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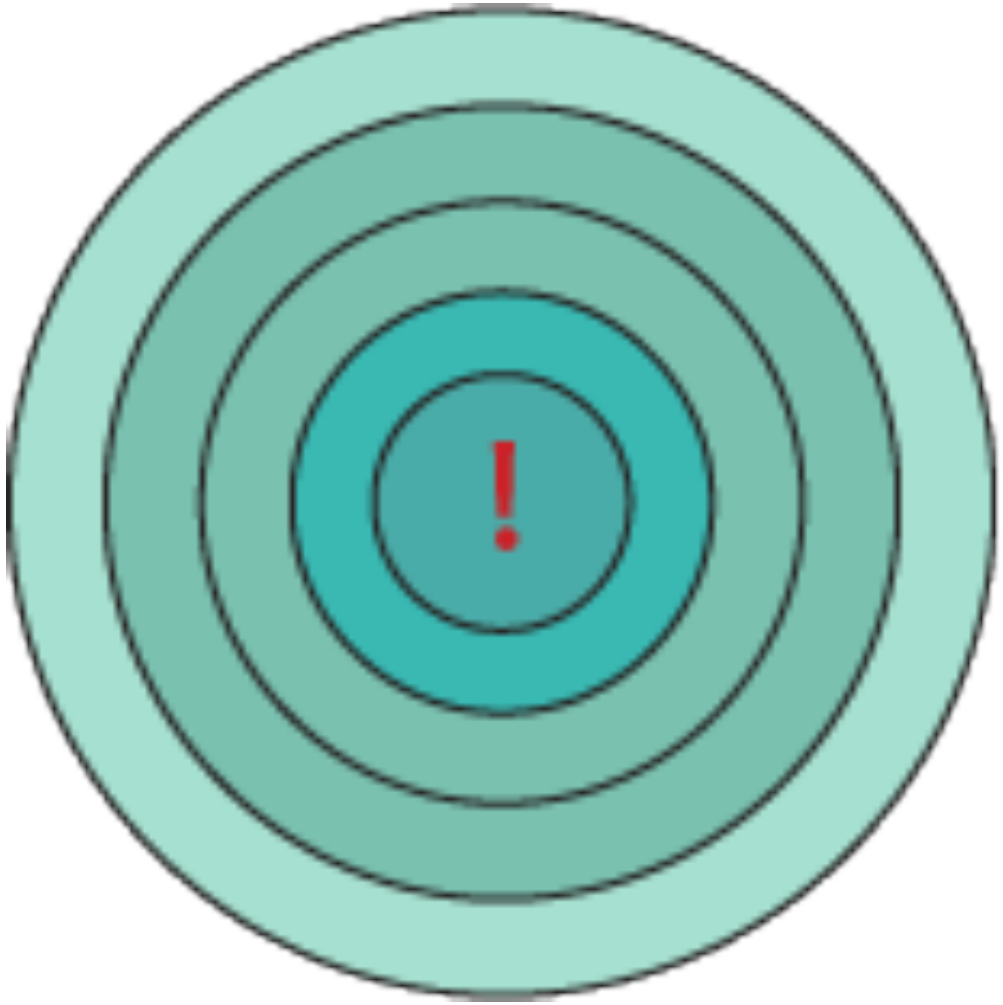
What's the Target?

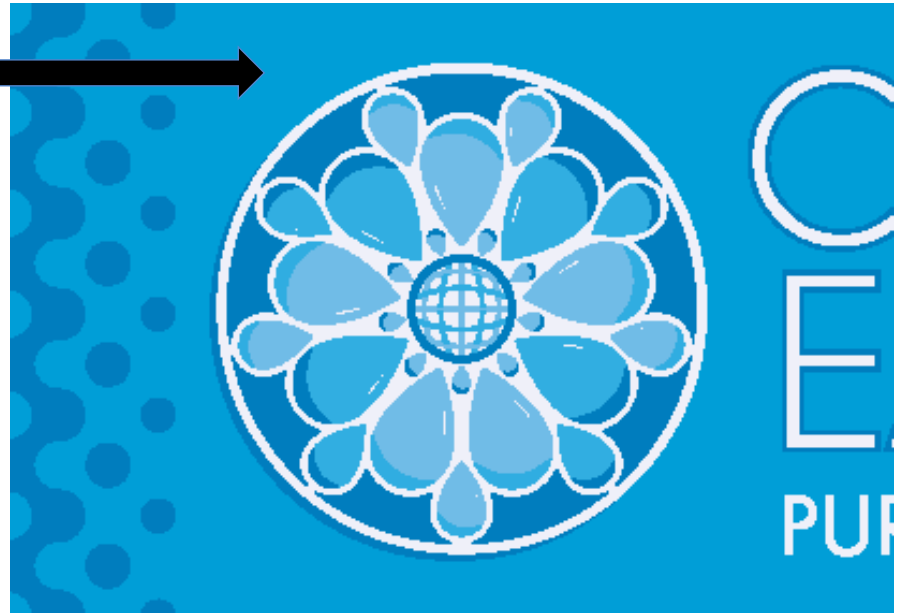
The Key to Effective Brand Color Matching

