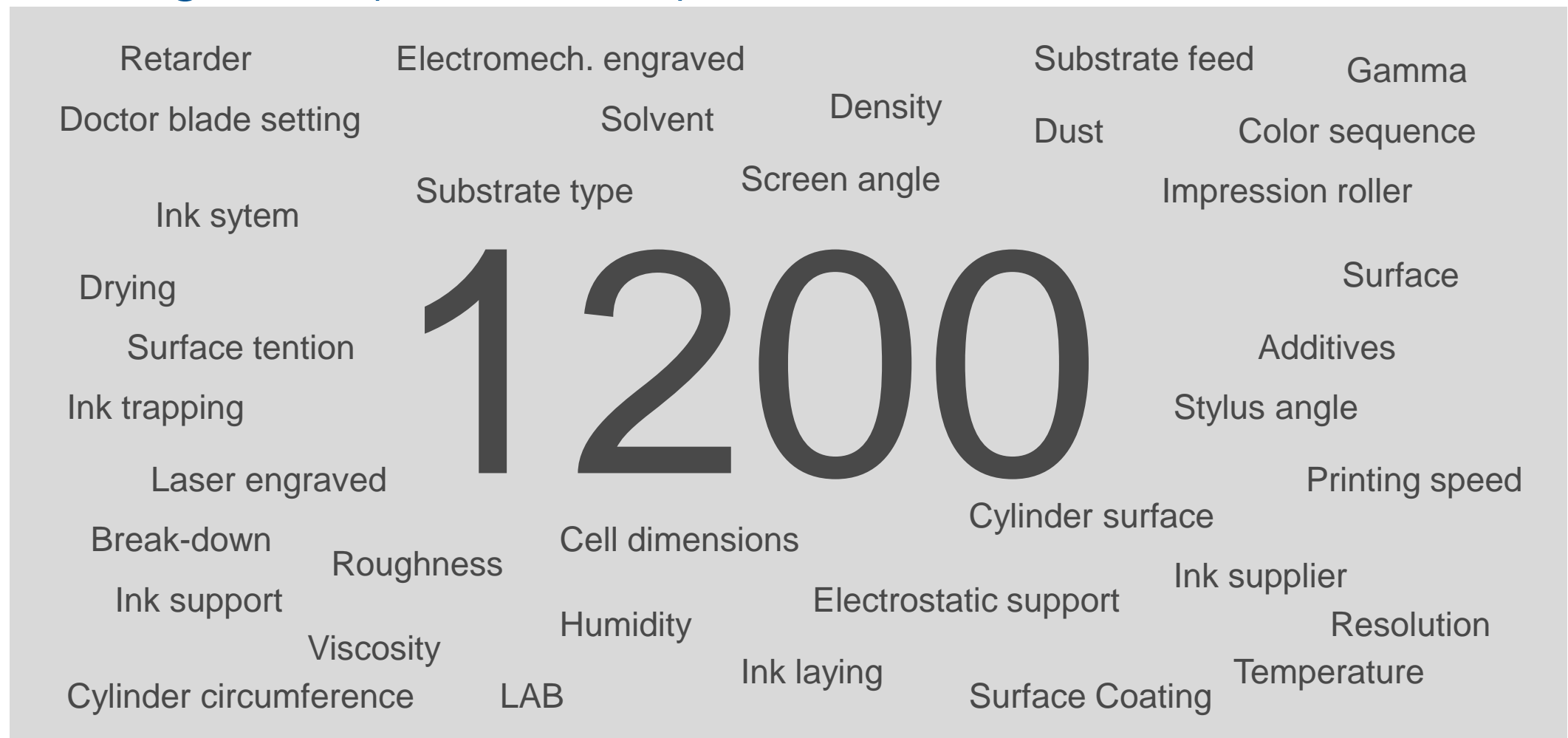
Many items have impact on the printing result...

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.



Picking Data (information)



Print Color Management: Fingerprint & Profiling

**Predictability
is a must !**

- Simulate the printing result prior to production
= Predictability
- Reduce set-up time
- Reduced waste
- Better efficiency
- Cost savings

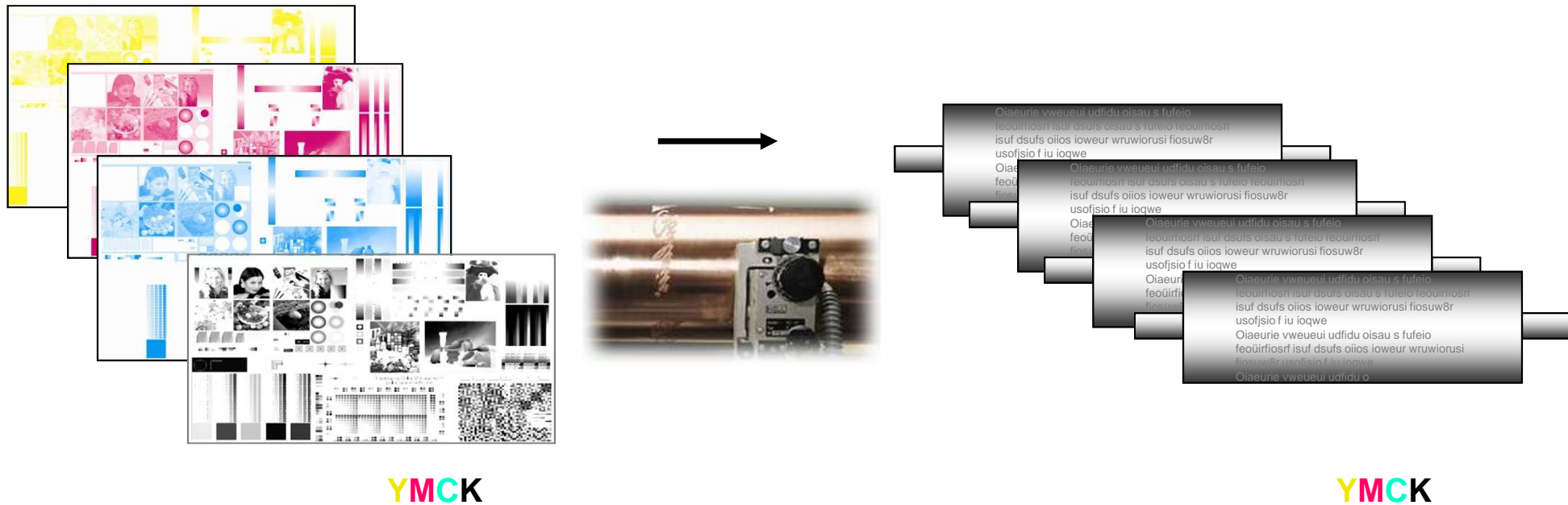
Fingerprint

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.)
- Etc.



Engrave a set of gravure cylinders



Fingerprinting

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

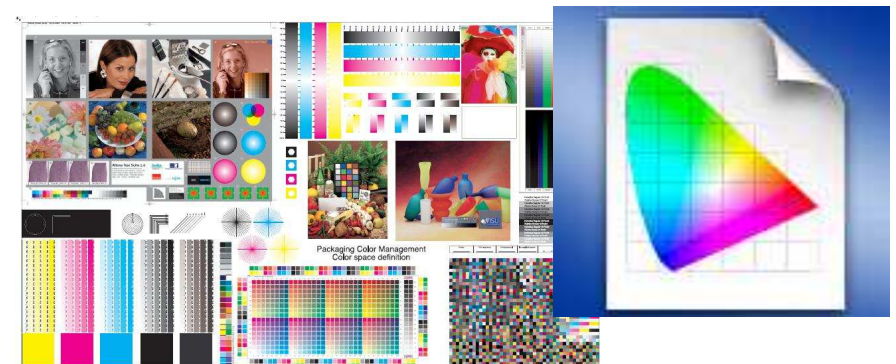


Profiling

- Once the printed result is approved, it will be used as the color target. The color charts will be read-in by automatic Spectro-photometers



- Additional visual corrections are applied when comparing fingerprint and proof

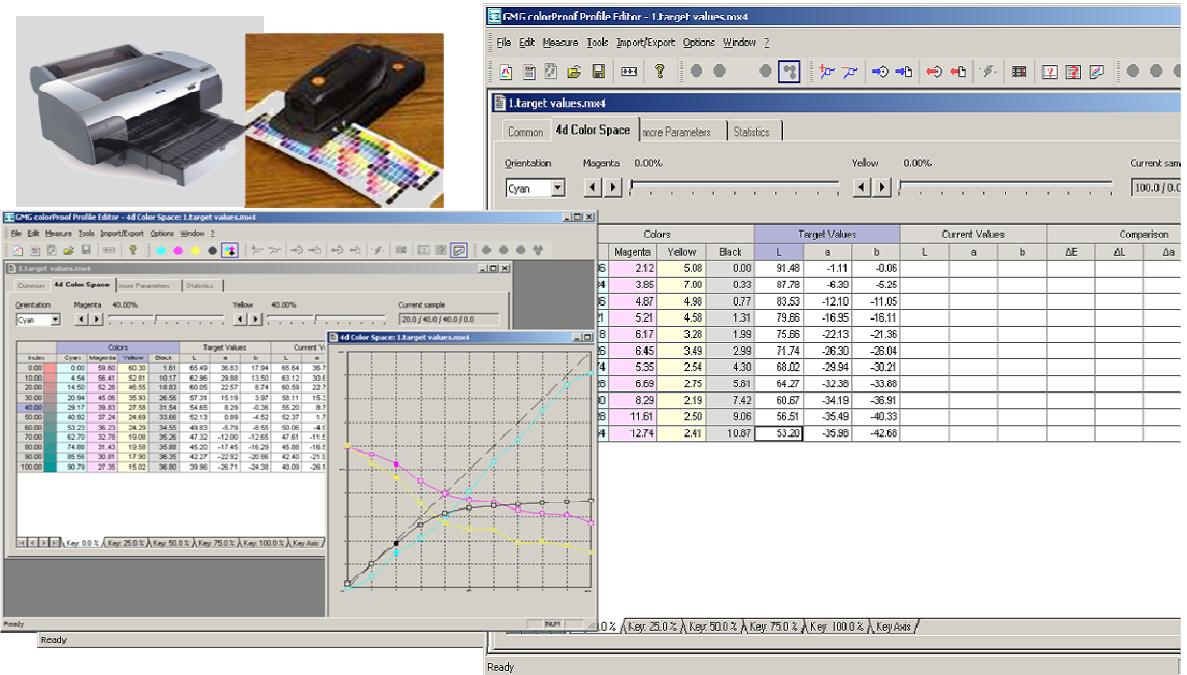


The Result: Printer dedicated color profiles

What you see
is what you get !

