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Eric Kirchner
Automotive & Aerospace Coatings

Digital Color Tools: Useful for Design?

KIVI NIRIA & Stichting Material Design
Special: "De Beleving van Kleur",
13 November 2013

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Contents

- Digital color tools for consumers
- Current Digital Color Tools for Design(ers)
- Experience within AkzoNobel Coatings
- How to mess up with Digital color tools
- Some benefits
- Conclusions

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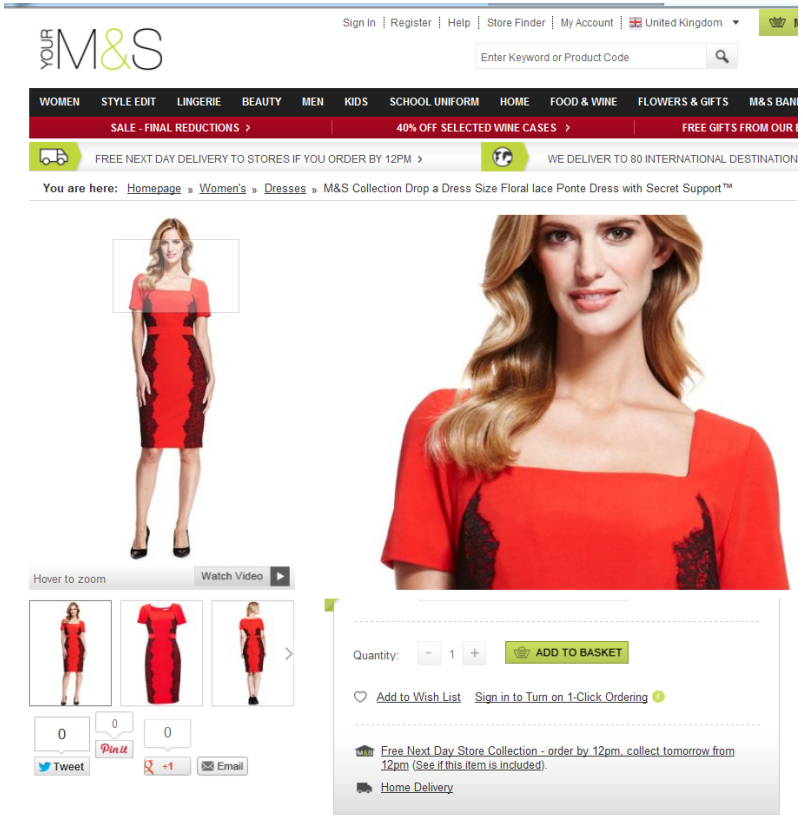
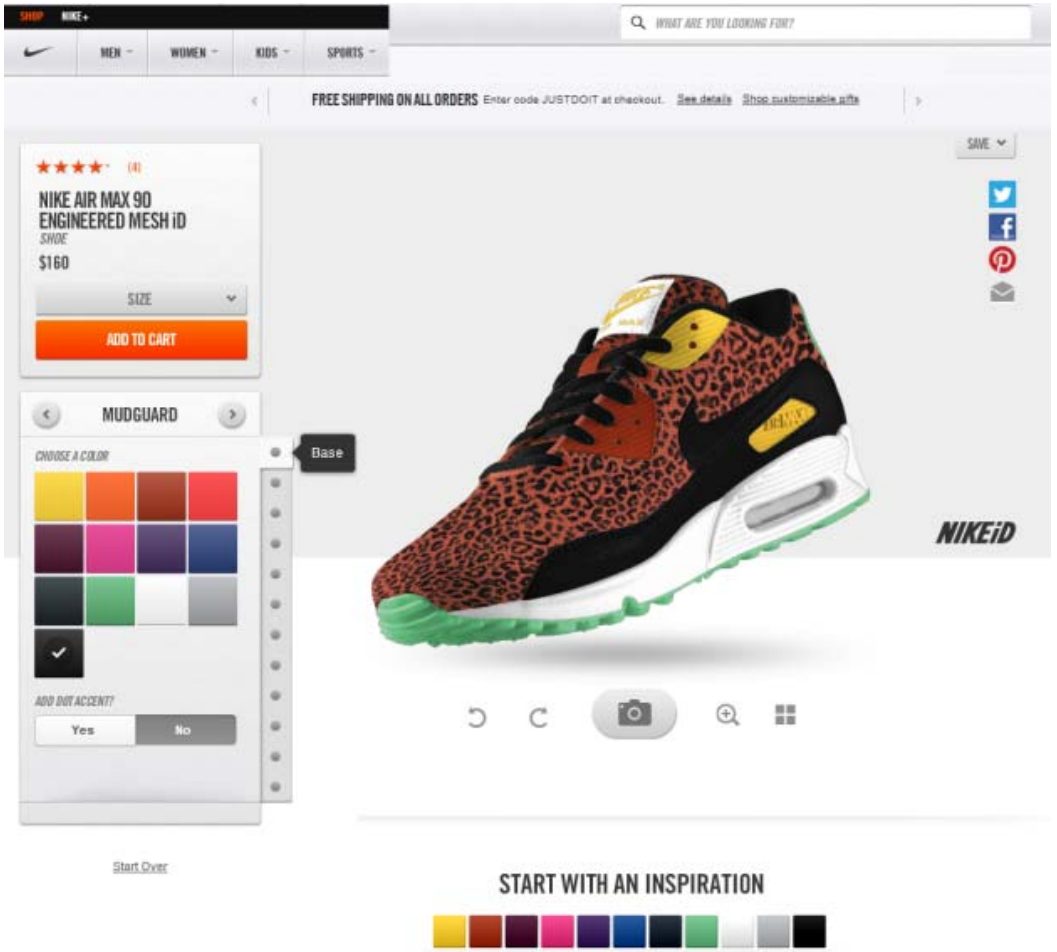
Digital Color Tools for consumers





Consumers are getting very used to digital color.
For example, when ordering through a website.