Mike Strickler, MSP Graphic Services



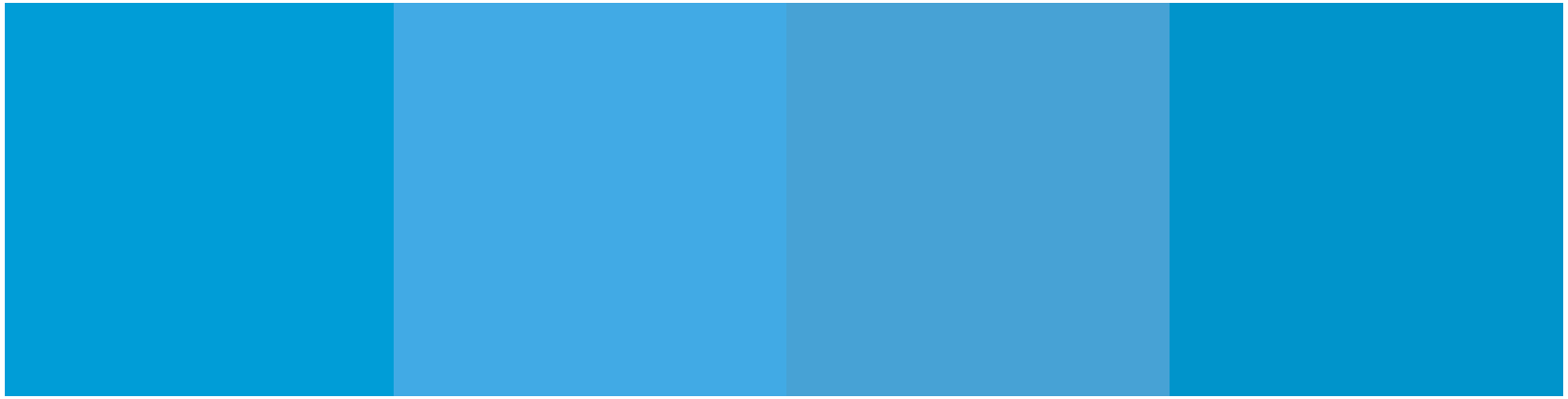
Scenario: A customer sends his color spec …

“75 cyan + 13 magenta”



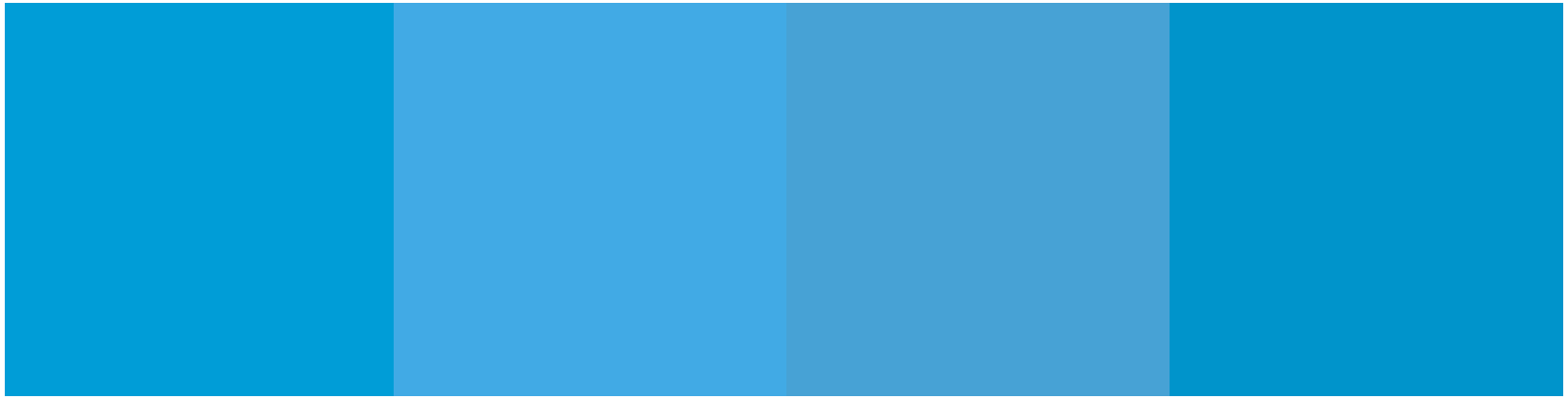
No problem, right?

But a question arises …



75 C 13 M	75 C 13 M	75 C 13 M	75 C 13 M

And a possible cause…



GRACoL2013 Coated

HP 12K Uncoated Brightened

GRACoL2013 Uncoated

Japan Web Coated

Typical Spot Color Matching by Device Value—Trial and Error (Digital Print)

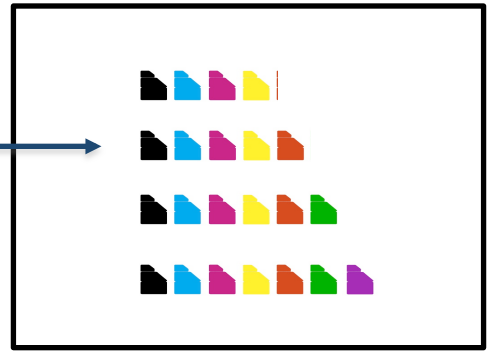
Customer Sample/Concept

Spot colors manually converted to estimated process builds

20 35 0 0 0 0 30

?