→ digital contract-proof

- Digital-proof
- Barrel-proof
- Printing production



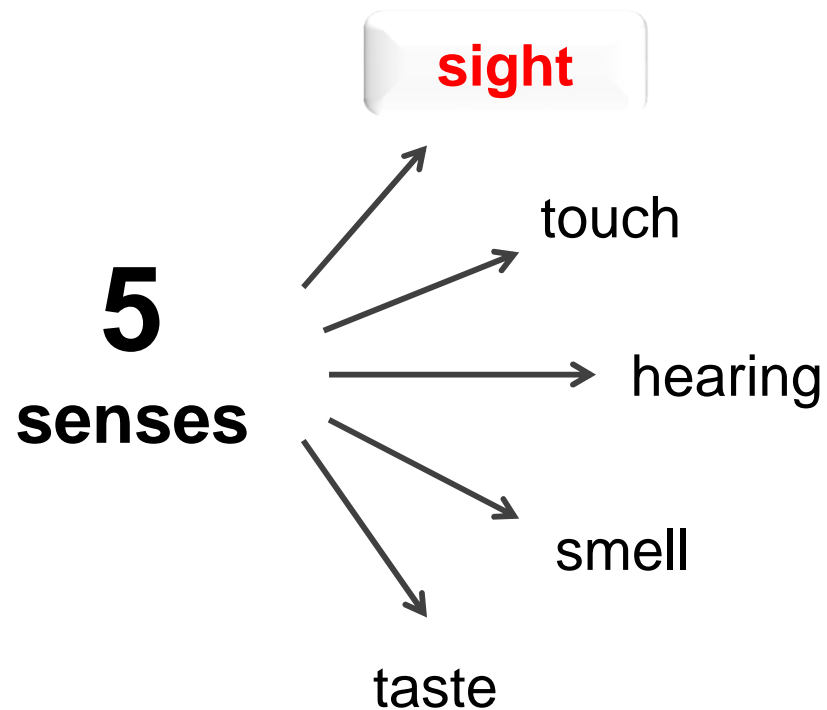
Uniform quality and color consistency

Regardless:

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



It's all about sight...

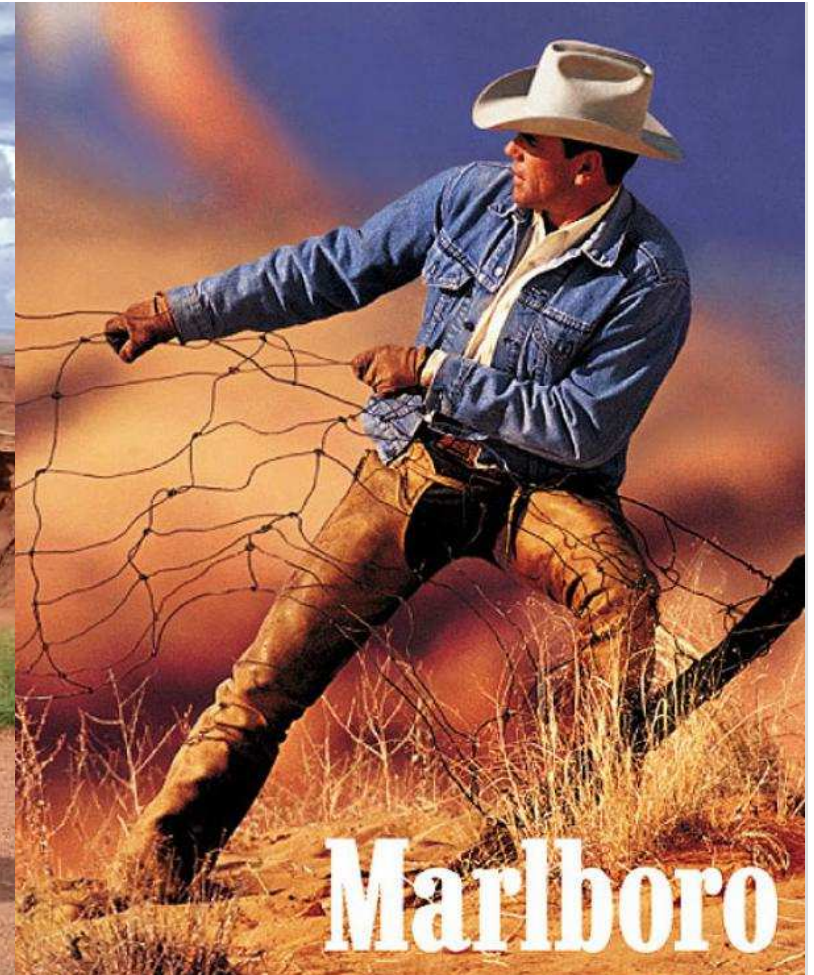


Consumers attractions...

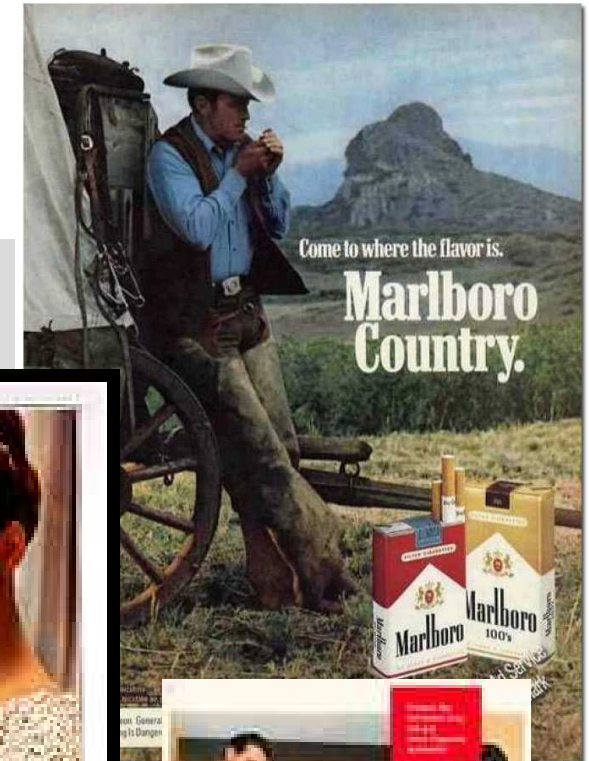




Which Brand is that...?



Branding without publicity...?



and what will happen...?



Product declination...



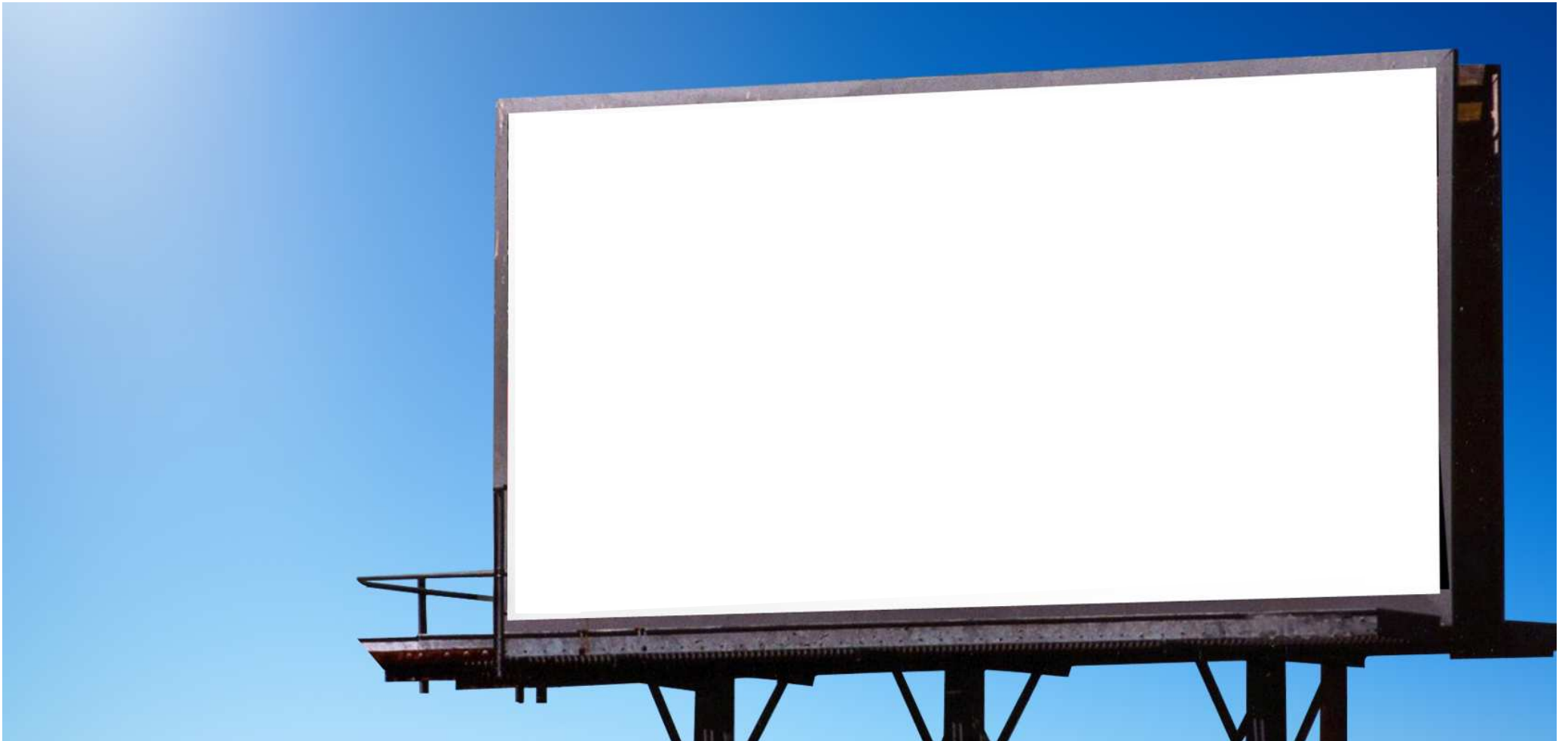
The ultimate...?