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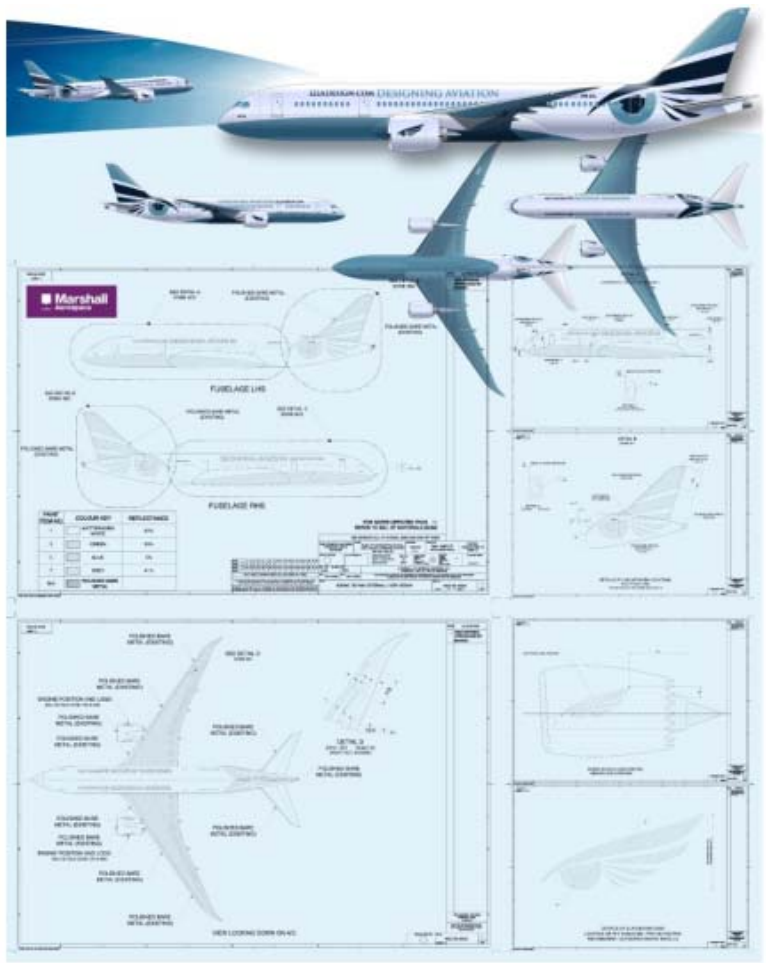
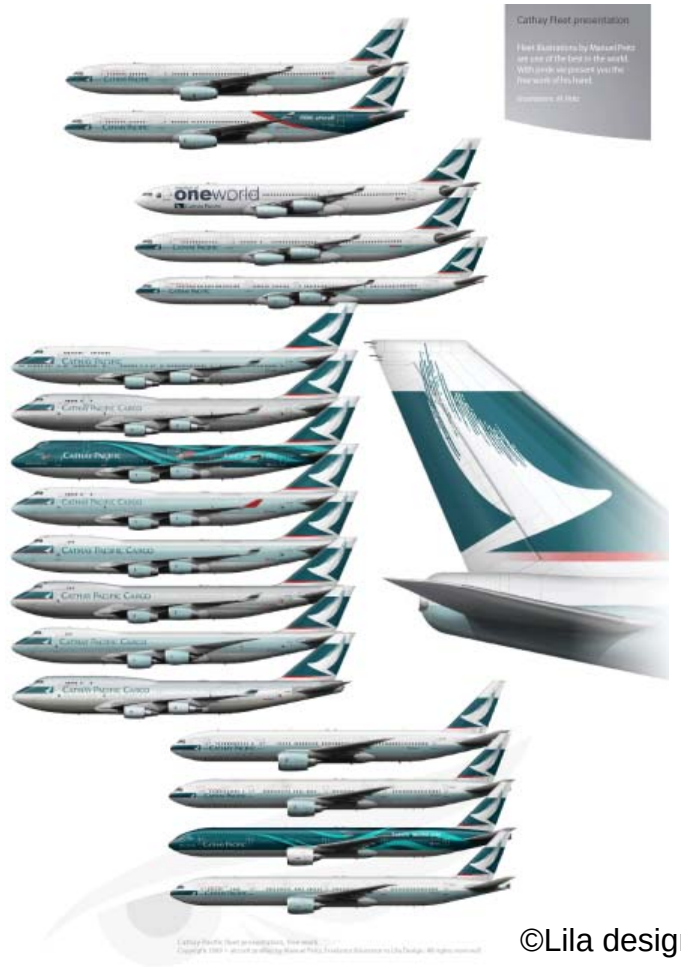
Current Digital Color Tools for Design





©Lila design

Also for designers, digital color tools are becoming more common.

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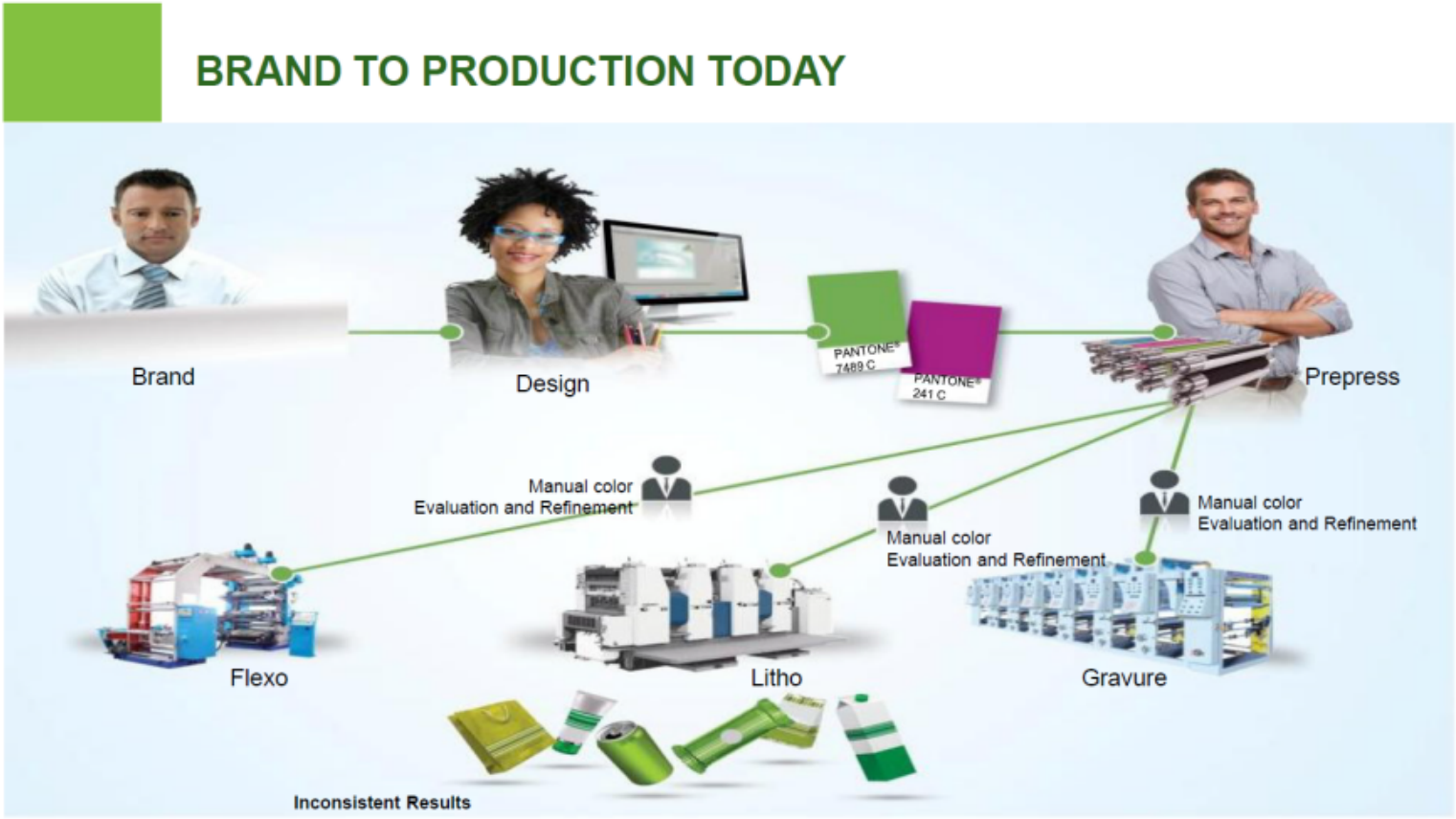
Current Digital Color Tools for Design



Color Communication is often difficult between designers, production ("Hong Kong"), end-customer.