Default DFE Color Mapping
Coated/Uncoated



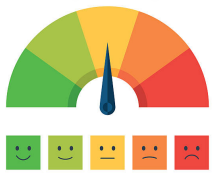
Trial 1

Trial 2

Trial 3

20 40 0 0 0 0 35

?



Spot Color Adjusted

Press Proof

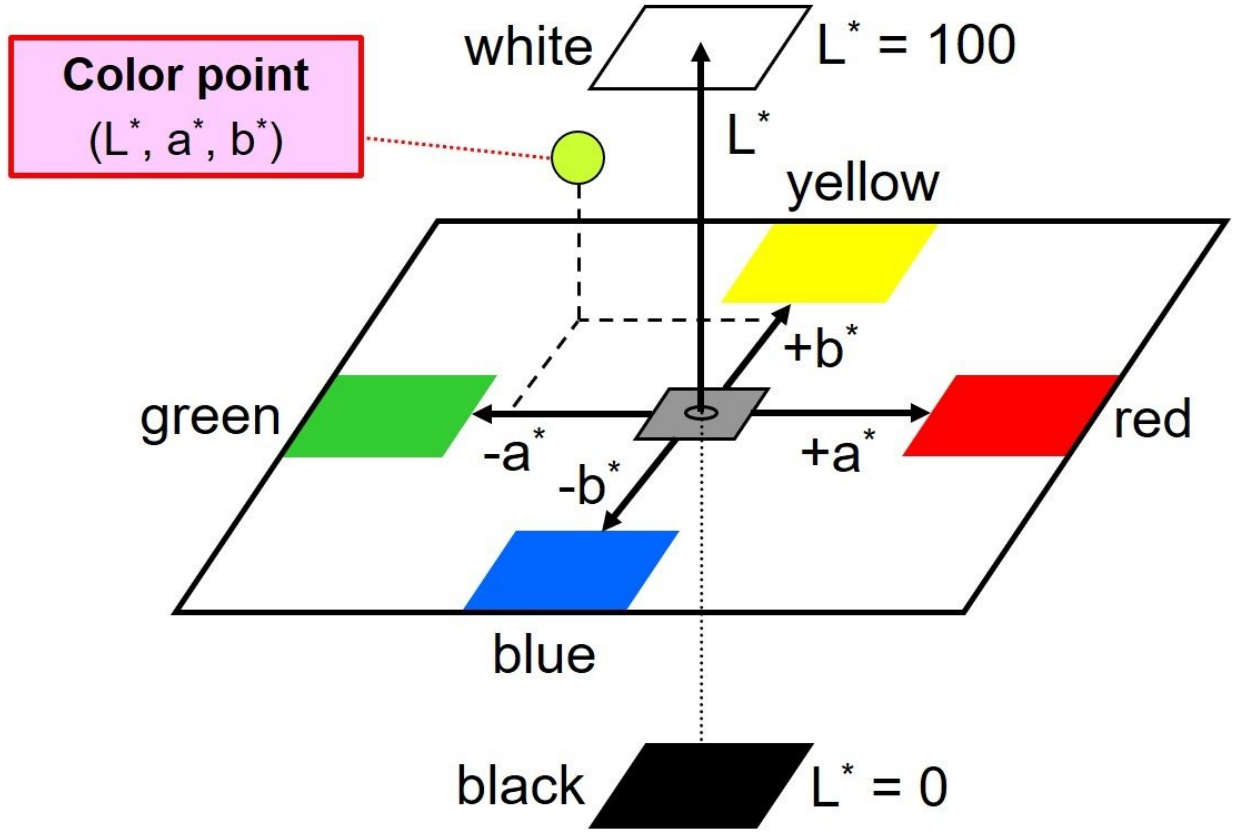
OK?

Adjust images, CMYK vectors?

KEY POINT!

RGB, CMYK: *Device* Value, not appearance value!

The CIELab Color Visual Model



Lab Space Advantages:

Easy to use: 0-100 scales, RGB-like primaries,
0a* and 0b* are always “neutral” gray

***Sort of* visually linear**

Widely used: The default ICC profile connection space

Based on the standard D50 illuminant

Lab Space Disadvantages:

Inherits shortcomings from CIEXYZ space—limits of 1931 apparatus and tests

Not very visually linear—color difference measurements (deltaE) misleading

Not all colors described well, e.g., purples.

Strangeness in numbers, e.g., a* and b* can exceed 100

Customer sends a second spec: Pantone 2995 U

L* 59.8
a* -17.8
B* -43.3

Better?

How Reliable is a CIELab Specification?