Publicity...



Publicity...



New challenges...



More and More Legal Obligations and Restrictions...





Legal obligations - market requirements

- Need for individual appearance to prevent from forgery
- Product identification / security elements on the pack
- Smaller text / type / elements

ERREAGENTENERGY800WGBAYERR
ENERGY800WGBAYENERGY800WGBAYE

Micro Text



Guilloché



Can you read this text?

Can you read this text?

Can you read this text?

Can you read this text?

Can you read this text?

Can you read this text?

Can you read this text?

Can you read this text?

Can you read this text?

Can you read this text?

Can you read this text?

Can you read this text?

Can you read this text?

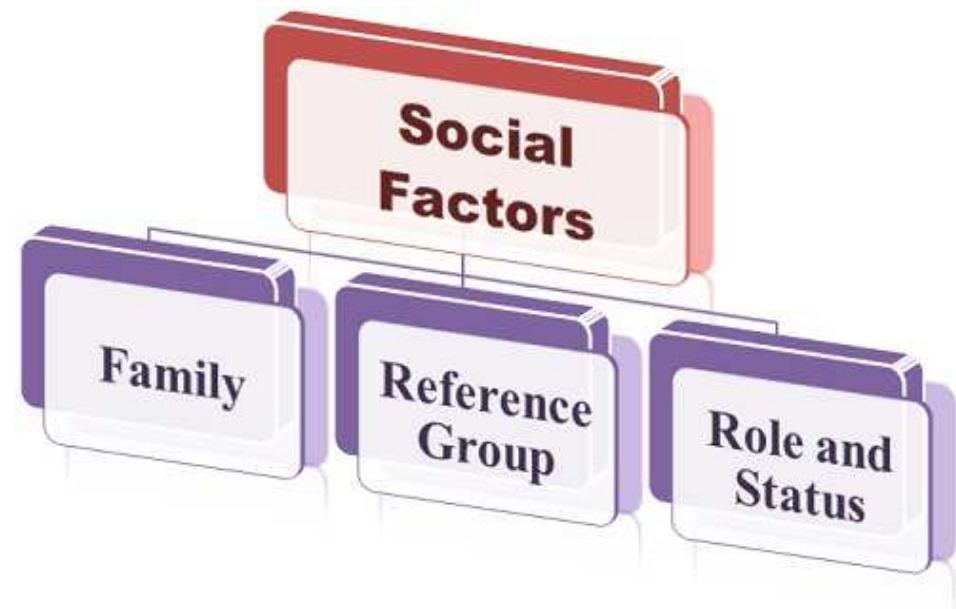
Can you read this text?

Can you read this text?

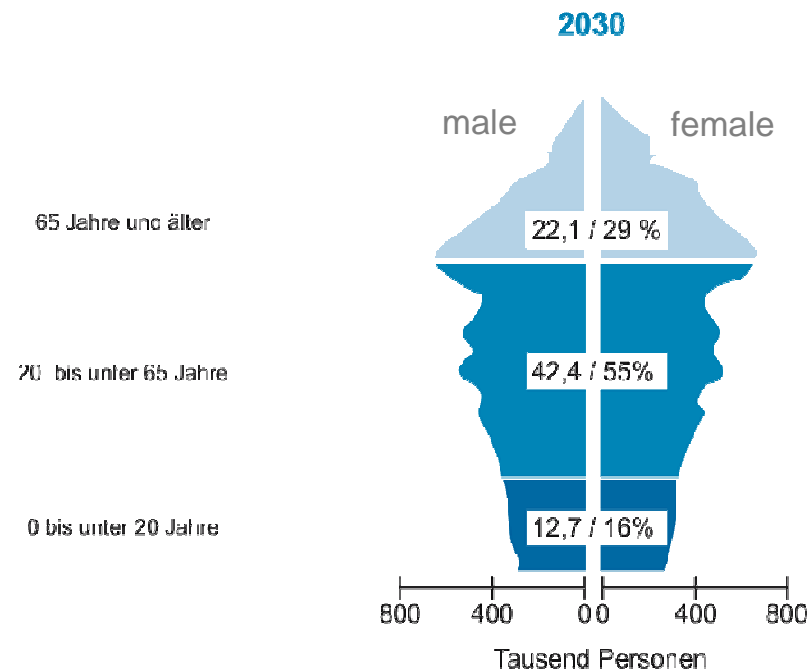
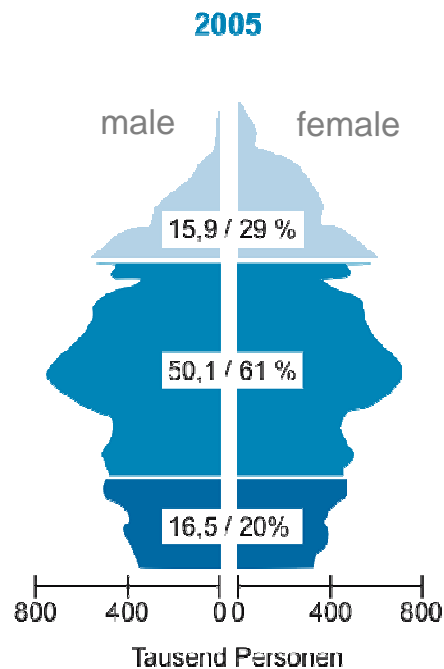
Laser technology provides unlimited options...



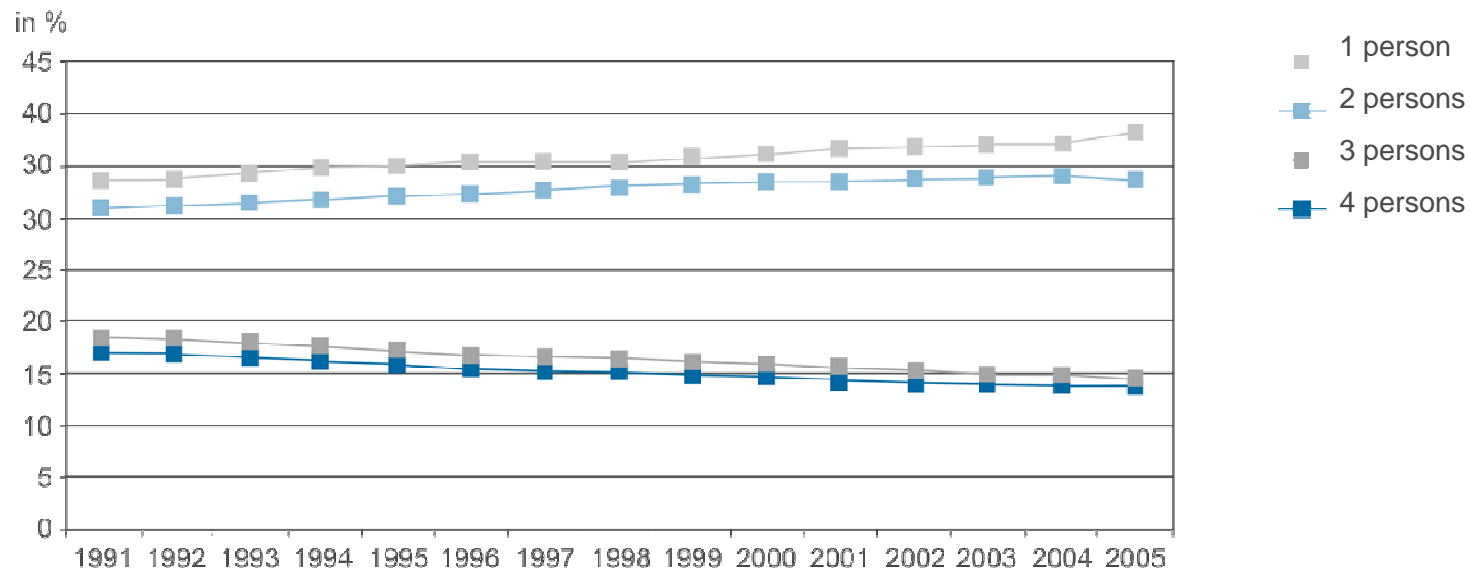
Change in Consumer behaviors...



Change in consumer needs and behavior is changing the requirements of our industry



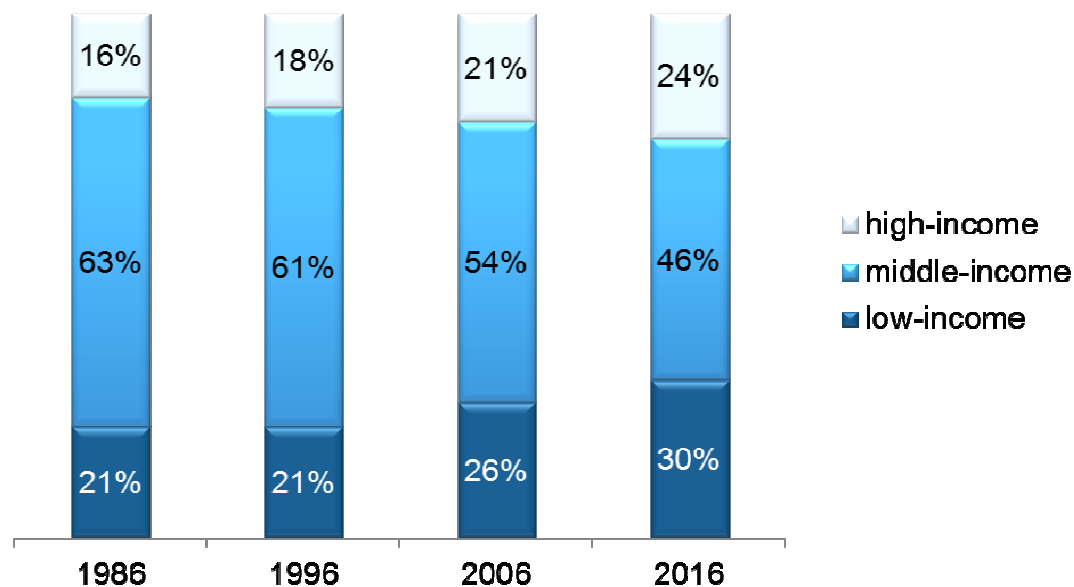
Change in consumer needs and behavior is changing the requirements of our industry



