

Eric Kirchner

Automotive & Aerospace Coatings

Digital Color Tools: Useful for Design?

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

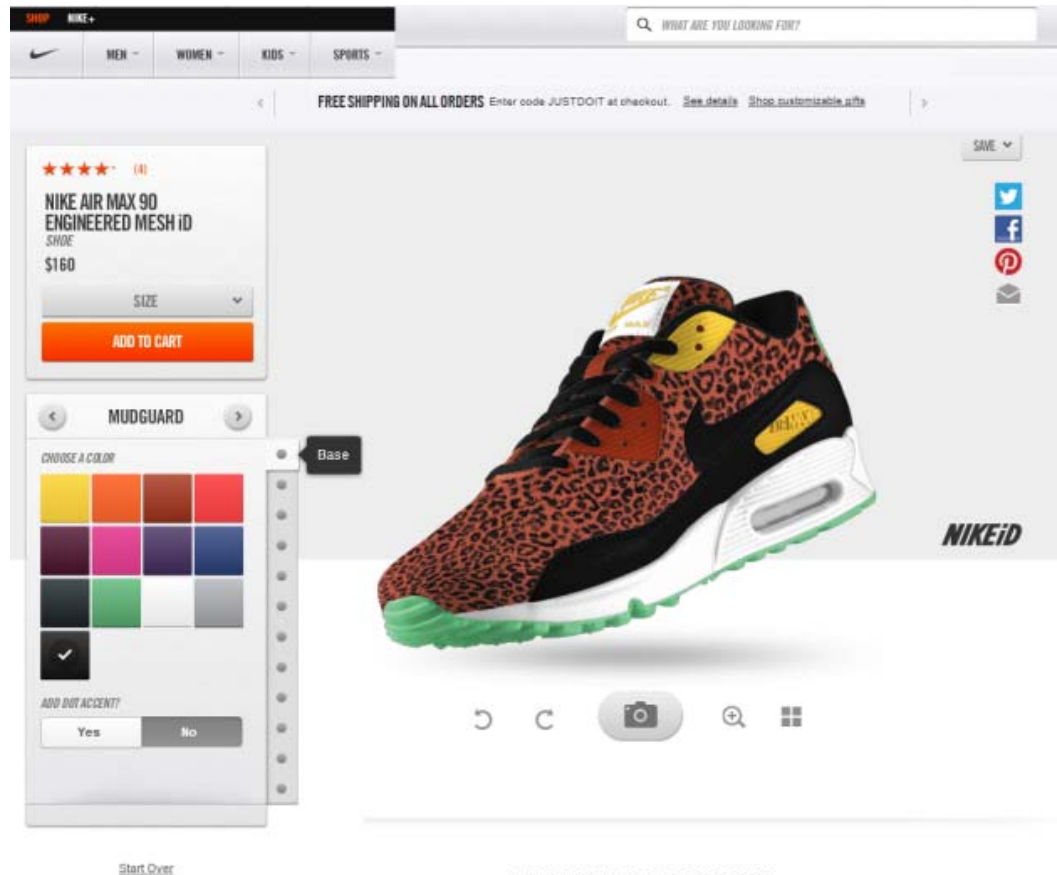
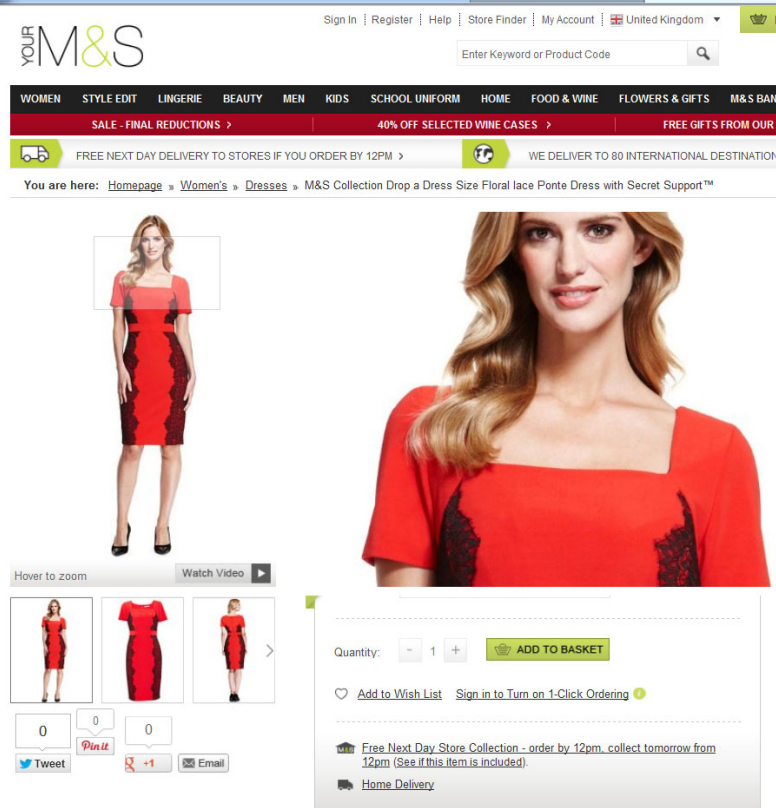