Assumes accurate measurement and characterization

Assumes common viewing conditions e.g., (D50 ISO 3664:2009)

What's in Pantone Spec?

Color Name

Measurement condition (M0)

Spectral measurements (to derive Lab values)

```
<cc:Object ObjectType="Color"
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BAFC-7E7222D08753"
GUID="4C674330-6352-604F-4AF5-B4314AF5B431">
<cc:CreationDate>2016-06-18T16:22:57-08:00</cc:CreationDate>
<cc:ColorValues>
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0.4811 0.5655 0.6492 0.7055 0.7226 0.7229 0.7013 0.6567 0.5978
0.53 0.4525 0.3807 0.3236 0.2677 0.213 0.176 0.1562 0.1463
0.1378 0.1318 0.1304 0.1314 0.134 0.1408 0.1514 0.1567 0.1545
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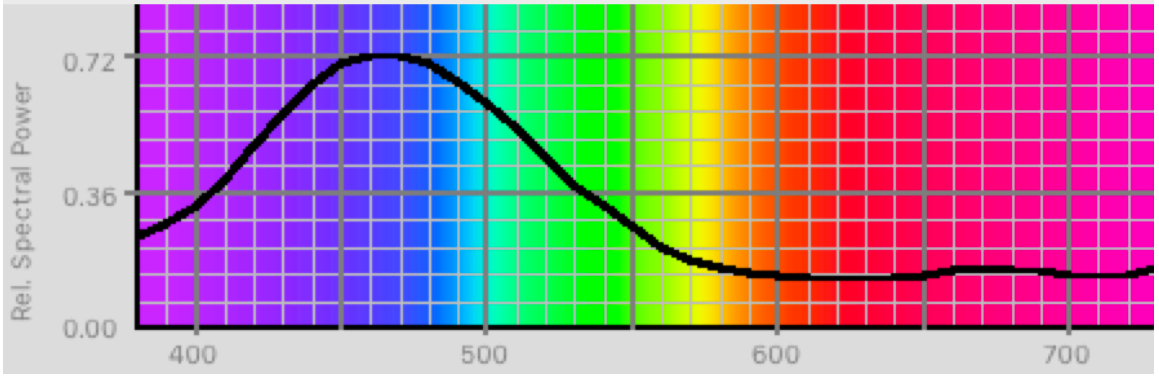
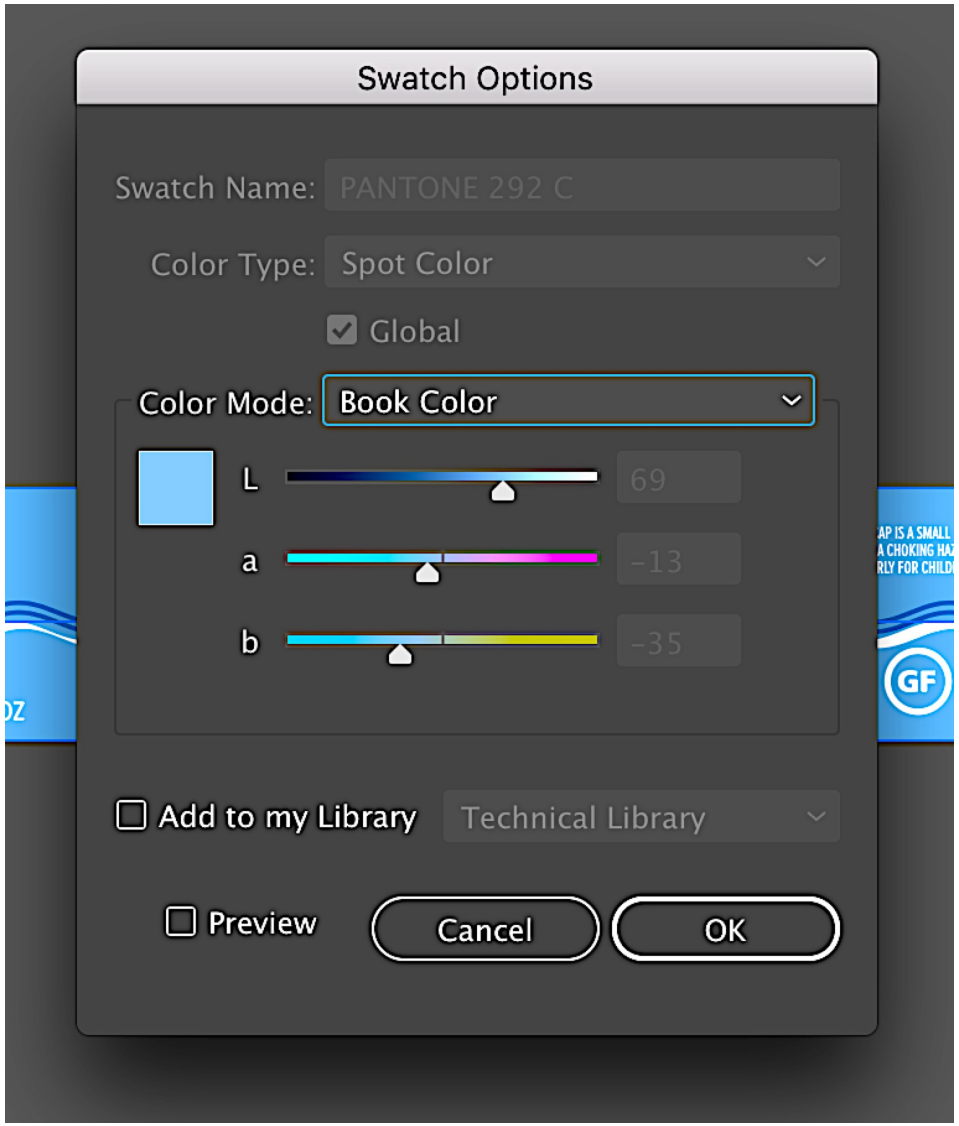
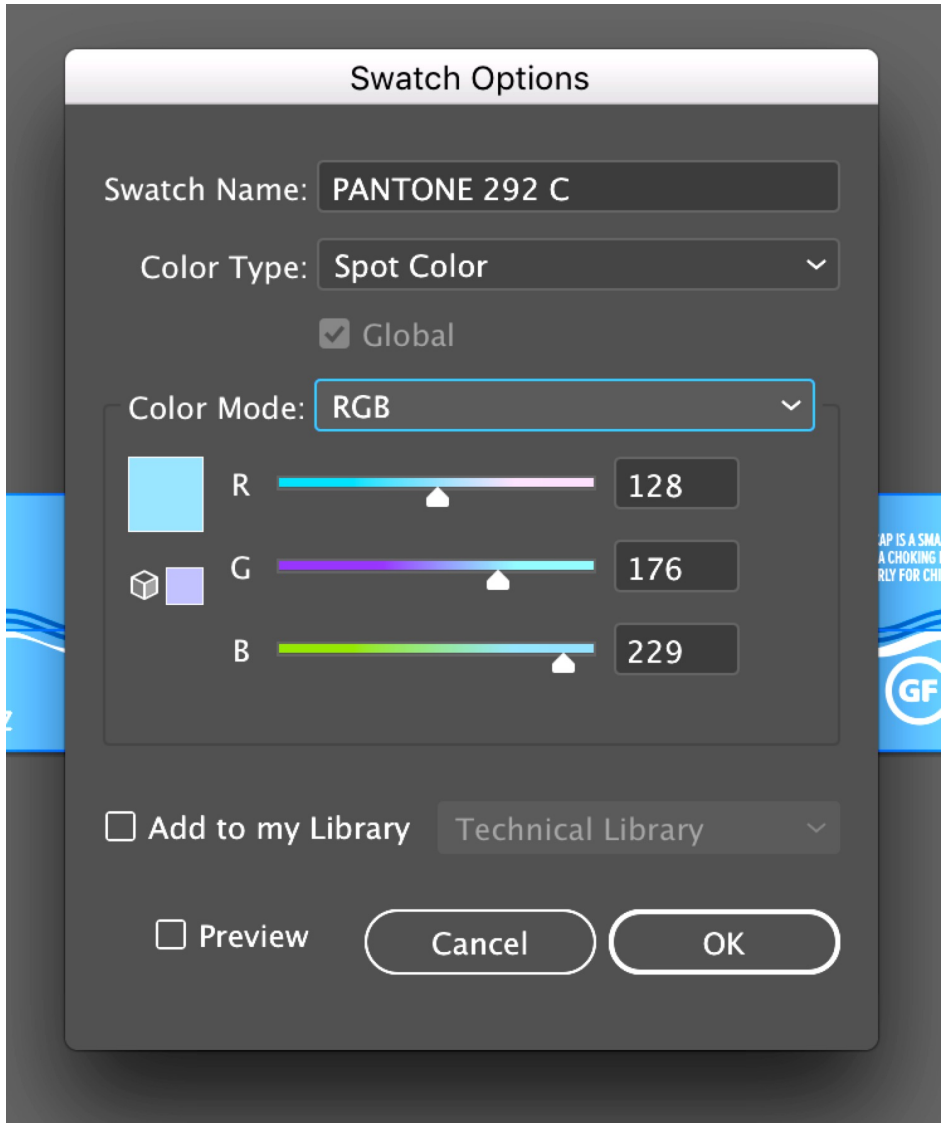


Advice for Creatives and Premedia …





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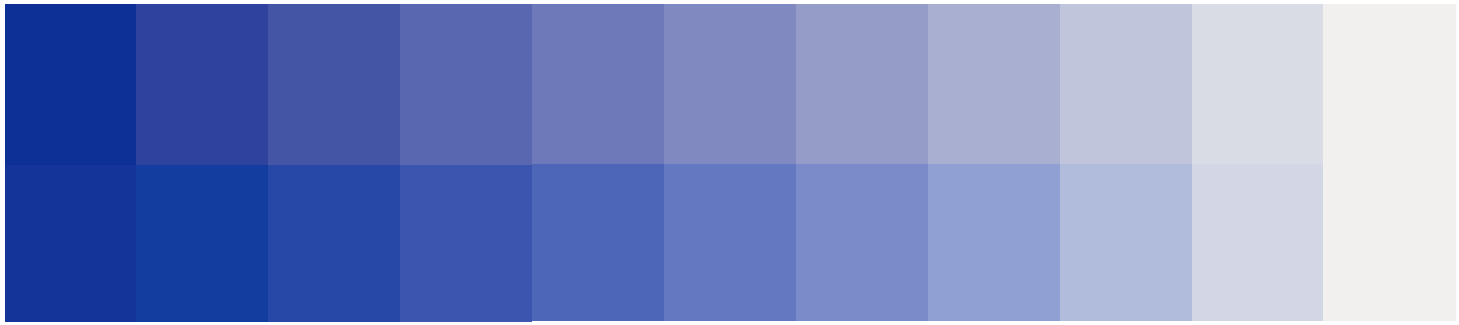
Special problem: How are spot *tints* defined?