Evolution of „person per household ratio“ in Europe



Change in consumer needs and behavior is changing the requirements of our industry



Change in spendable income in Europe

Market requirements - Sustainability

Change in consumer behaviors - and their needs

- Change of Lifestyle
- Health & Beauty – BIO
- Environment: reduce – reuse – recycle
- Carbon Footprint - biodegradable substrates



Compostable deep freeze packaging

Market requirements – Technical Support

Changes in market needs
is changing our industry

- Time to Market
- Cost-control, cost-reduction, savings
- Added-value
- Faster printing speed
- New printing presses
- New printing technologies: digital-print



Market requirements – Quality

Changes in consumer needs
is changing our business:

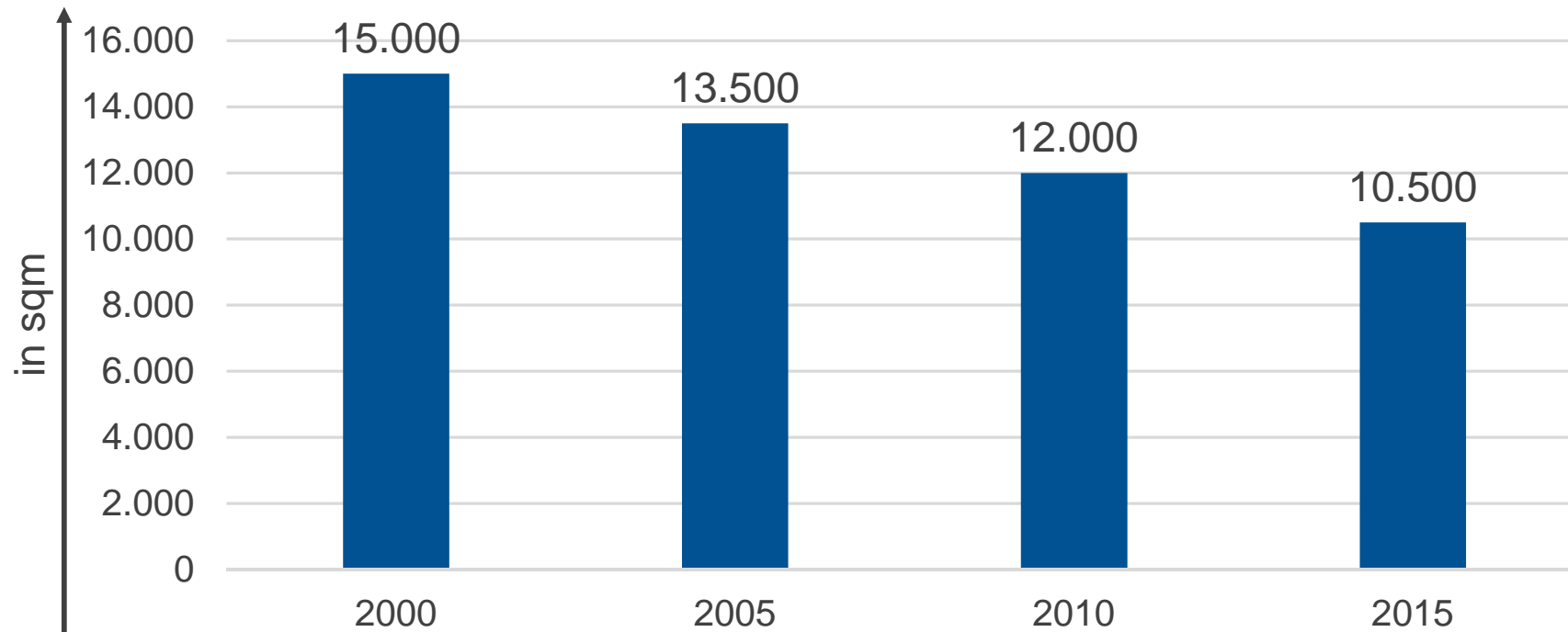
- Overall more complexity in packaging design
- Matt and glossy finishes, new lacquers etc.
- Uniform Quality for all printing technologies is a must!