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Current Digital Color Tools for Design

©X-Rite, Pantone

A company like Pantone considers Digital Color standards as the best way to improve Color Communication..

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Current Digital Color Tools for Design

C. Shimizu, PhD thesis, 2009

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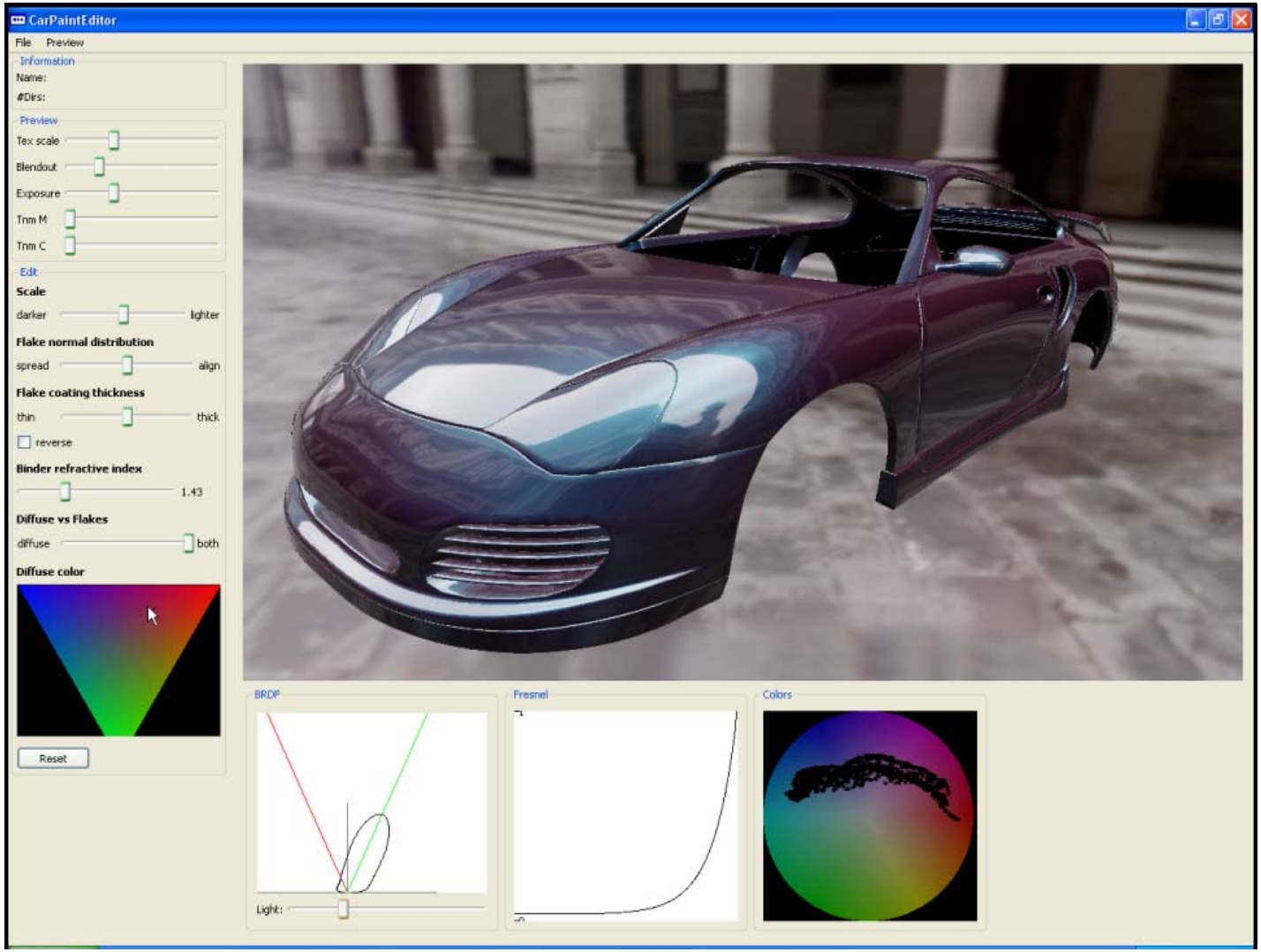
Current Digital Color Tools for Design



C. Shimizu, PhD thesis, 2009

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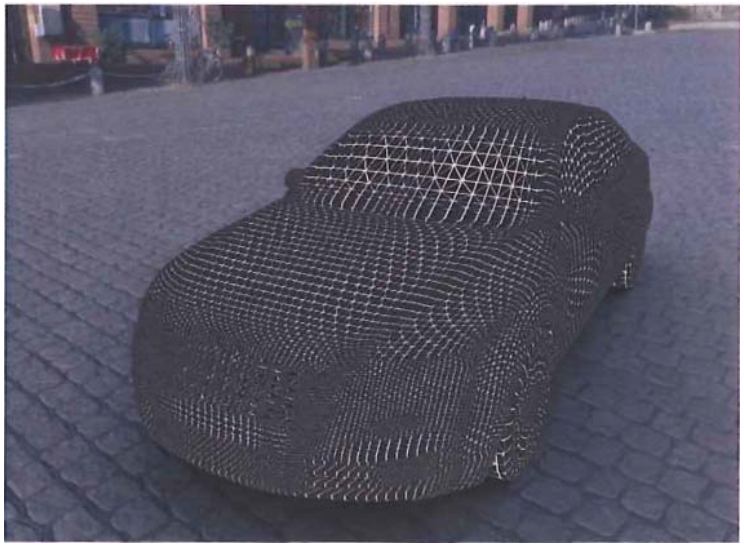
Current Digital Color Tools for Design



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Current Digital Color Tools for Design