Contents

- 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



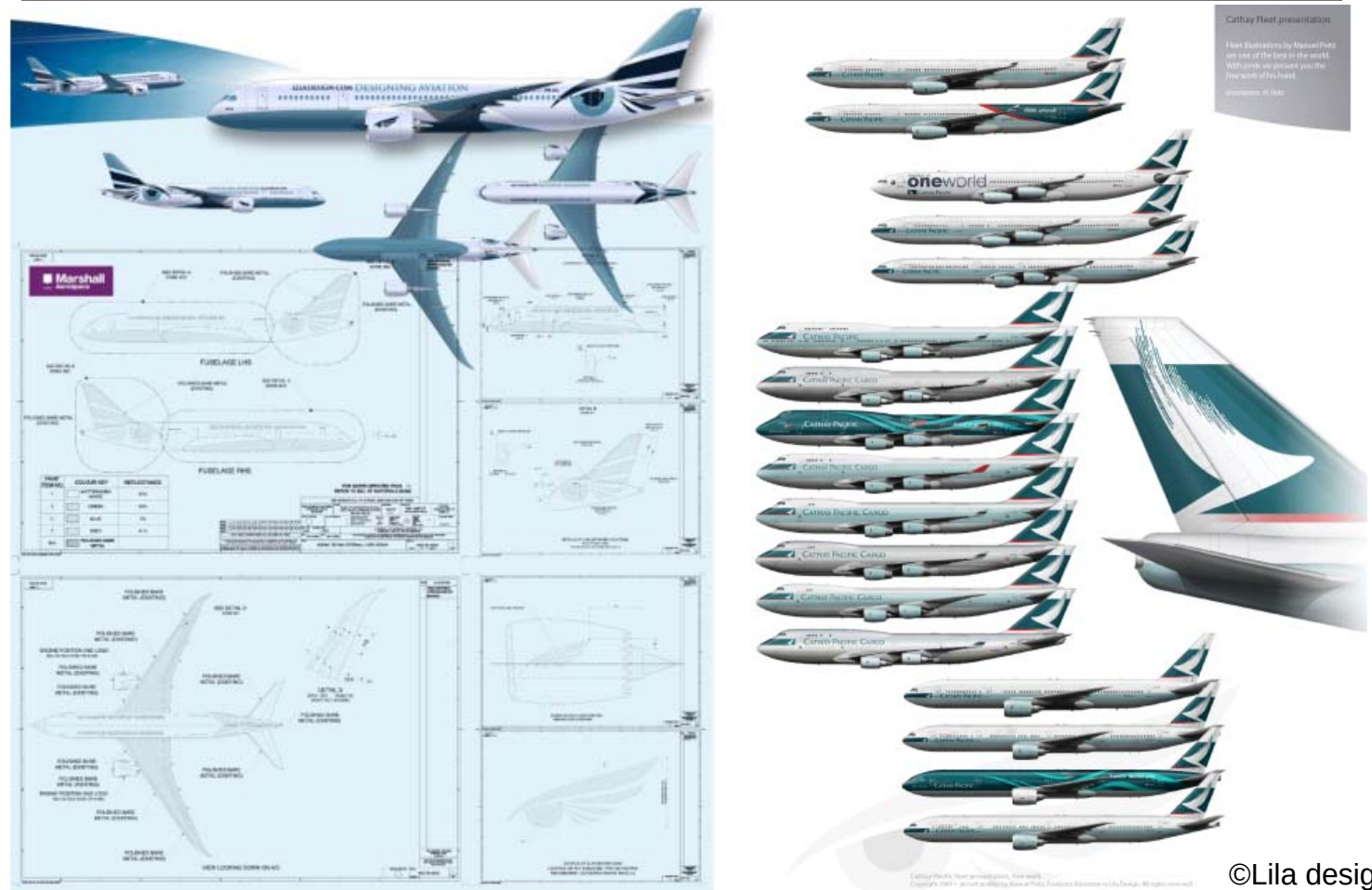
Digital Color Tools for consumers



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



Current Digital Color Tools for Design

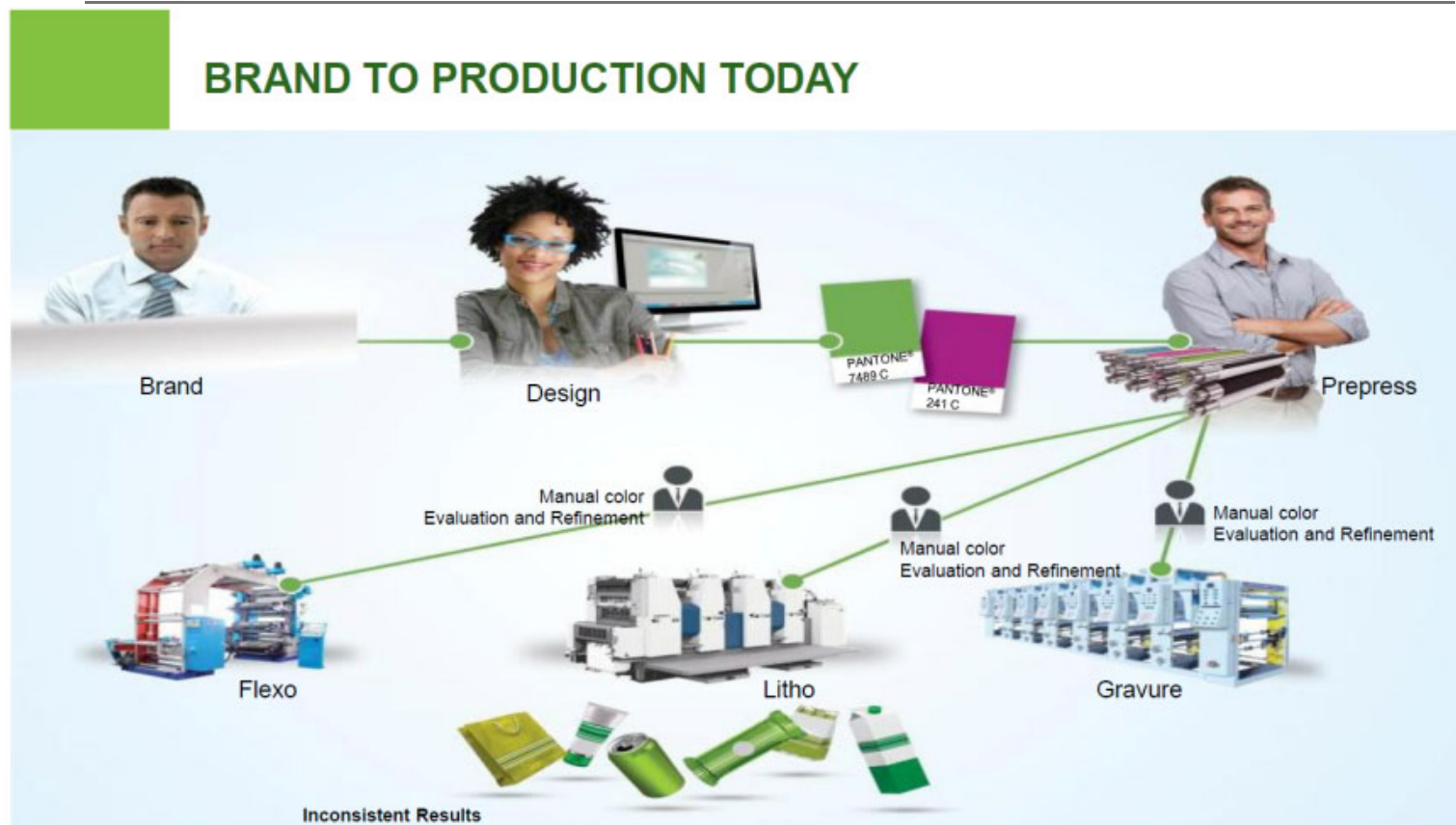


©Lila design

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



Current Digital Color Tools for Design



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