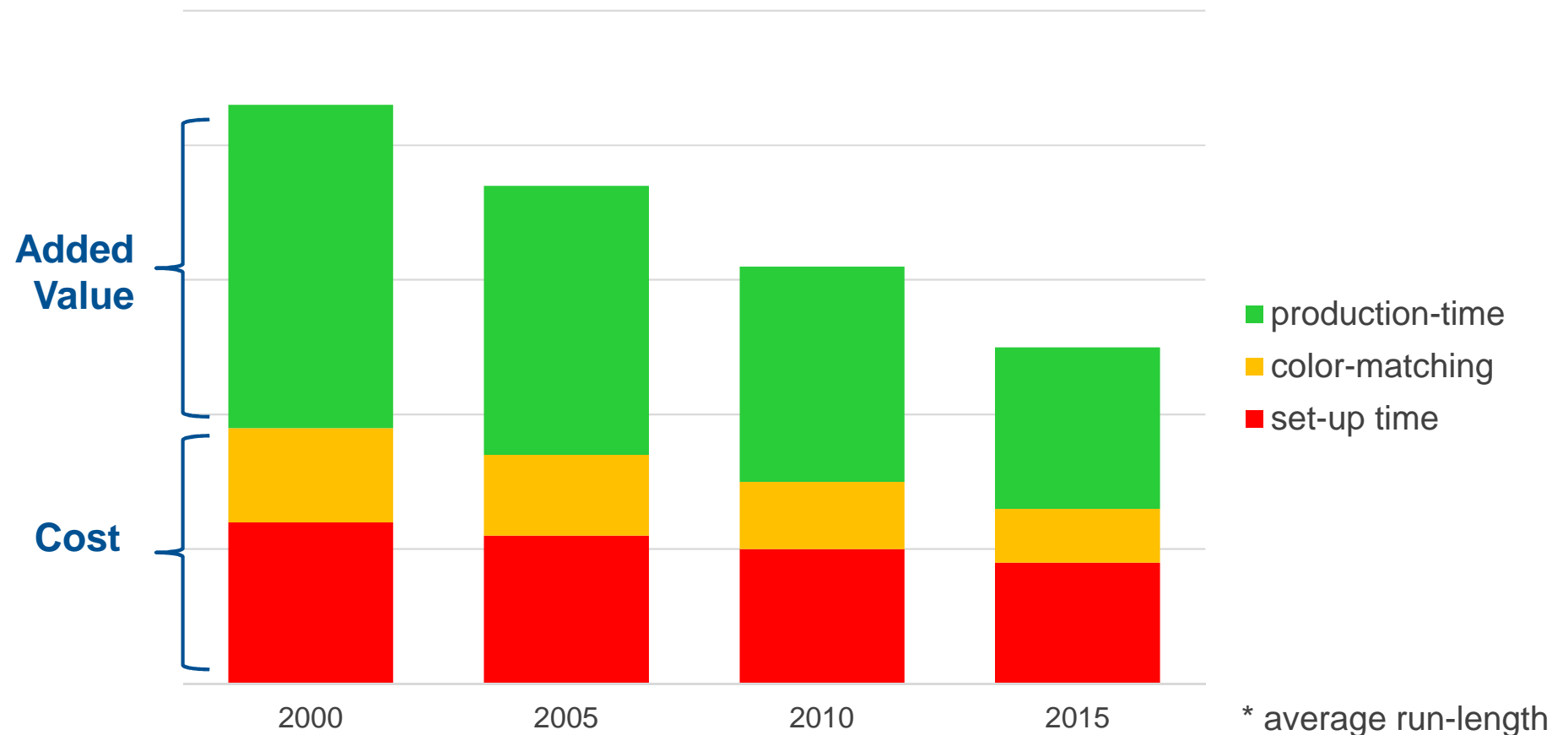


PROBLEM N° 1: run length-decline

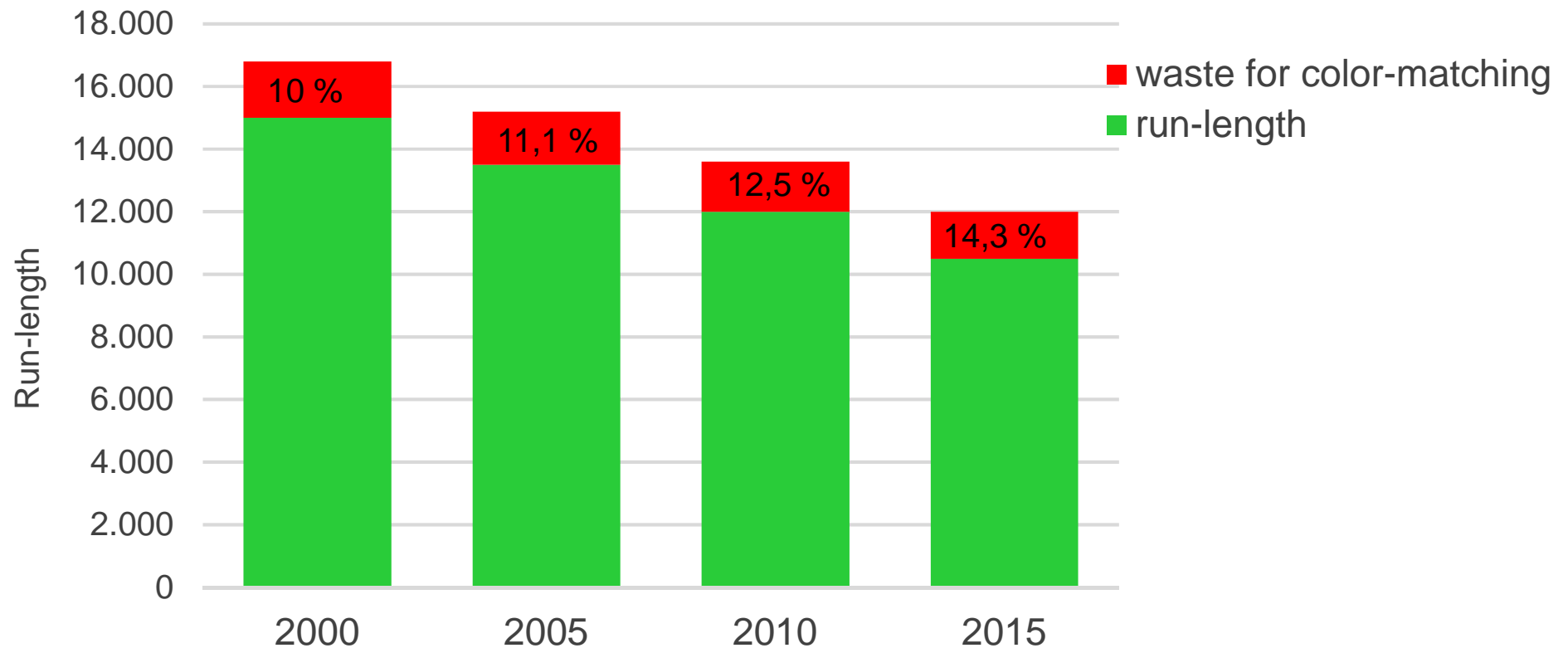


* average run-length

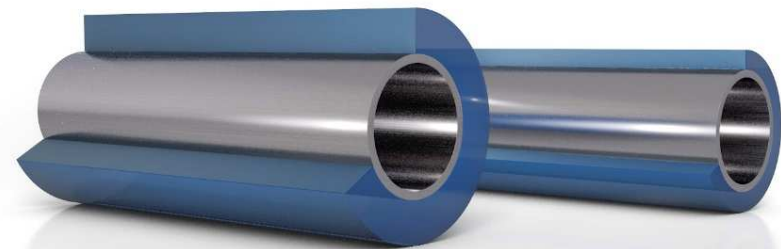
PROBLEM N° 2: Utilization (time) of the printing-presses



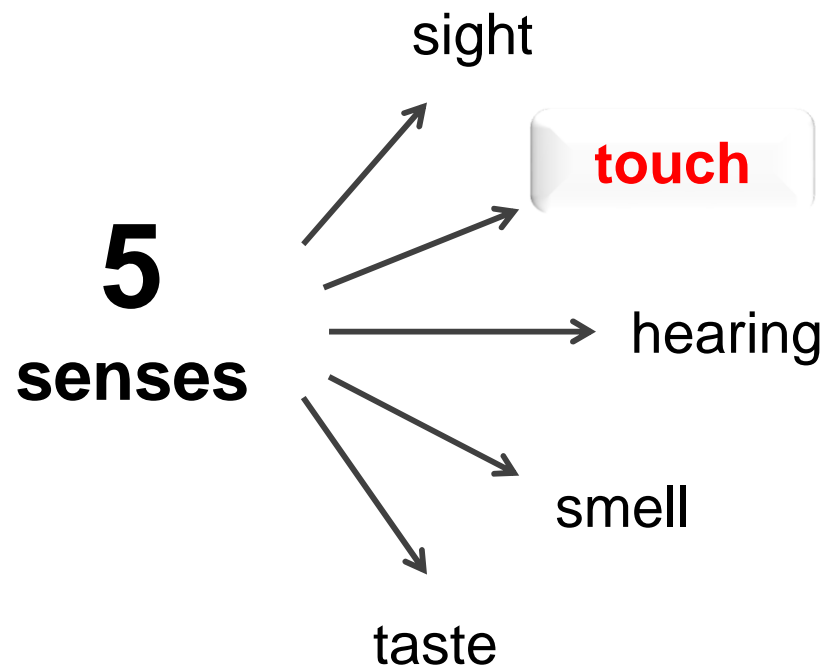
PROBLEM N° 3: Waste



New standards for Rotogravure ...



Consumers attractions...

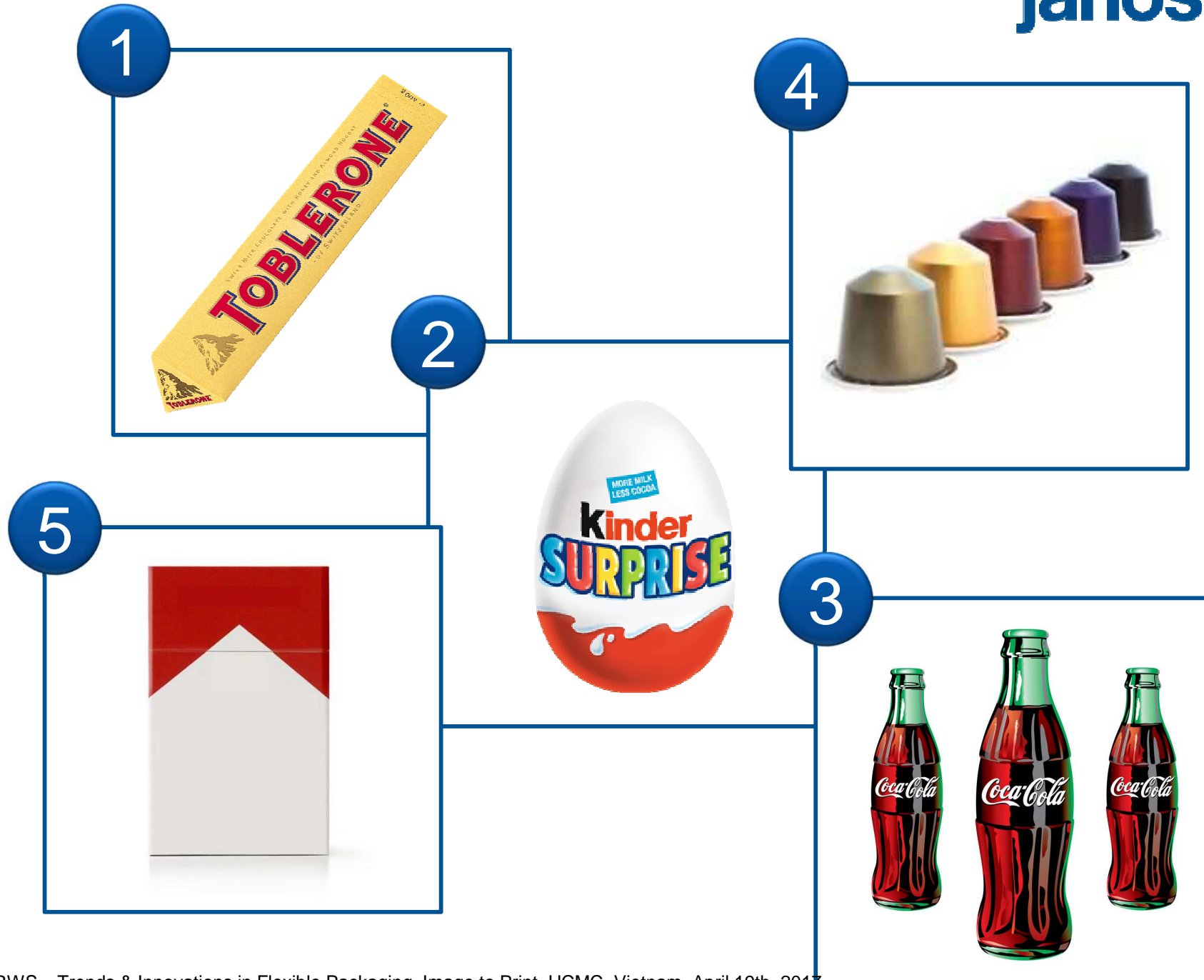


Desire to touch...

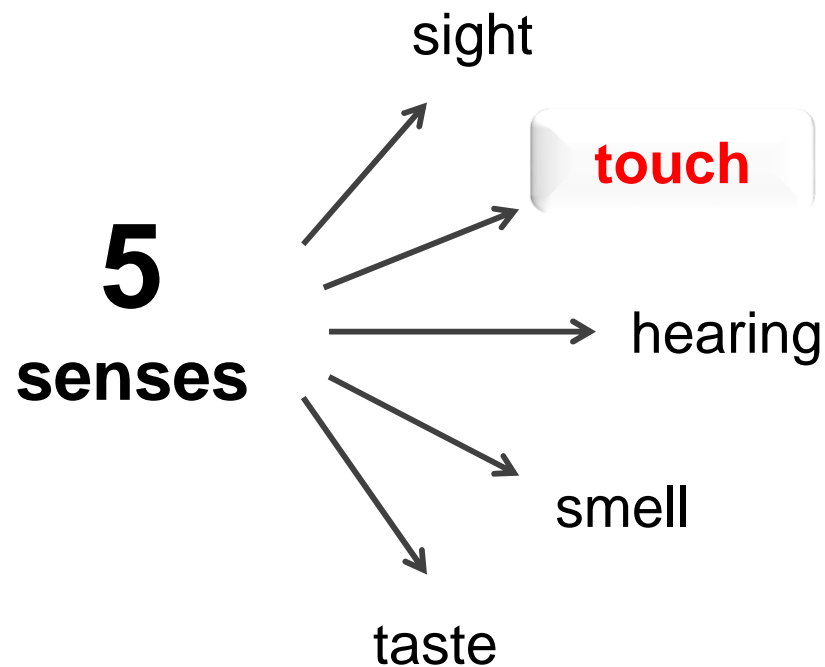


Consumers attractions...

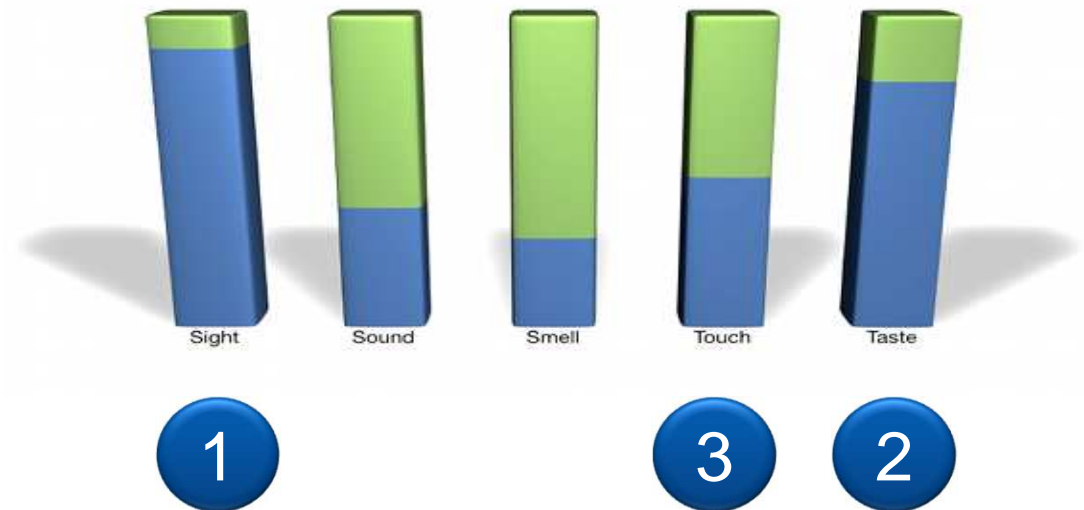




Consumer attractions...