University of Bonn

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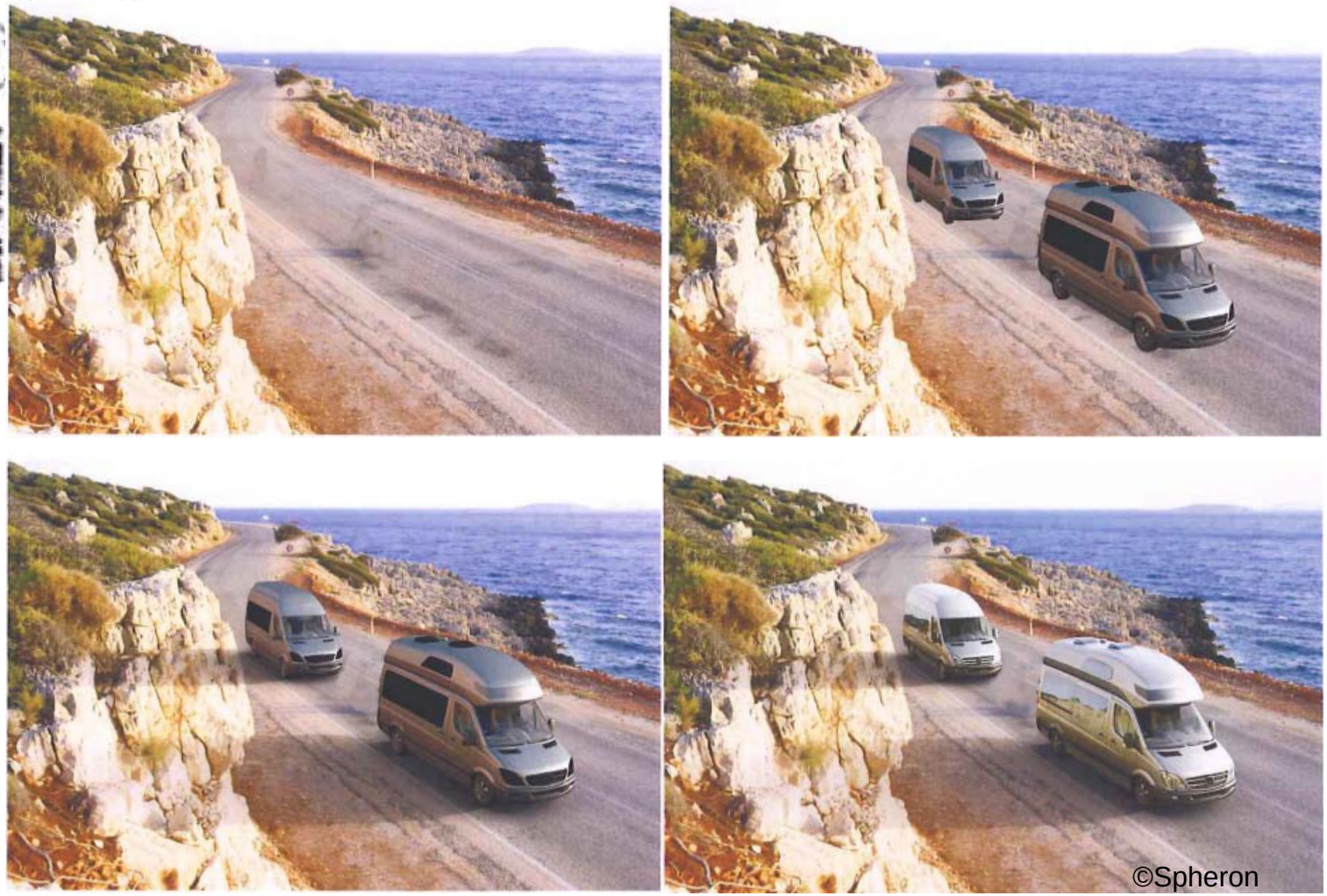
Current Digital Color Tools for Design



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Advertisements can be made immediately after the design phase.

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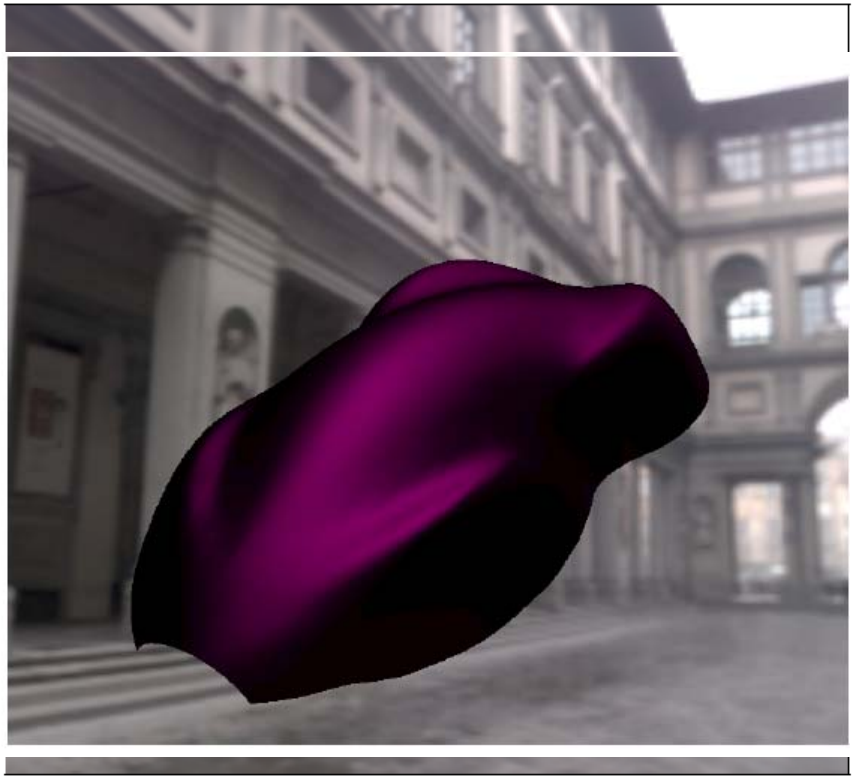
Current Digital Color Tools for Design



C. Shimizu & G.W. Meyer, Proc. Color Imaging Conference 2010

Also early in the design phase, digital color tools may be helpful.

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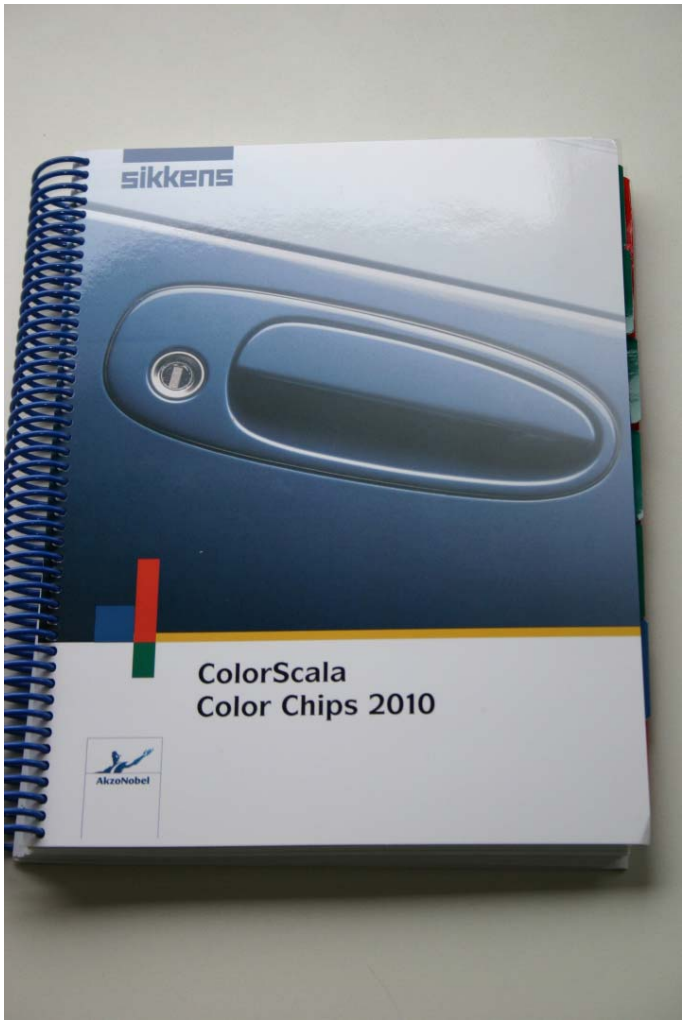
Experience within AkzoNobel Coatings: Car Refinishes