Digital Color Tools: Useful for Design?

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..

Digital Color Tools: Useful for Design?

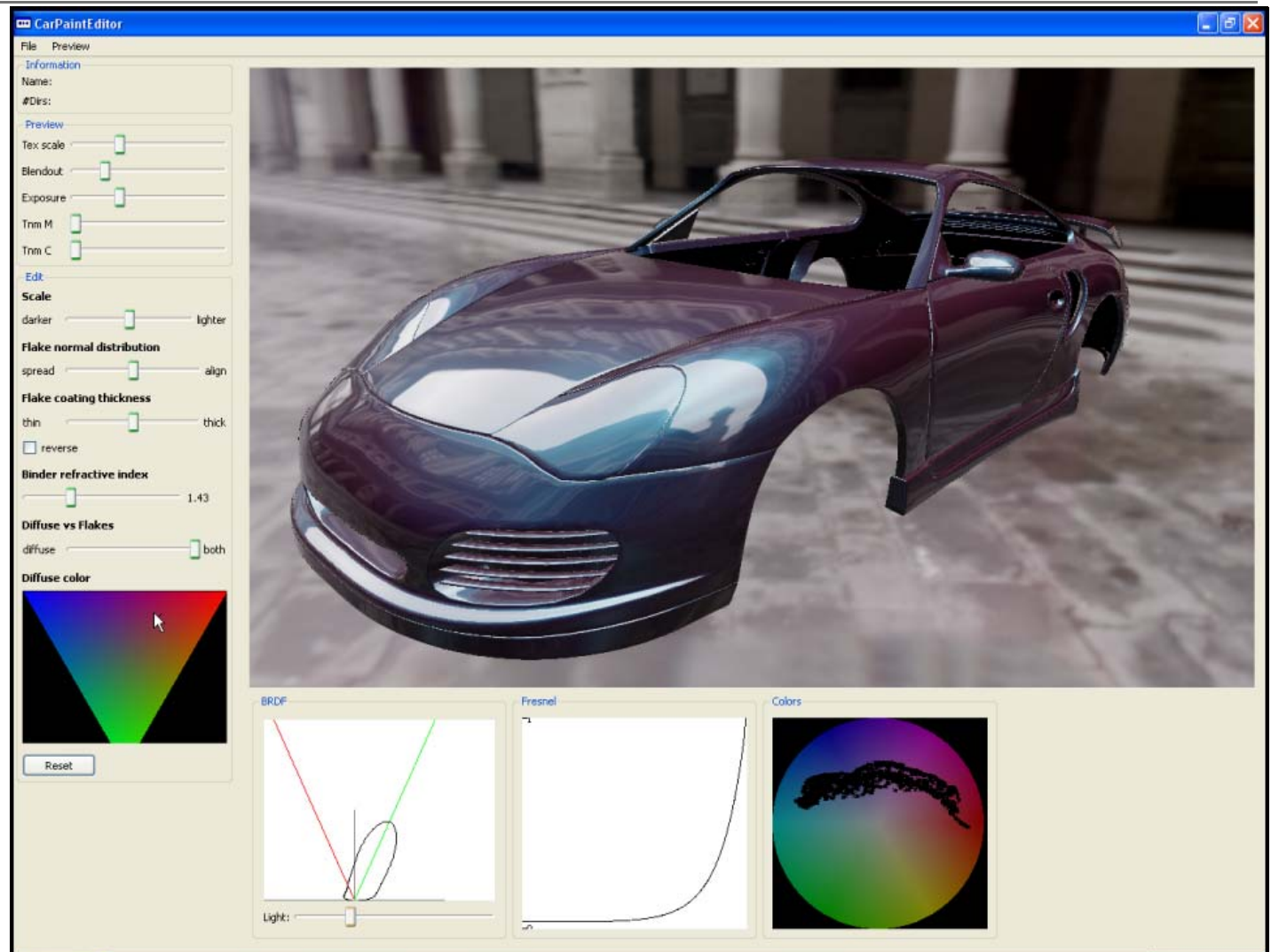
Current Digital Color Tools for Design



C. Shimizu, PhD thesis, 2009



Current Digital Color Tools for Design

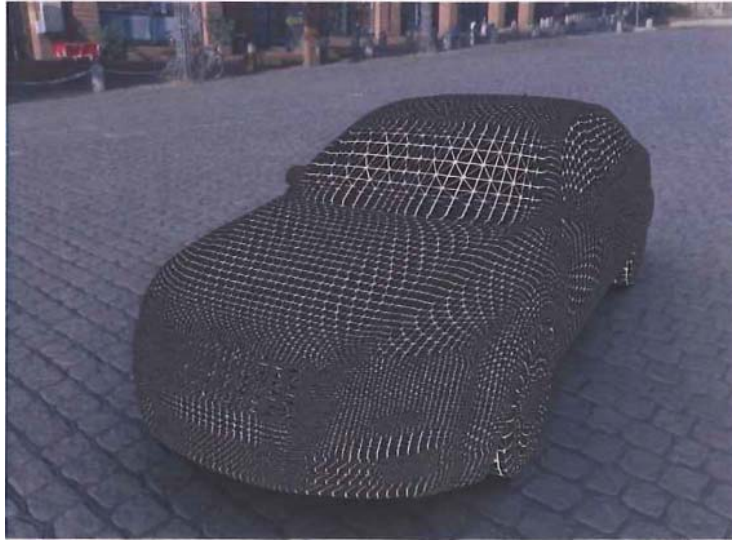


C. Shimizu, PhD thesis, 2009



Digital Color Tools: Useful for Design?