The gateways to the emotions



Combination of form and color...



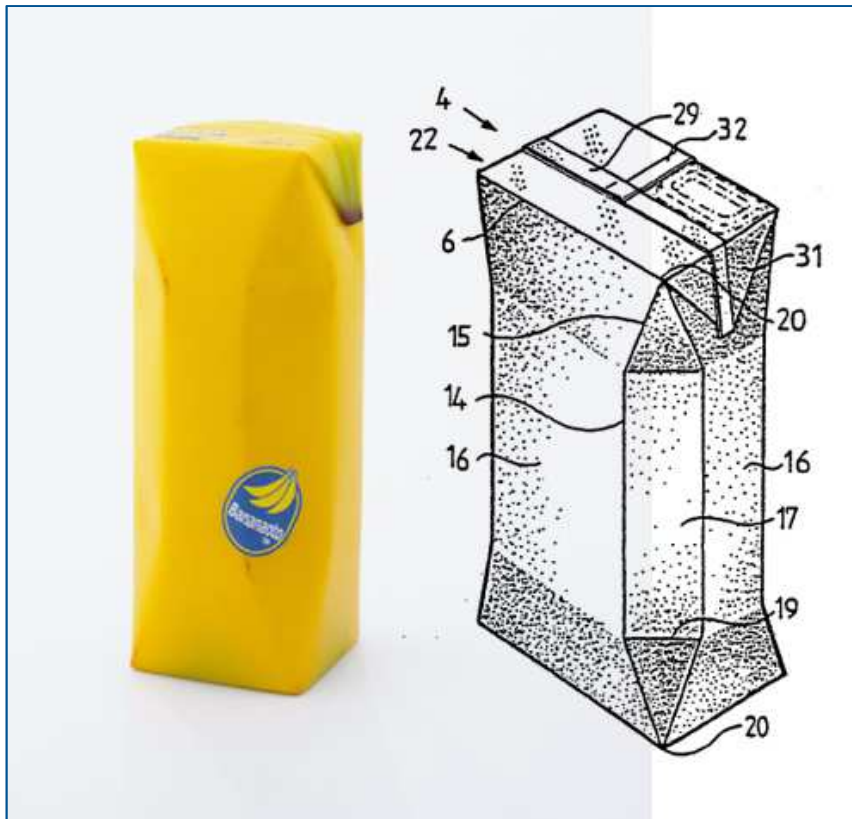
Combination of form and color... ???



Desire to touch...



Desire to touch...



Desire to touch...



Desire to touch...



Desire to touch...



Desire to touch leads to innovations...