Current color documentation for car repair shops.

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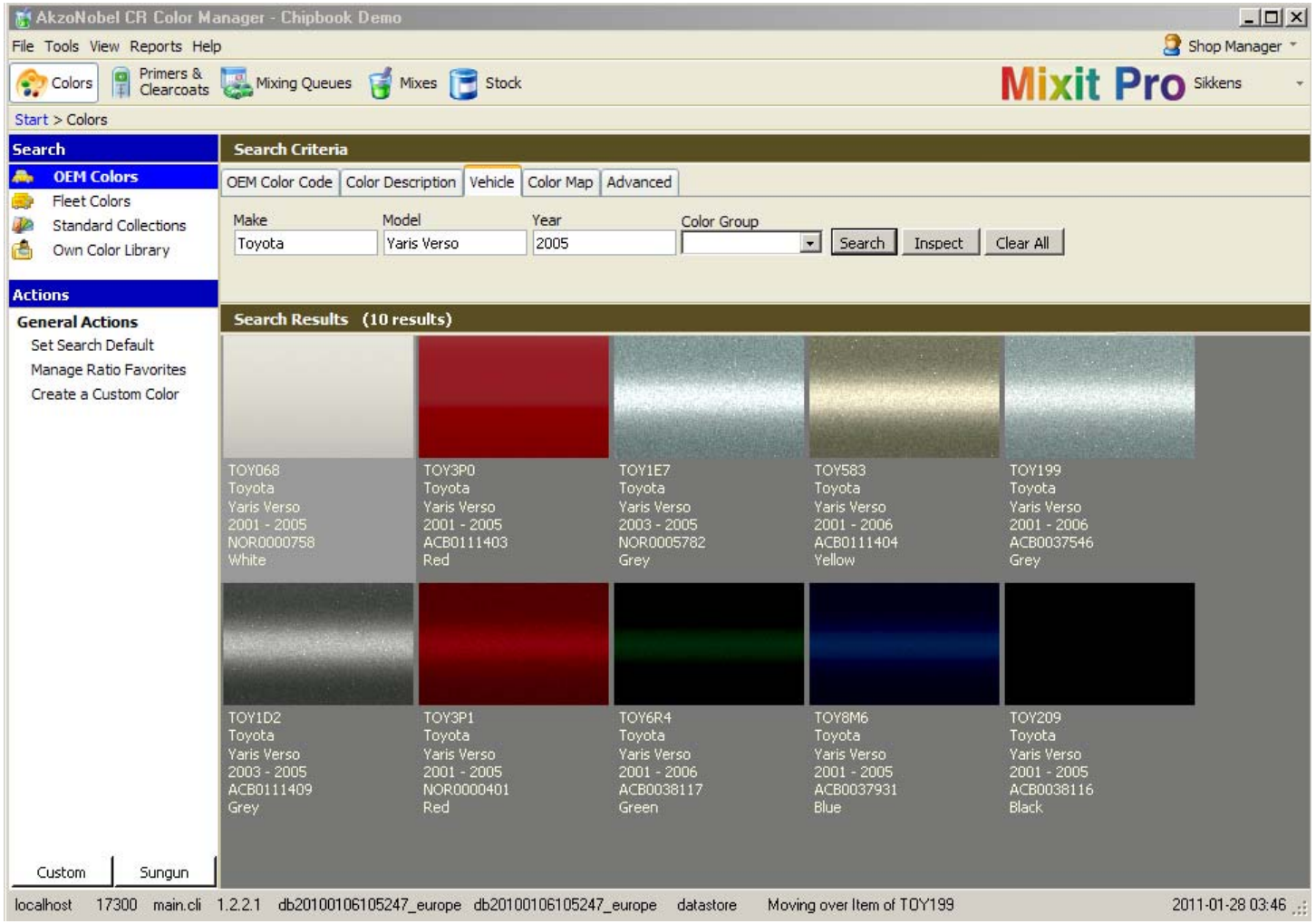
Experience within AkzoNobel Coatings: Car Refinishes



Digital color documentation, introduced early 2012.

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Experience within AkzoNobel Coatings: Car Refinishes

Innovative research for introducing the digital tool.

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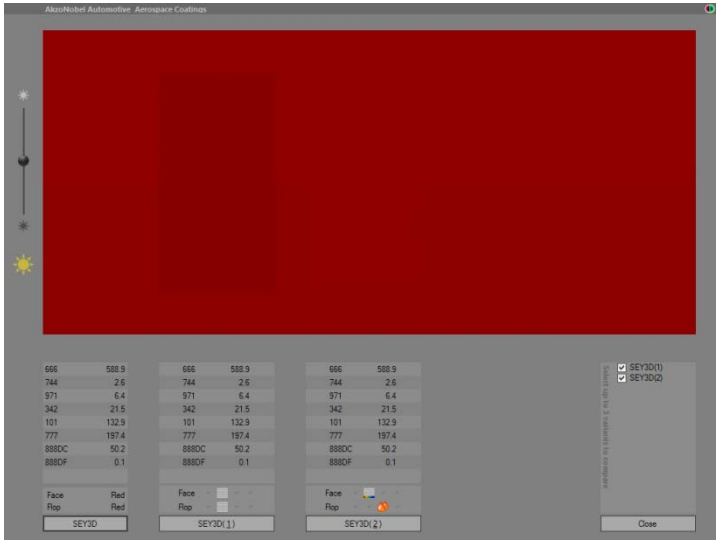
Experience within AkzoNobel Coatings: Car Refinishes



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Experience within AkzoNobel Coatings: Car Refinishes

Practical testing before market launch.