Current Digital Color Tools for Design



©Spheron



Digital Color Tools: Useful for Design?

Current Digital Color Tools for Design



University of Bonn

Digital Color Tools: Useful for Design?

Current Digital Color Tools for Design

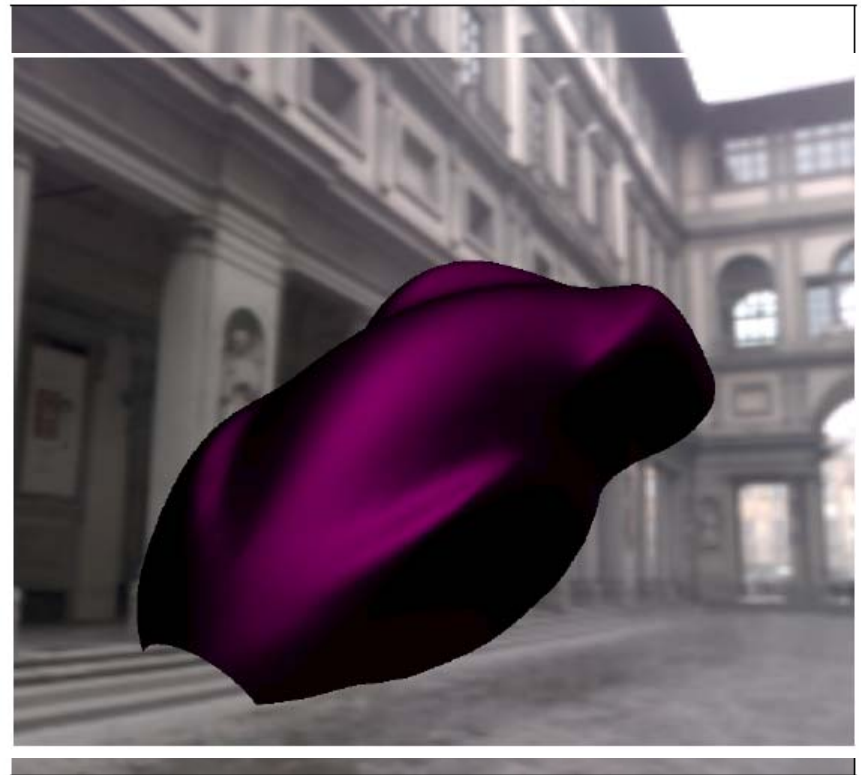


Advertisements can be made immediately after the design phase.

Digital Color Tools: Useful for Design?



Current Digital Color Tools for Design



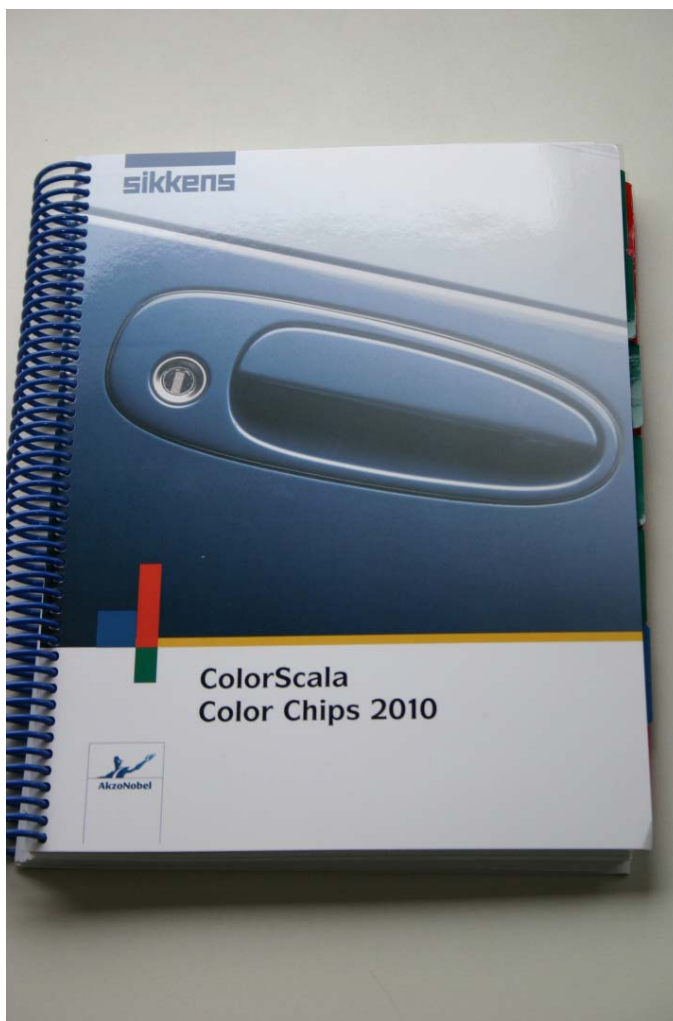
C. Shimizu & G.W. Meyer, Proc. Color Imaging Conference 2010



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

Digital Color Tools: Useful for Design?