Market trends

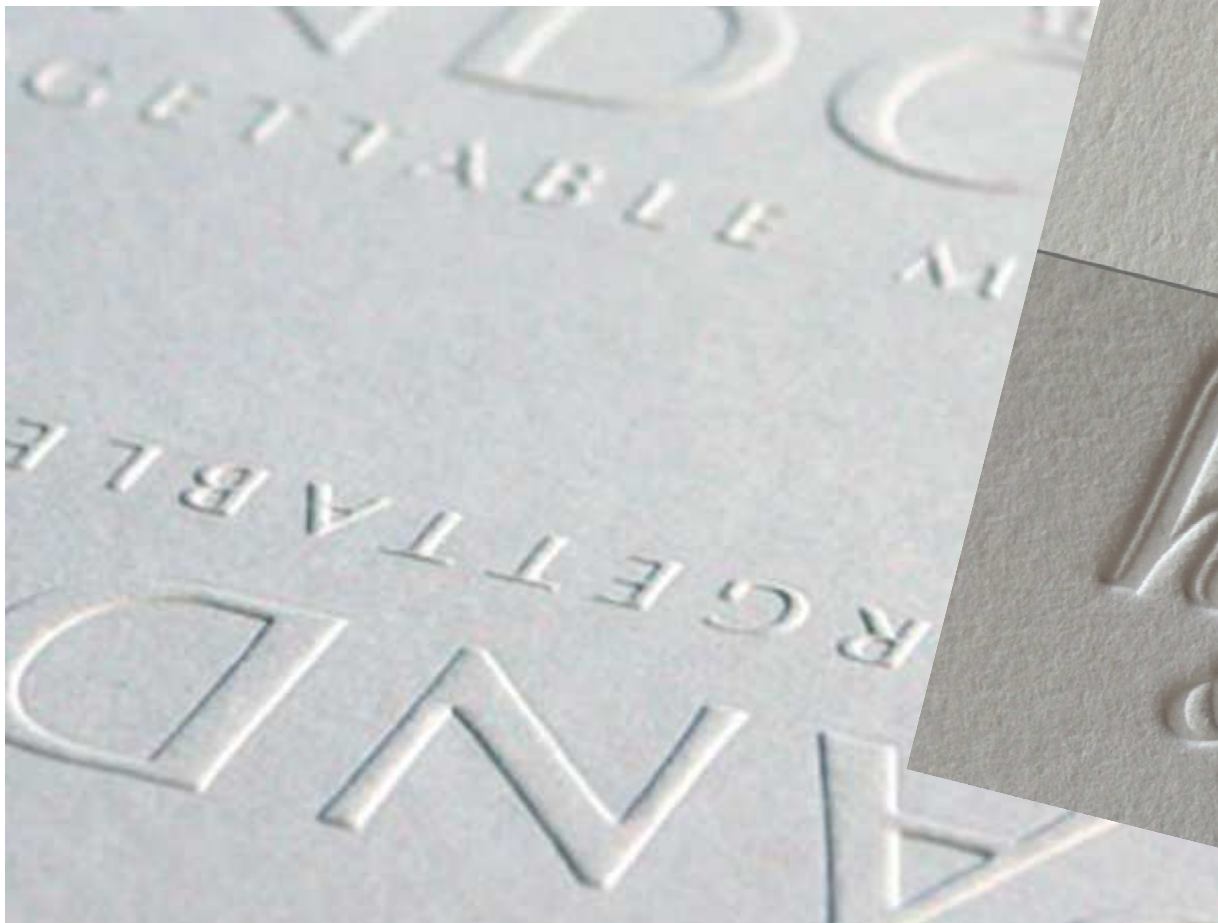
Embossing



Principles of Embossing Technology



Embossing - De-bossing

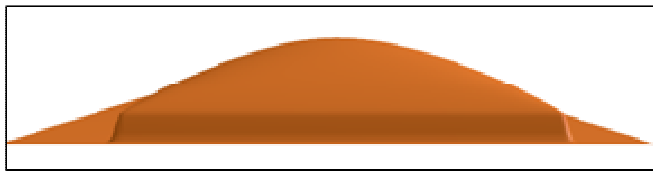


3D Embossing

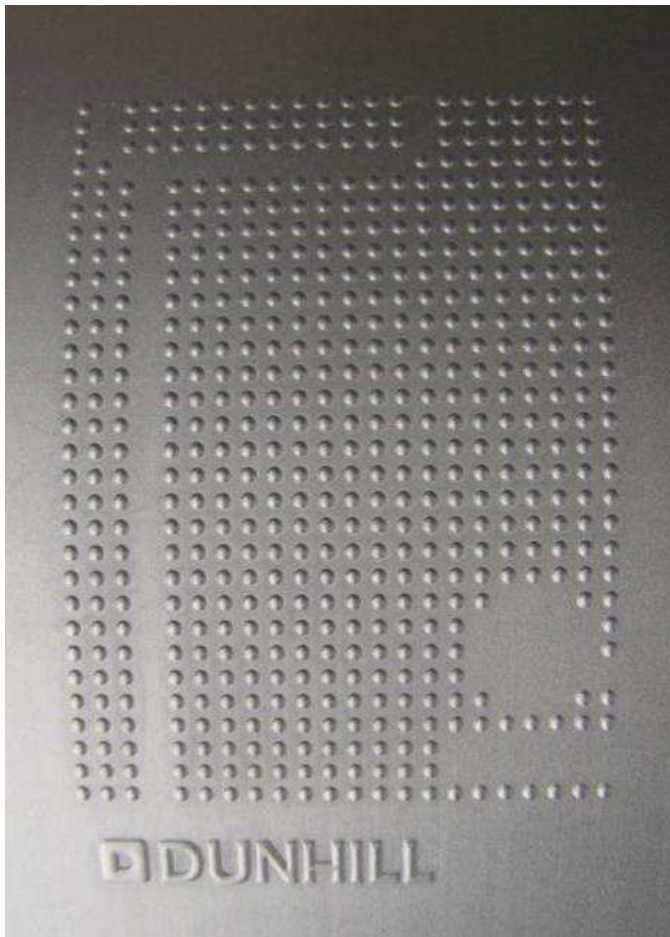
CNC technology



Laser technology



3D Embossing



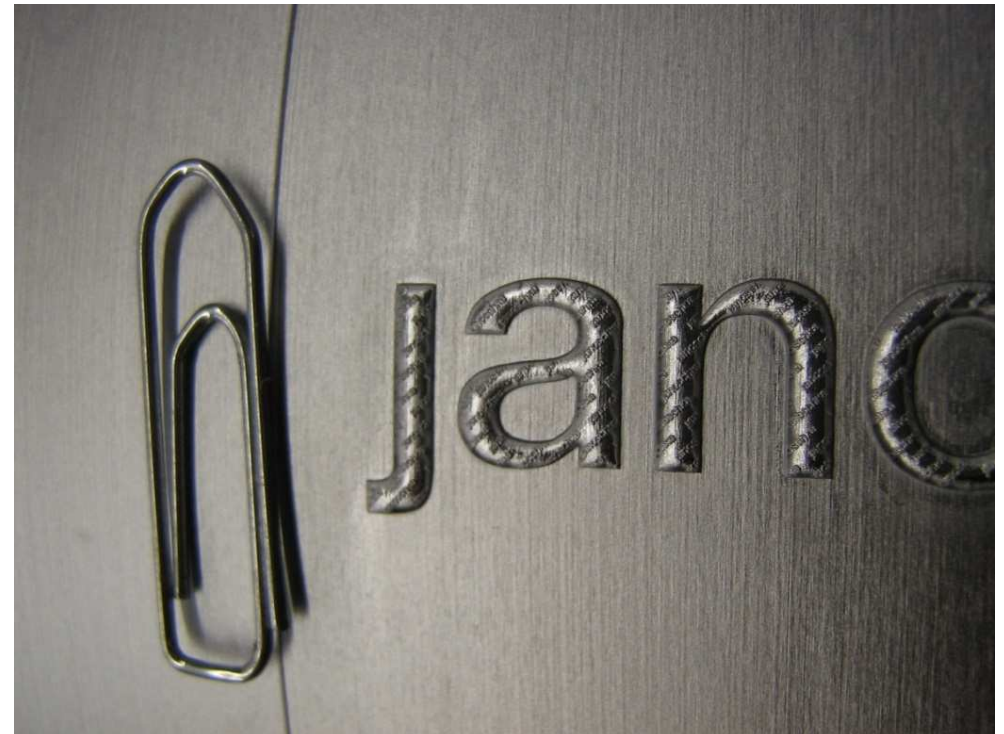
3D Embossing



Structures: Pictures



Micro-embossing with Laser Technology



Special Varnishes

- **Haptic effect :**

Created with UV or water based varnishes to generate a visible and 3D structure like lines, text or logos.

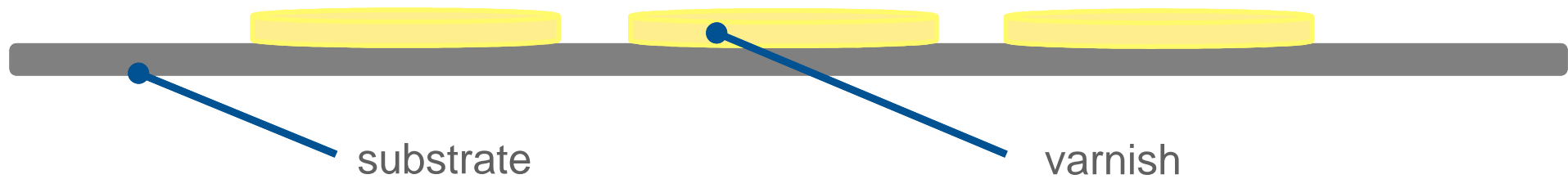


- **Tactile effect :**

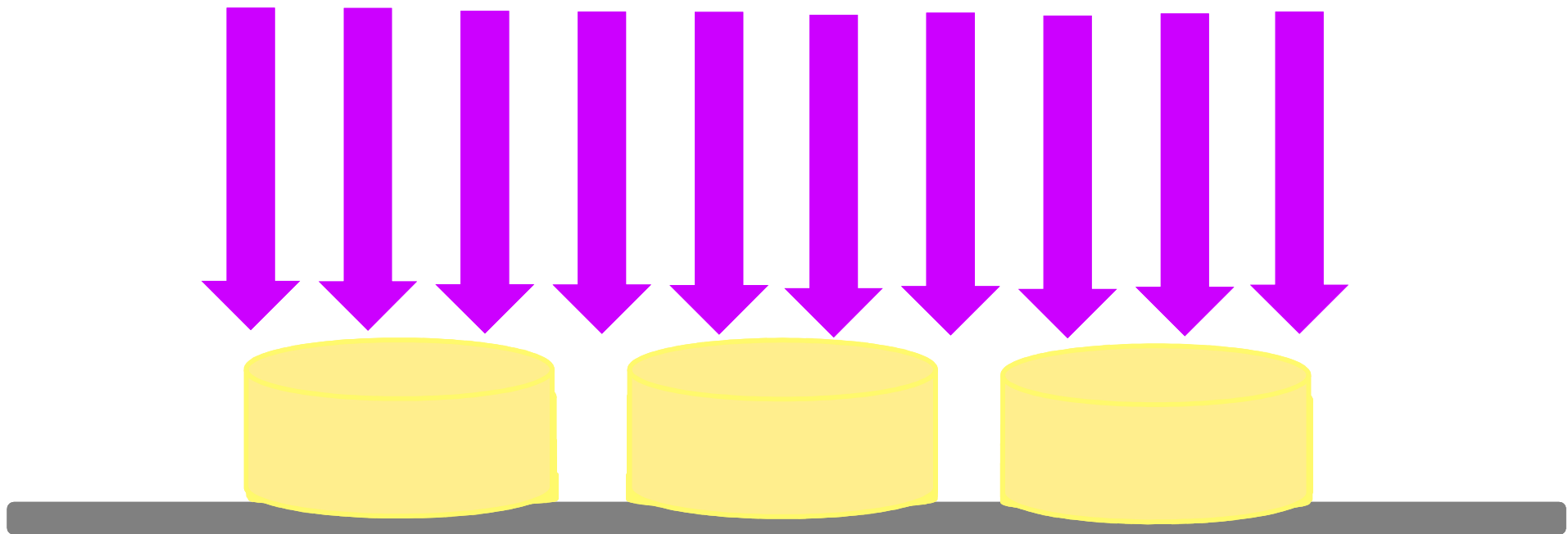
Created with soft touch or sand varnishes to generate a palpable surface.



Printing principles



UV curing



UV light installed in the printing unit will make the UV lacquer expand after printing and give it a 3D shape

The principles



1. Printing of a gold
2. Overprint of the

**Special cylinder
required !**

1. Printing of a gold background color
2. Overprint of the Logo color
3. Overprint of the 3D Lacquer
4. UV curing of the lacquer after printing
creates 3D effect

Market trends...

Haptic

- Structure Varnish
- Touchy Stuff : Sand, soft, glossy or matt varnish
- Hotfoil



Market trends...



Applications and limitations...



Combining beauty with functionality...



Combining beauty with functionality...



Combining beauty with functionality...



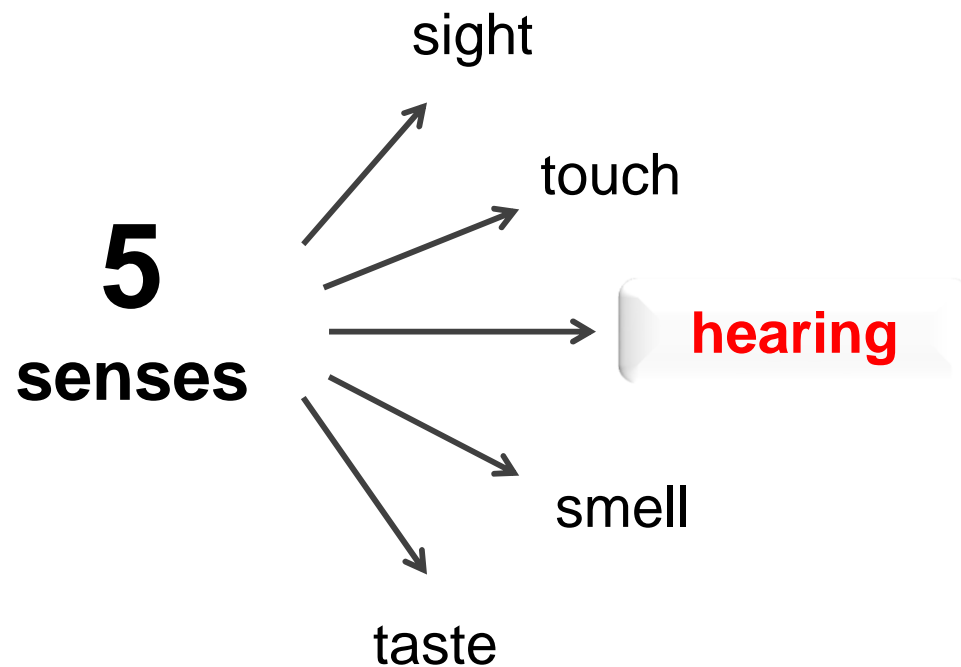
Combining beauty with functionality...



Combining beauty with functionality and saving costs...

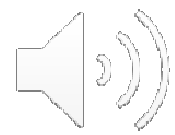


Consumers attractions...



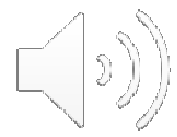
The sound of packaging...





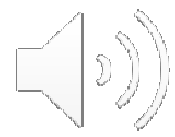
Consumers attractions...





Sounds...





Sounds...