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How to mess up with Digital color tools

- Use uncalibrated displays
- Ignore light spectrum and intensity
- Ignore visual effects
- Forget the reality check

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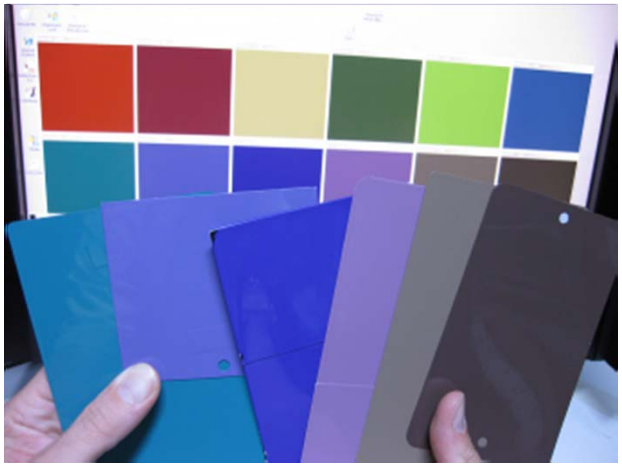
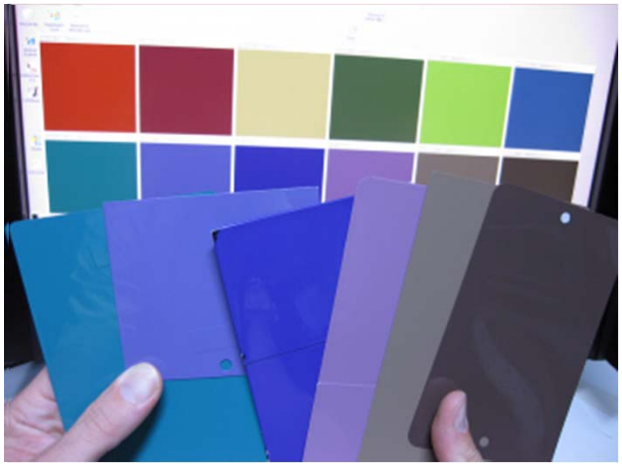
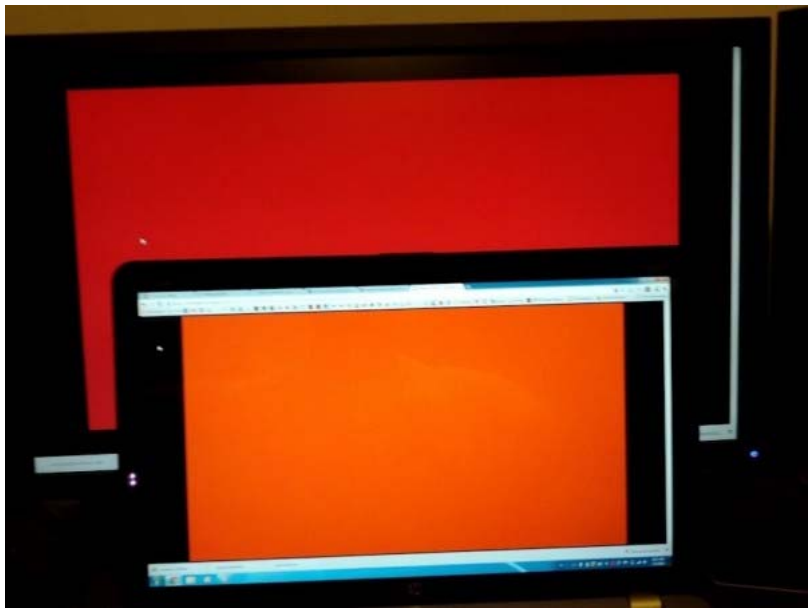
How to mess up: Use uncalibrated displays







Color calibration are essential for getting accurate digital colors. Displays are often very different!

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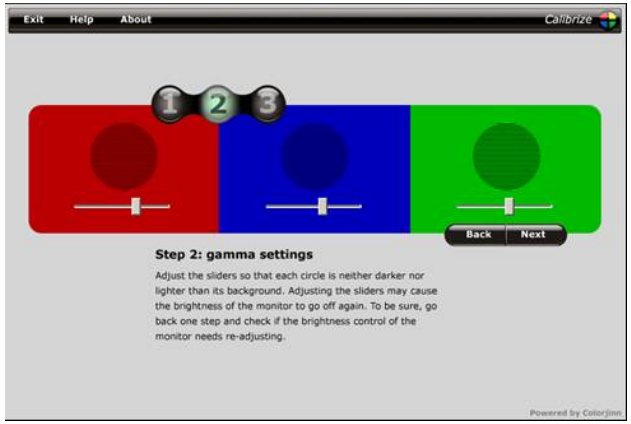
How to mess up:
Use uncalibrated displays



Color calibration of displays: hardware or software based.

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How to mess up: Ignore light spectrum

The importance of the light spectrum is often forgotten.

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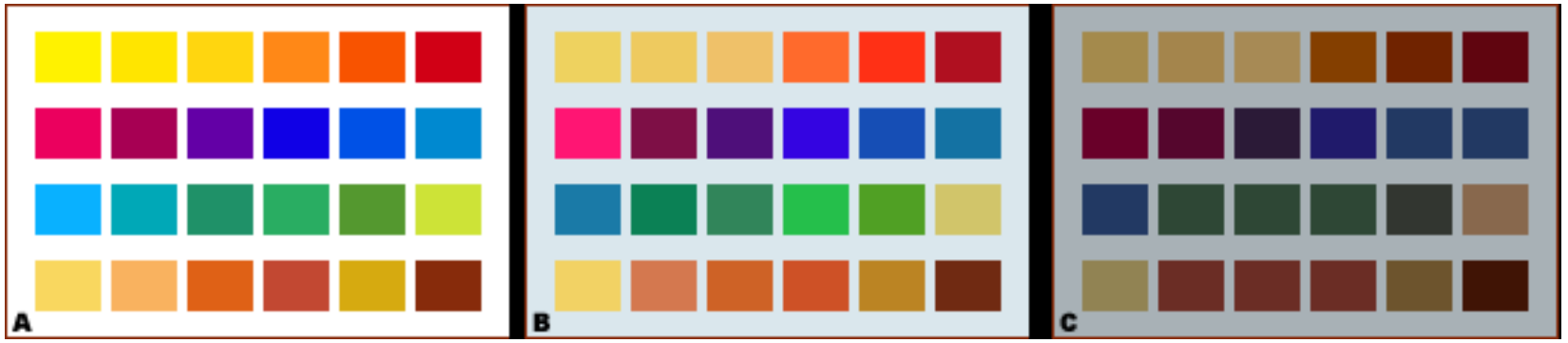
How to mess up: Ignore light intensity

Light intensity influences brightness and colorfulness.



Hunt effect

This must be accounted for when calibrating the display.