Experience within AkzoNobel Coatings: Car Refinishes

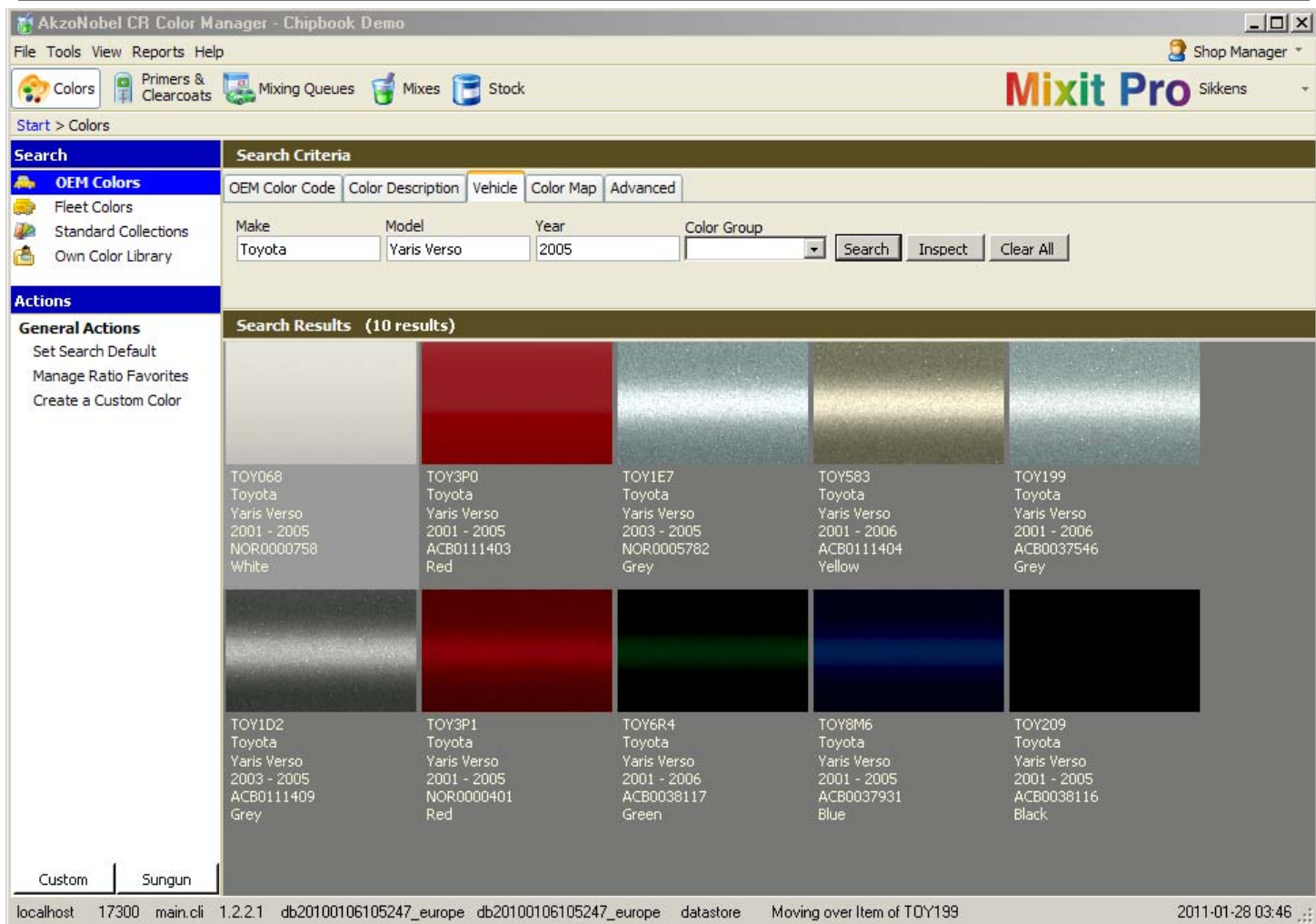


Current color documentation for car repair shops.

Digital Color Tools: Useful for Design?



Experience within AkzoNobel Coatings: Car Refinishes



AkzoNobel CR Color Manager - Chipbook Demo

File Tools View Reports Help

Colors Primers & Clearcoats Mixing Queues Mixes Stock

Start > Colors

Search

Search Criteria

OEM Color Code Color Description Vehicle Color Map Advanced

Make Model Year Color Group

Toyota Yaris Verso 2005

Search Inspect Clear All

Search Results (10 results)

TOY068 Toyota Yaris Verso 2001 - 2005 NOR0000758 White	TOY3P0 Toyota Yaris Verso 2001 - 2005 ACB0111403 Red	TOY1E7 Toyota Yaris Verso 2003 - 2005 NOR0005782 Grey	TOY583 Toyota Yaris Verso 2001 - 2006 ACB0111404 Yellow	TOY199 Toyota Yaris Verso 2001 - 2006 ACB0037546 Grey
TOY1D2 Toyota Yaris Verso 2003 - 2005 ACB0111409 Grey	TOY3P1 Toyota Yaris Verso 2001 - 2005 NOR0000401 Red	TOY6R4 Toyota Yaris Verso 2001 - 2006 ACB0038117 Green	TOY8M6 Toyota Yaris Verso 2001 - 2005 ACB0037931 Blue	TOY209 Toyota Yaris Verso 2001 - 2005 ACB0038116 Black

Custom Sungun

localhost 17300 main.cli 1.2.2.1 db20100106105247_europe db20100106105247_europe datastore Moving over Item of TOY199 2011-01-28 03:46

Digital color documentation, introduced early 2012.

Digital Color Tools: Useful for Design?