Interpolation via spectral measurement per ISO-17972 (CxF/X4)

Simple arithmetical interpolation



Tips for Measuring Color

- Spectrophometers only, no densitometers
- M1 mode—aligns with current D50 viewing spec
- Large aperture of multiple sampling for uneven materials

A bit about lighting …

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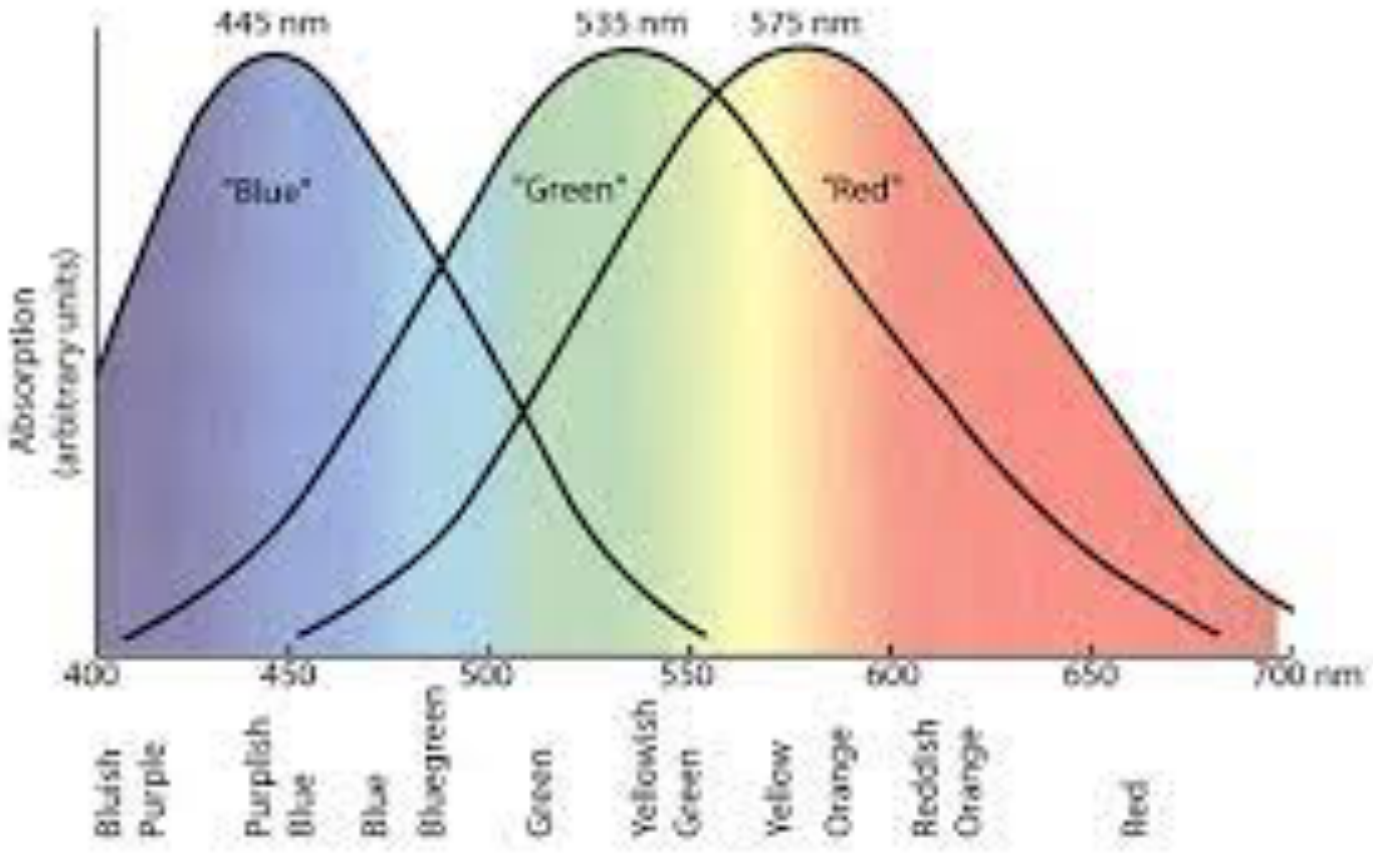
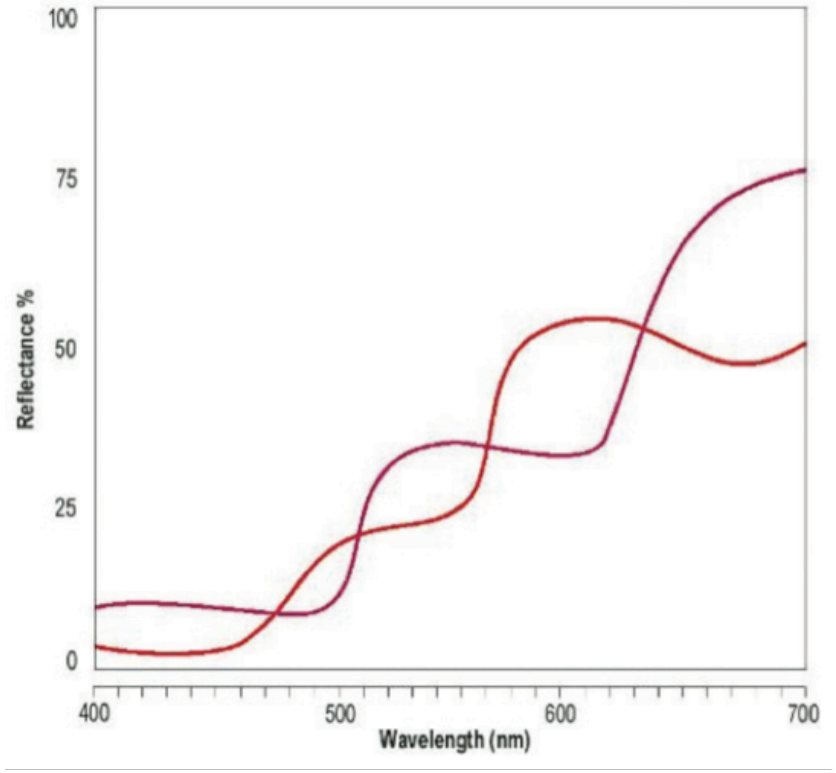
The Human Visual Response Function



What is a Metameric Pair?

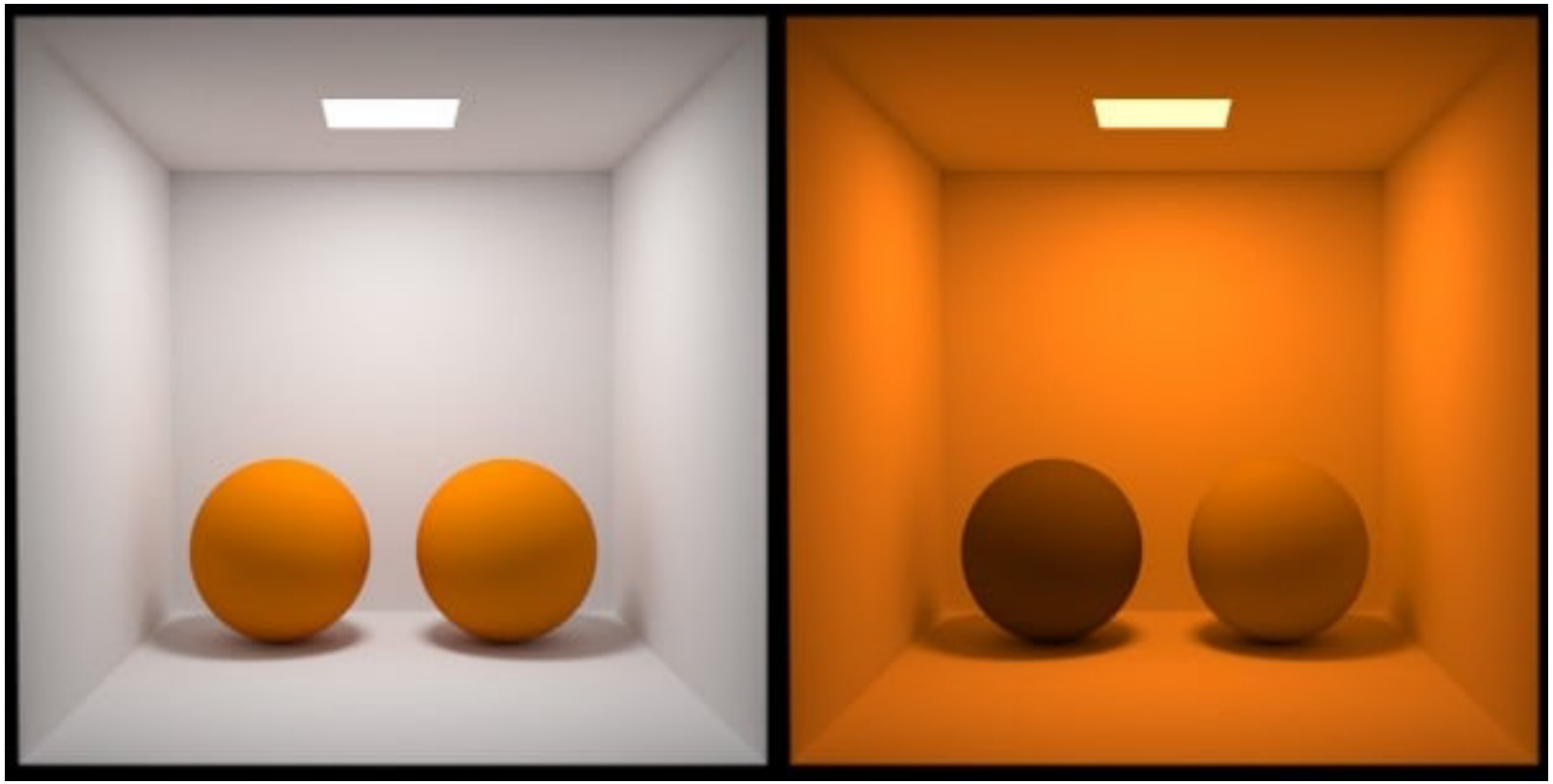