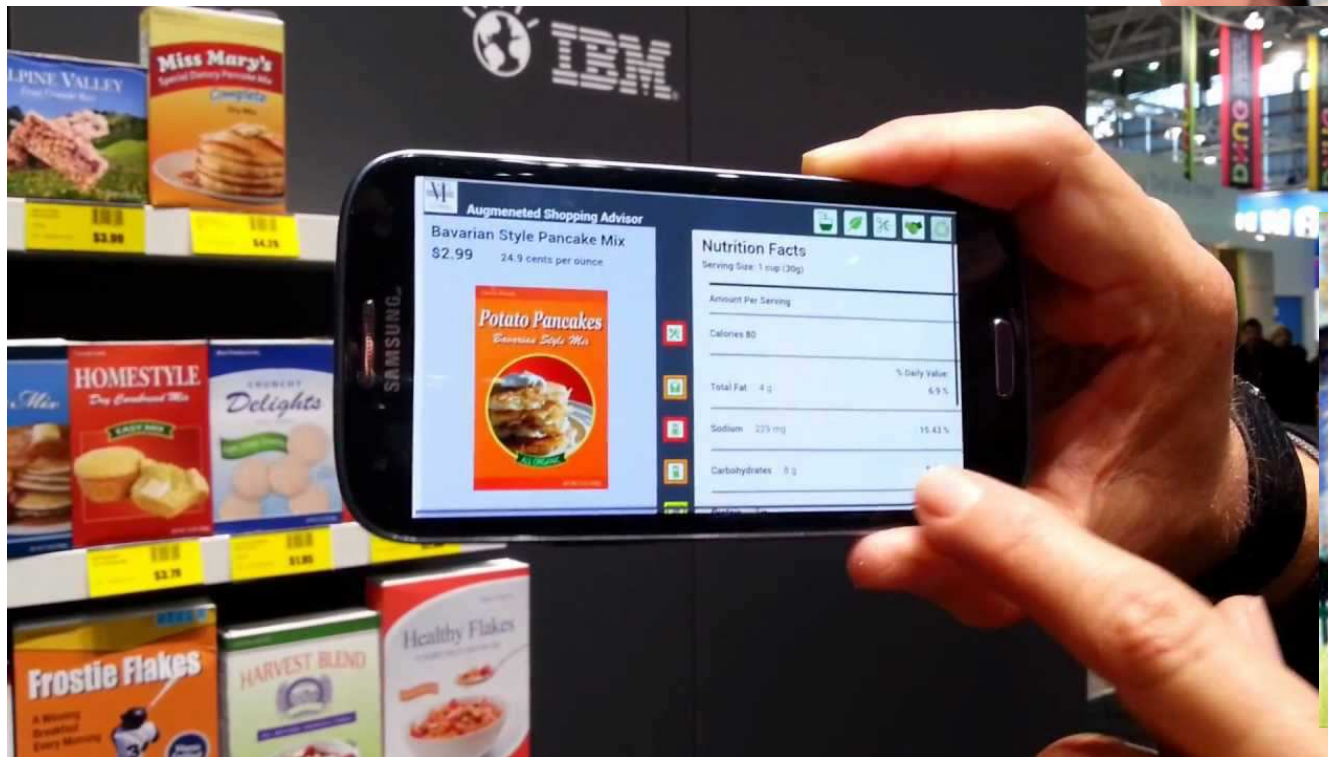


We live in a digital world...



Interactive Packaging...

- Store GPS
- Price comparison



Augmented reality...

- Additional product information
- Ingredients
- Allergy warnings
- Recipes





Facts:

- More than 220 Million* catalogs per year
- Catalog in 32 languages, 332 pages* each
- Printed in Germany (several printers)
- Biggest printing matter in the world with 6,5 Billion printed square meters...
- 60 Pages (out of the 332 = 18%) include digital content (videos, animations...)
- 22 Million* APP downloads

*2015

Augmented reality...



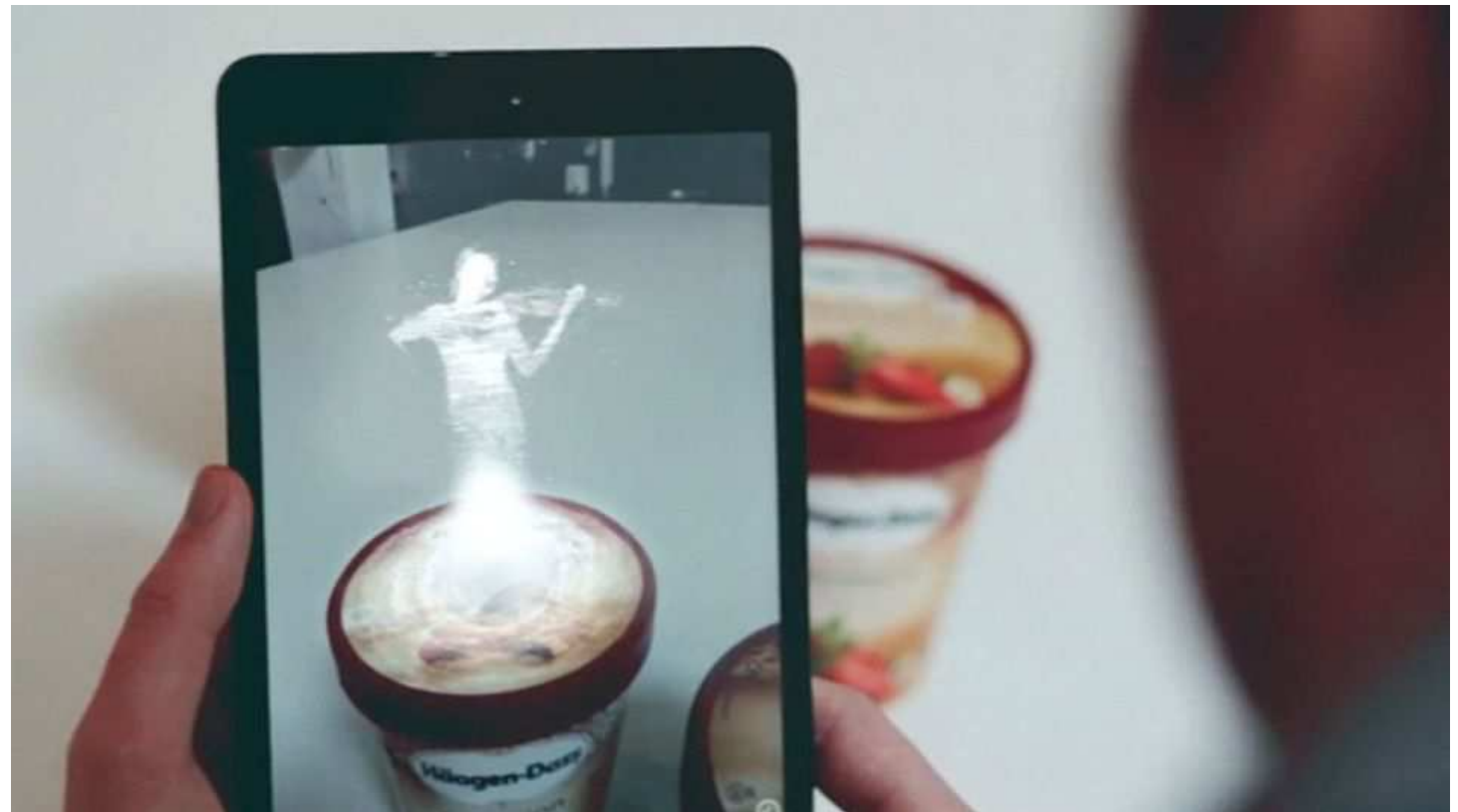


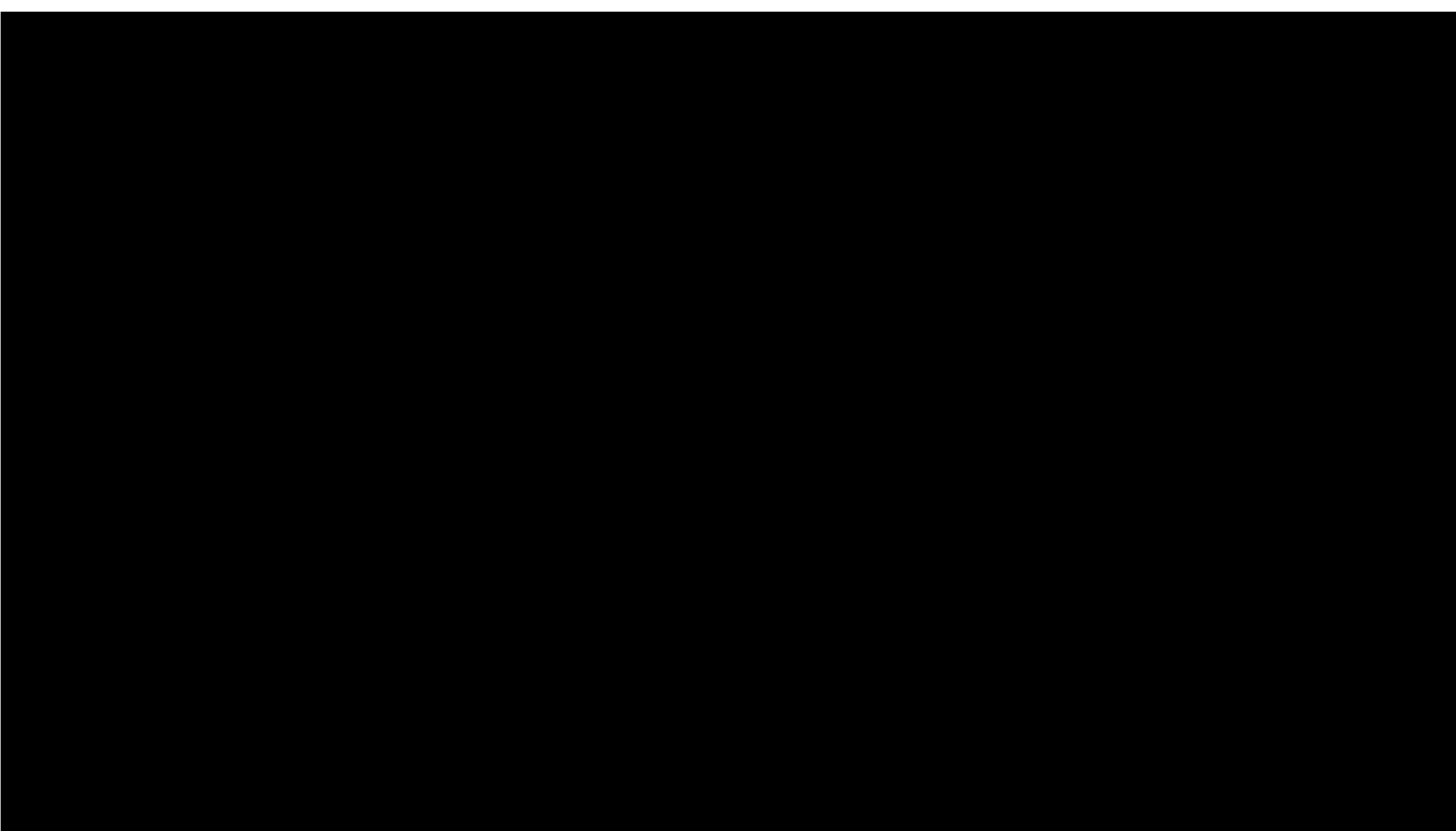
of coordinated covers
4cm. Cover: 50% viscose/
chair **£80** Hand made, gives soft
Each piece of furniture is unique.
H100cm. 202.016.82



Scan page to see more

Augmented reality...





New challenges...