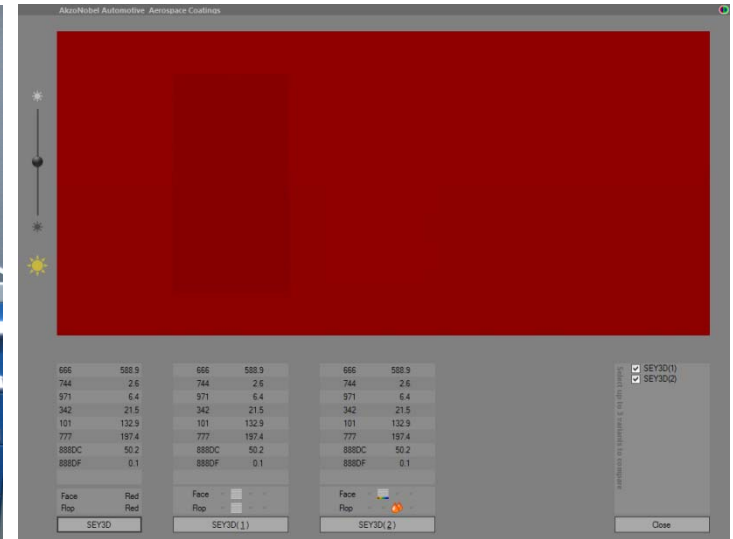
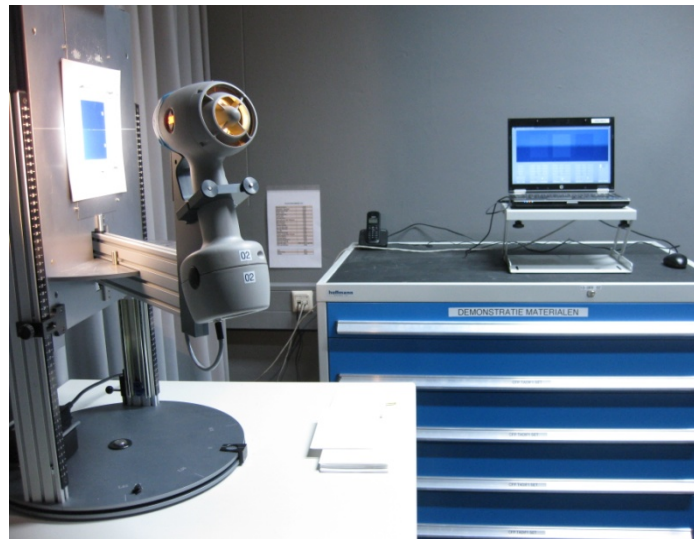
Experience within AkzoNobel Coatings: Car Refinishes



Innovative research for introducing the digital tool.

Digital Color Tools: Useful for Design?

Experience within AkzoNobel Coatings: Car Refinishes



Digital Color Tools: Useful for Design?



Experience within AkzoNobel Coatings: Car Refinishes



Practical testing before market launch.

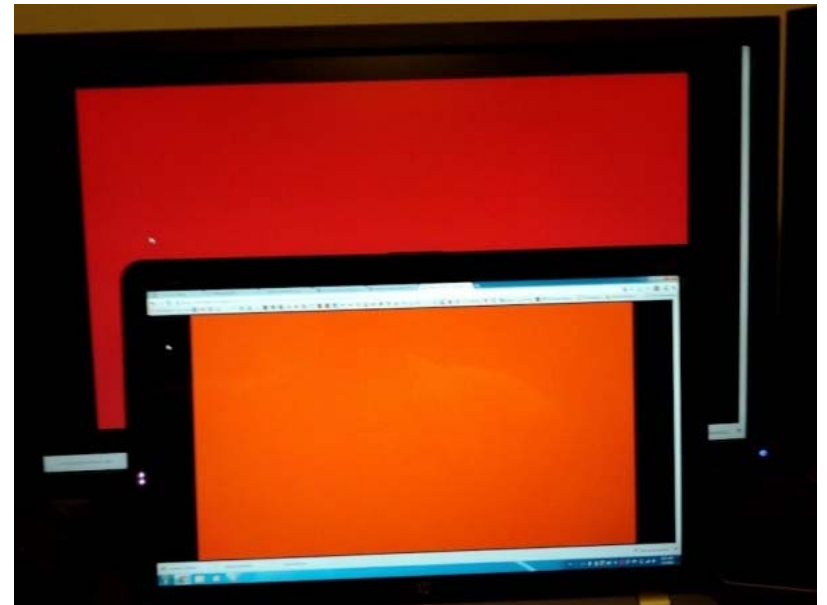
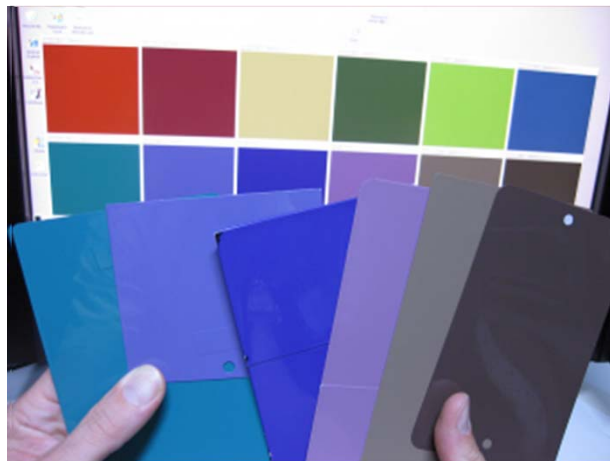
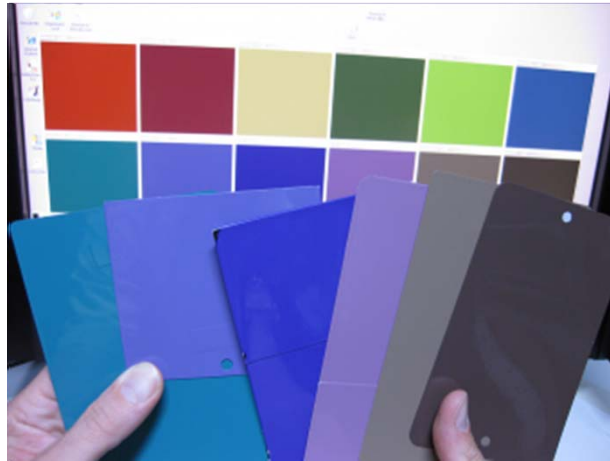
Digital Color Tools: Useful for Design?