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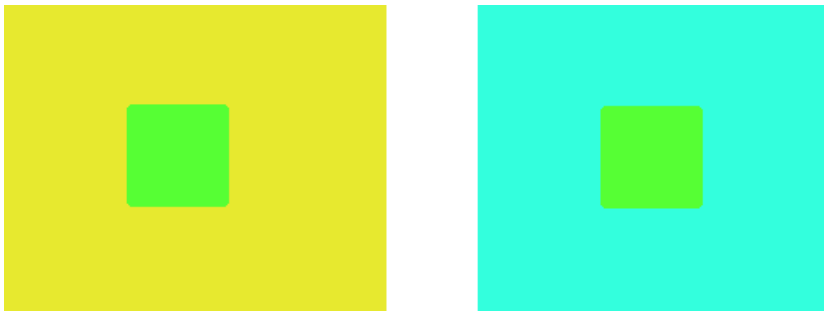
How to mess up: Ignore visual effects

Surrounding colors also affect color perception.

Simultaneous contrast effect

Therefore colors surrounding digital colors strongly affect their color.



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How to mess up: Forget the reality check

Integration of the Front Bumper into the A4

Audi
Vorsprung durch Technik

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How to mess up: Forget the reality check

Integration of the Rear Bumper into the A4

Audi
Vorsprung durch Technik

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How to mess up:
Forget the reality check

R. Gascón López, Thesis 2013, University of Alicante

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Benefits from using Digital color tools: Find the right color

The number of color chips can be overwhelming...

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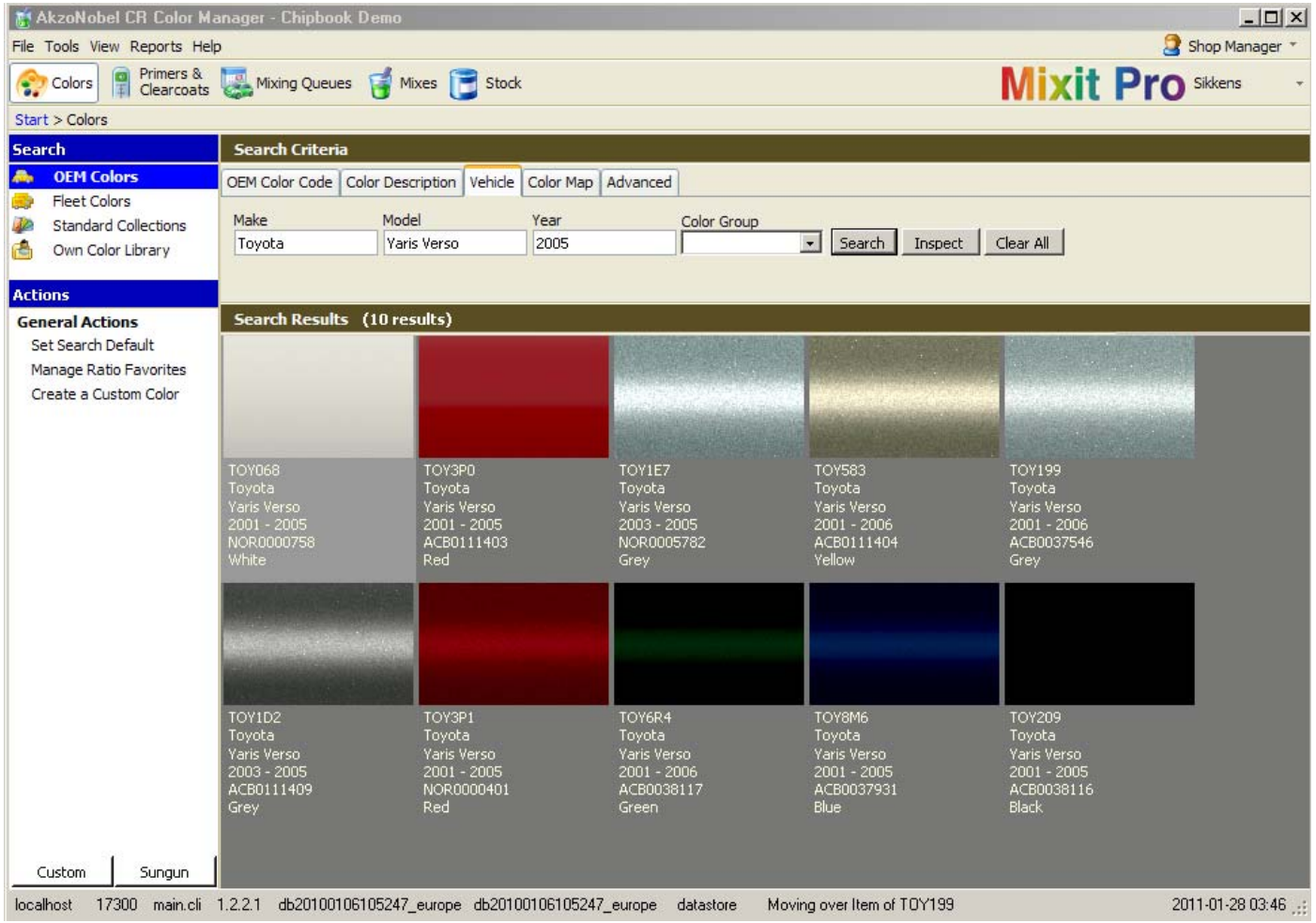
Benefits from using Digital color tools: Find the right color



Digital color tools allow you to “Google your color”.

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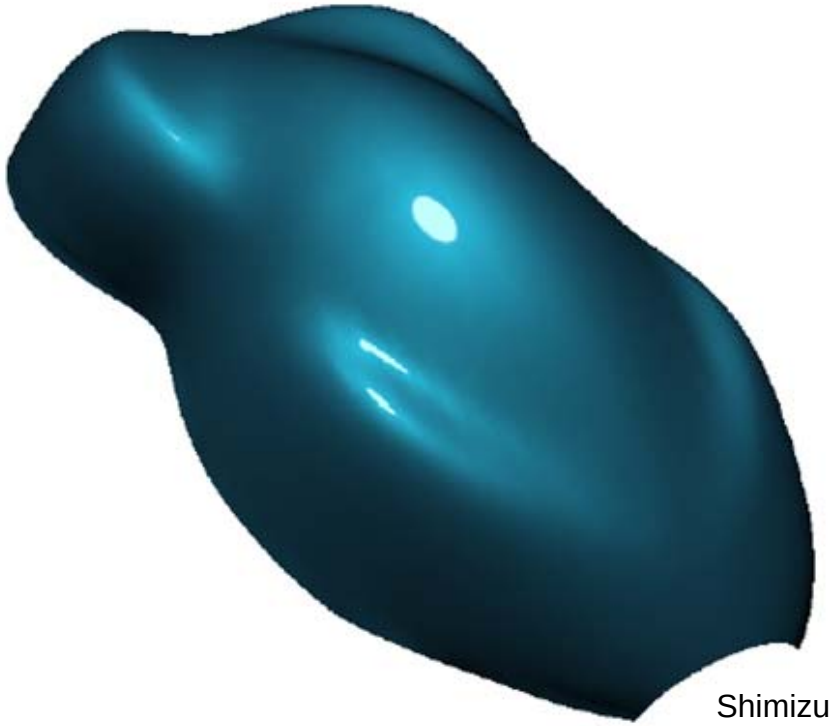
Benefits from using Digital color tools: Faster iterate to the best color



Shimizu, PhD thesis, 2009

In the design phase, digital color tools allow you to iterate faster to the best color.