Measure differently

Two colors

Look the same

But only under the same illuminant!



Illuminant D50

Illuminant A

Miscellaneous aggravating factors:

UV Brighteners/fluorescing agents in substrates

Aging or incorrect lighting tubes

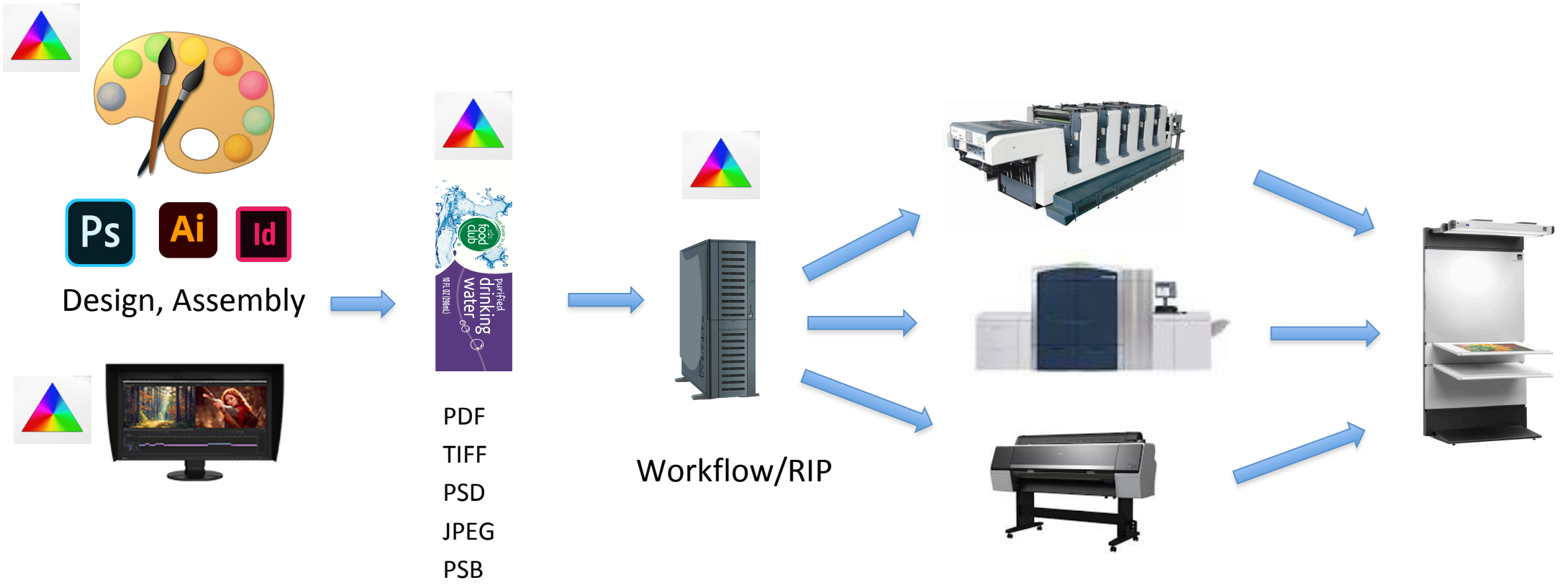
Aging corneas

Color discrimination deficiency or color blindness

Wrong illuminant standard

Unrealistic expectations

The Total Workflow—What Can Go Wrong?



A Few Simple Tips

- Define all brand colors in CIE Lab space, not RGB or CMYK
- Always measure any provided samples, even in Pantone books
- Use M1 measurement mode
- Set reasonable tolerances, e.g., 2-3 dE00
- Make all visual approvals under ISO 3664:2009 (D50/M1) viewing conditions
- Be alert for the effect of colored substrates: A correct color may *look* wrong
- Spec Pantone equivalents to custom colors when possible
- All process color refers to a color space: Preserve ICC profiles and PDF intents!

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Thank You!

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