How to mess up with Digital color tools

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



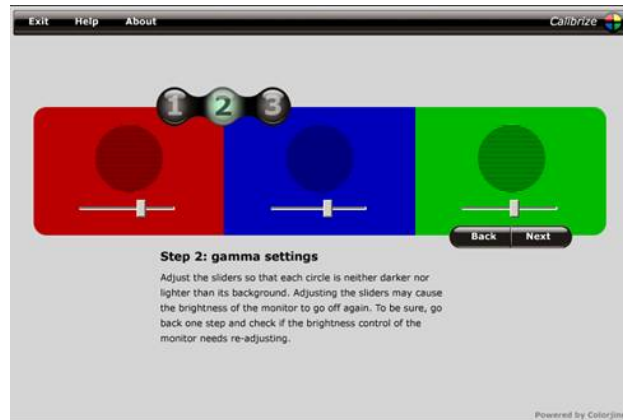
How to mess up: Use uncalibrated displays



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



How to mess up: Use uncalibrated displays



Color calibration of displays: hardware or software based.

Digital Color Tools: Useful for Design?

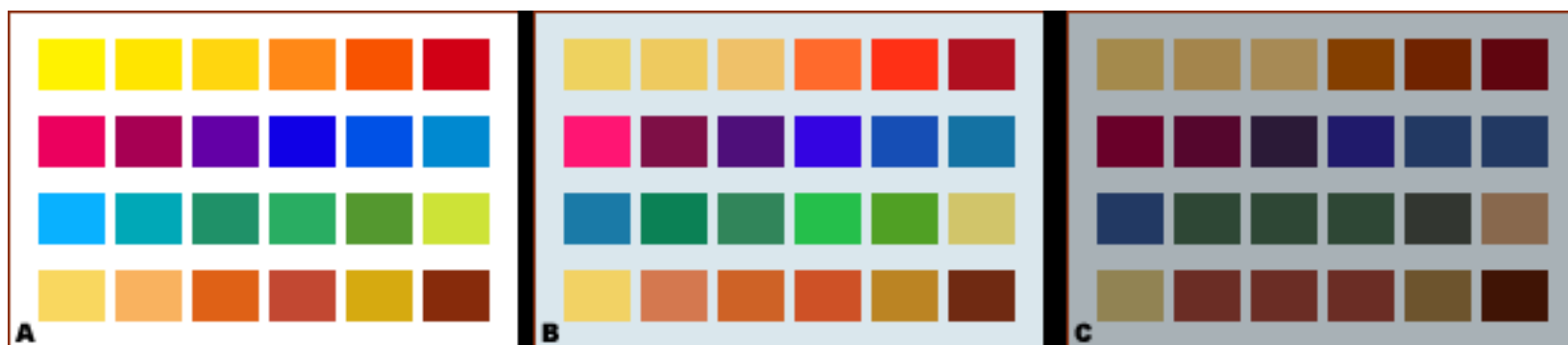
How to mess up: Ignore light spectrum



The importance of the light spectrum is often forgotten.

How to mess up: Ignore light intensity

Light intensity influences brightness and colorfulness.



Hunt effect

This must be accounted for
when calibrating the display.



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.



How to mess up: Forget the reality check

Integration of the Front Bumper into the A4



How to mess up: Forget the reality check

Integration of the Rear Bumper into the A4



How to mess up: Forget the reality check



R. Gascón López, Thesis 2013, University of Alicante

Digital Color Tools: Useful for Design?



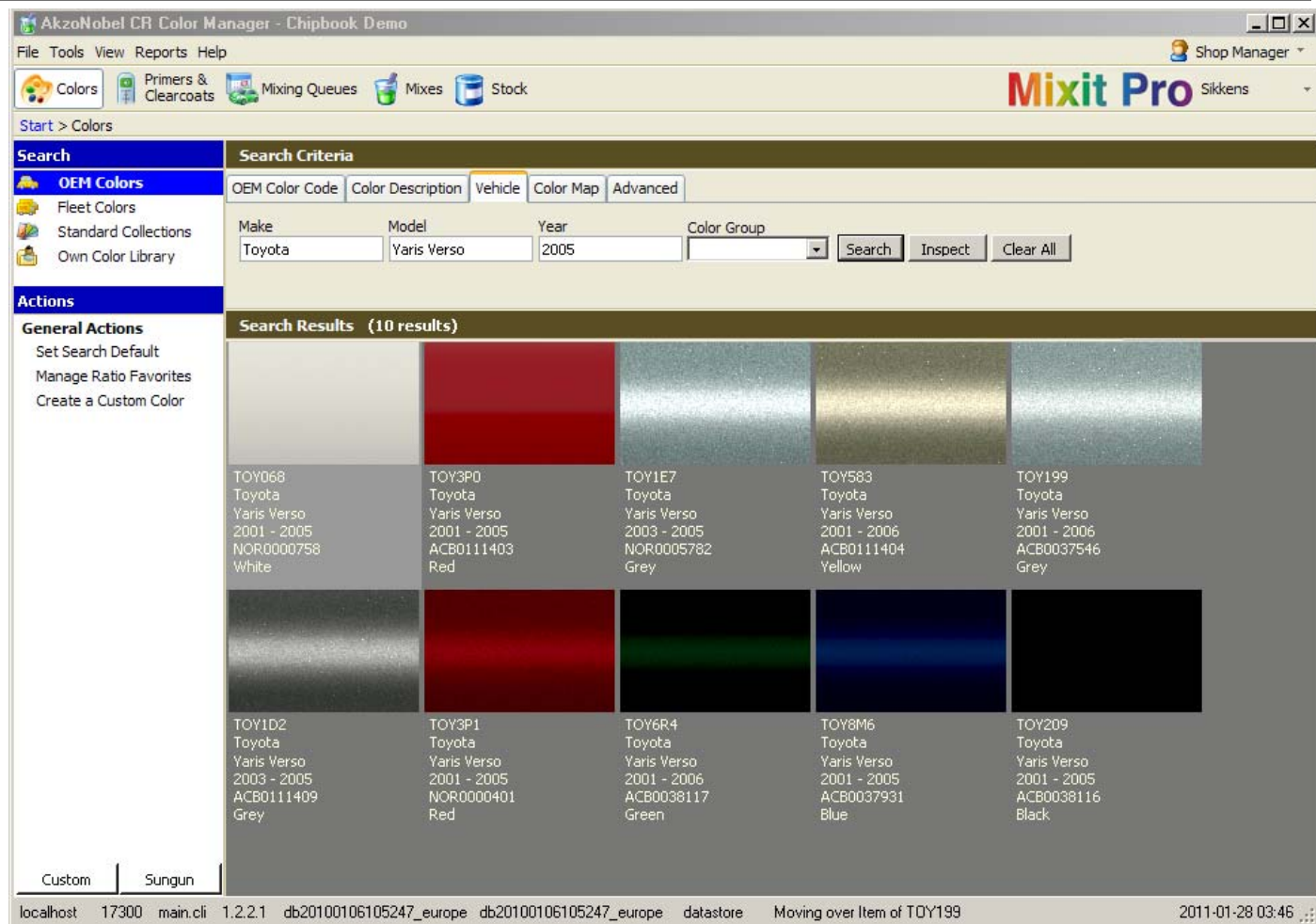
Benefits from using Digital color tools: Find the right color



The number of color chips can be overwhelming...