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Benefits from using Digital color tools: Size effect of color appearance

Berrier, PhD thesis, 2012

With paper color documentation, even if you do find the right color chip…

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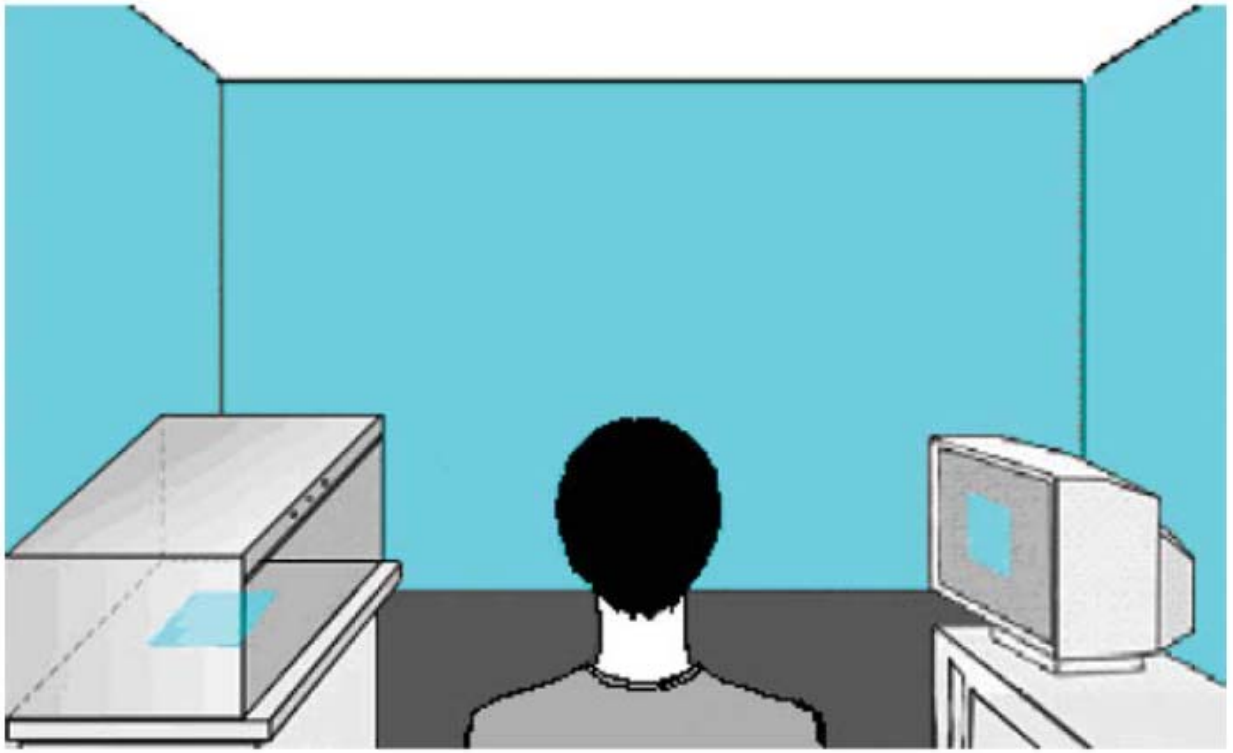
Benefits from using Digital color tools: Size effect of color appearance



Xiao, Luo et al., Color Res Appl 2010

... most large size wall colors look lighter and more colorful than small sized chips with the same paint.

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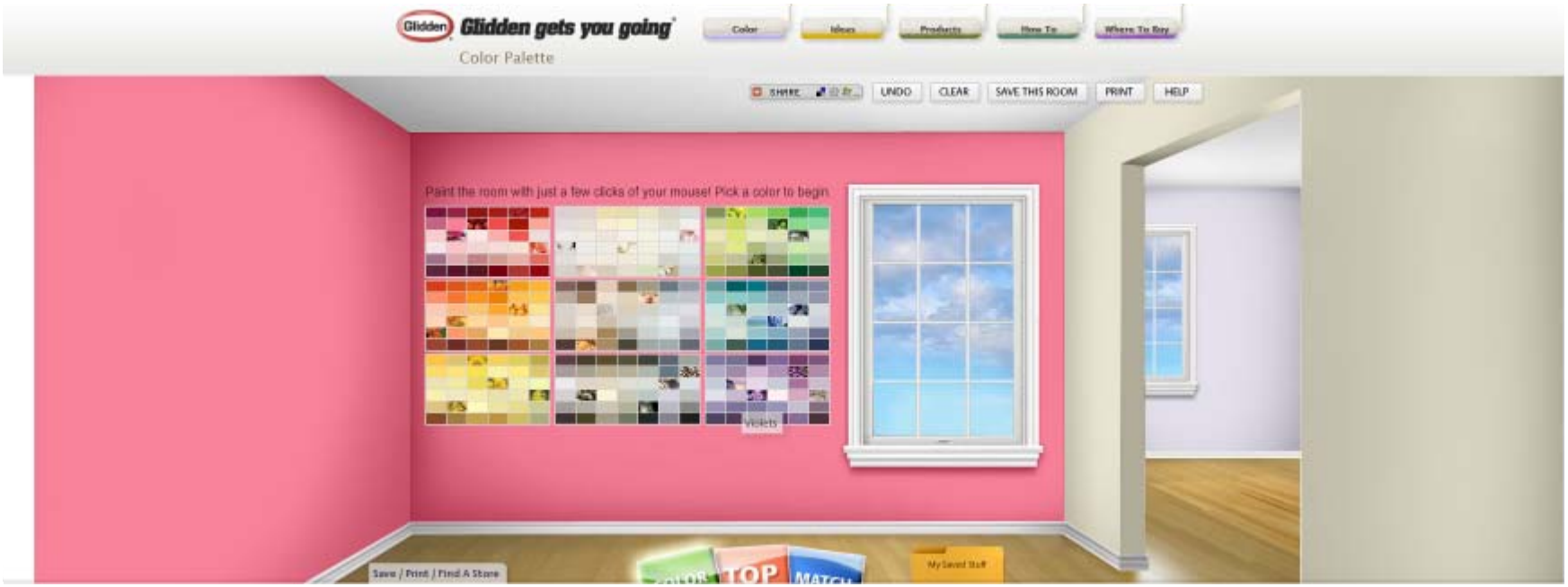
Benefits from using Digital color tools: Size effect of color appearance



Digital color tools can help you with this as well.

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Conclusions

- Digital color tools are there, for consumers and designers
- It is easy to mess up with digital color tools
- If you use them correctly, digital color tools can help you to find the best color faster