The Missed Opportunity of Soft Proofing

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Based on slides by Dave Dezzutti & Joe Marin, PIA

Content ...

- Soft proofing basics
  - Basic LCD/LED display concepts
  - Why should you color manage your display?
  - How display profiling works
  - Hardware and software
  - Calibration and profiling overview
- Viewing considerations
- Soft proofing in Acrobat and Photoshop
- Remote soft proofing

What is soft proofing?

- Cheapest, most valuable, least appreciated application of color management
- Time machine display from capture (or scene) to output
- Can replace most hard-copy proofs, depending on application

How soft proofing works

Closed-loop soft proofing (1984)

World’s first color-accurate “soft proofing”
Revolutionized scanner setup simplicity
Won Queen’s Award to Industry (1985?)

LCD/LED vs prehistoric CRT

- Bigger, brighter, cheaper
- Stays calibrated longer
- Virtually fade-free
- Higher resolution
- Longer life
- But display quality determines is key
Why profile a display?

- Accuracy
- Efficiency
- Consistency
- Soft proofing

Soft proofing for different users

Printers
- Accurate-as-possible representation of final press appearance
- Must be as “ugly” as the printed sheet

Photographers
- Digital display of a camera image that replaces original transparency or print
- “Scene” color gamut is limited by display gamut
- NOT a true “soft proof”

Profiling a display

Profiling software

Colorimeter or spectrophotometer

ICC profile

Hardware options

- Colorimeter
  - Less expensive
  - Less accurate
- Spectrophotometer
  - More expensive
  - More accurate

Good, cheap display profiling

- baslCColordisplay
  - www.baslicolor.de
- Spyder 5 Pro
  - www.datacolor.com
- i1 Display Pro
  - www.xrite.com

Remote soft proofing solutions

- Creation of color-accurate online proofs that can be shared with anyone
- Collaborative, markup, approvals, versions
- Closes the loop
Profiling the display
1. Qualify the display
2. Hardware settings !!
3. Calibrate the display
4. Characterize the display
5. Profile the display
6. Test the profile

Typically occur together

Qualify the display
- Check uniformity
- Know the color gamut
- Check angle of view
- Set best Color Mode
- Optimize brightness & contrast controls

Visual uniformity test
- Flat gray photoshop tint
- Select View > Full screen mode
- Expand to fit screen
- Note any unevenness

Confirm brightness

1 Year 2 Years 3 Years

Angle of view

Ideal color-critical monitor features
- Wide color gamut (100% Adobe RGB)
- Good cross-screen uniformity
  - With uniformity correction tool
- > 10-bit LUTs (better smoothness)
- High dynamic range (rich blacks)
Wide gamut displays

Eizo ColorEdge CS2420
BenQ SW320
NEC PA243WM

sRGB Displays

Samsung UH750
HP 27er

Typical high-end monitor gamut

Viewing booth requirements

Images courtesy JUST -Normlicht and GTI

Calibrate and profile (if you must)

- Display calibration sets the device to a repeatable, consistent, condition
- Main considerations
  - White point (color temperature)
  - Contrast (gamma)
  - Brightness

Hardware settings

- Color mode
- Backlight
- Brightness
- Contrast
- White point

White point

D50
D65
**Brightness and contrast**

- **Display backlight control works like a dimmer**
  - Brightness (if available) controls blackness, pivoting on white
  - Too much makes shadows “plug”
  - Contrast (if available) controls white brightness pivoting on black
  - Too much makes highlights “clip”
  - Not all displays follow this logic
  - Some displays use opposite terminology (test)

**Apple displays best practices**

- Backlight—set to maximum to get best shadow detail
- Brightness and contrast—nothing to adjust
- White point—adjust in software, or leave “native” if no viewing booth
- Gamma—set to 2.2 via profiling software

**Non-Apple displays best practices**

- Backlight—set to maximum to get best shadow detail
- Brightness and contrast—adjust visually using a grayscale
- White point—adjust in software
- Gamma—set to 2.2 via profiling software

**Before calibrating and profiling**

- Warm up time = 30 minutes
- Calibrate the measurement device

**Gamma**

- Gamma is mid tone
- Not a factor since 1.8 and 2.2 will look the same after profiling within ICC-compatible software
- The desktop and non-compatible ICC software will look lighter with a gamma of 1.8 and darker with 2.2
Calibrate and profile (demo)

![Calibrate and profile demo](image)

### Installing the profile

- A workstation has one system profile that is used by all applications.
- Most profiling software will make your most recent profile the system profile.
- ICC compatible software (Adobe CC, etc.) automatically recognizes the system profile.
- Non-ICC compatible software will ignore it.

### 5 Steps to successful soft proofing

1. Qualify the display
2. Calibrate the display
3. Characterize the display
4. Profile the display
5. Test the profile

### Testing the profile

- Open a grayscale
- Voyager target or andrew@voyagercreative.com
- White_Balance_RGB.tif
- www.hutchcolor.com

- Check for:
  - Neutrality throughout the scale
  - Banding (quantization)
  - Highlight clipping
  - Plugged (crushed) shadows
Photoshop's Proof Colors command

- Mac...  
  Command + Y
- PC...  
  Control + Y
- Shows approximately how an RGB image will print in the default CMYK Working Space

Proof colors

- Original RGB
- Simulated CMYK Print

Accurate Photoshop soft proofing

- **Proof Colors** only shows a crude soft proof
- Can lie about dynamic range and saturation
- Doesn’t show paper effect
- High-quality soft-proofing requires more effort
Accurate RGB Soft Proofing

Accurate CMYK soft-proofing
Ideal viewing environment

- Controlled lighting
  Controlling the amount and quality of light reflecting from the front surface
  And the amount of ambient lighting behind the display
- Monitor hoods reduce front surface glare caused by overhead and side lighting

Ideal viewing

Worse  Better

Dimmable viewing booth

Lights adjusted

Pure RGB

Dimmable D50 booth

Simulated print

Dimmable D50 booth

Dimmable booth benefits

- Saves hard-copy proofing costs
- Provides a visual reference for white balance and exposure
- Simplifies color-matching of non-standard proofs, pre-prints, original artwork, product samples, etc.
**Dimmable viewing booth**

- Smaller viewing booths tend to exhibit uneven lighting. This can affect the apparent match between the soft and hard proof.
- Viewing booths that have “uplights” distribute light evenly across the hard proof.

**Self-profiling wide-gamut monitors**

- EIZO
- NEC
- ASUS
- BenQ

**Profile maintenance**

- Ideally, only re-profile when...
  - You change resolution
  - Any control is changed (brightness, contrast, etc.)
  - When the lighting changes
- TEST for the accuracy of the profile...
  - At the beginning of each shift
  - When a new profile is created

**Summary**

- Best advice for professionals? Don’t profile, buy a self-profiling monitor instead ($1 – 2 k).
- For cheaper monitors...
  - Hardware calibrate if needed, then profile
  - Re-profile seldom (every 12 months) if ever
  - App-level soft-proof settings?
  - Viewing conditions for hard-copy comparison

**Q & A**

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