Digital Color Tools: Useful for Design?

Benefits from using Digital color tools: Find the right color

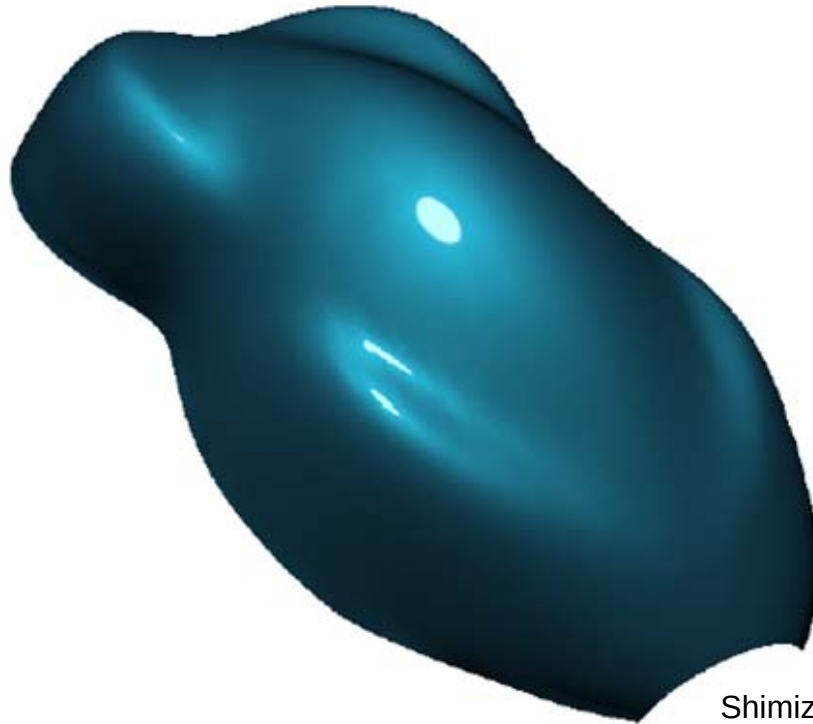


Digital color tools allow you to “Google your color”.

Digital Color Tools: Useful for Design?



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.



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

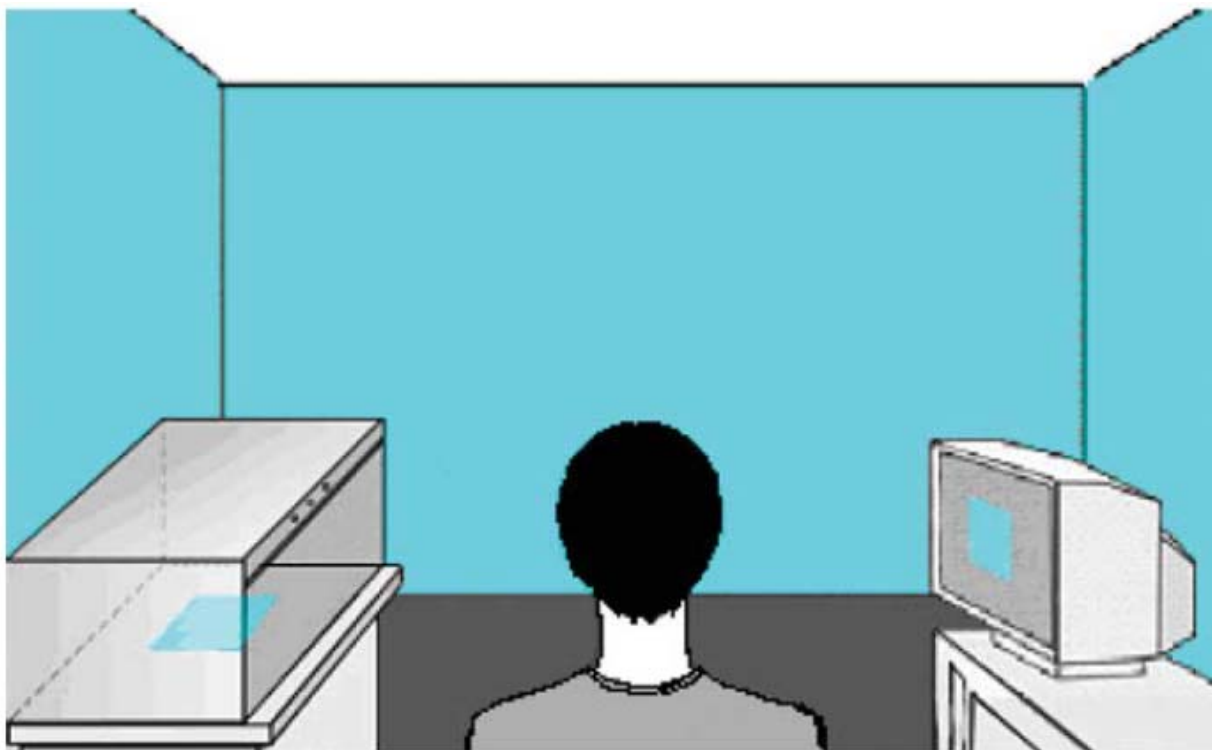


Berrier, PhD thesis, 2012

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



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.



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



Digital color tools can help you with this as well.



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

