Top Ten Color Management Pros

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1. Predictable color

Using an affordable monitor calibration/profiling product, such as Color Vision's Monitor Spyder with PhotoCal ($224), or Gretag Macbeth's Eye One Monitor ($600), you an achieve excellent soft proofs on your monitor representing final output. This is what most everyone says they want in the first place. To see on the monitor what they will get in print. They want to predict final output. Color management does this quite well.

With good profiles and workflow training, it's possible for you in-house inkjet printers and to some degree even color laser printers, to simulate final output.

High end implementations of color management are capable of taking final output conditions into account such that, in terms of color, inkjet proofs predict color more accurately than traditional analog proofs.

2. Consistent color

One of the primary goals of color management is repeatability. This way not only are you able to predict the output of the final product on screen, or in proof – but that this can be done so on a consistent basis. Even if you buy a new monitor, or replace an inkjet printer, once they have been calibrated and profiled, they can be brought into the consistency loop you create.

3. Better conversions

By making a concious effort to improve your workflow with training and knowledge, you will bet better equipped to make the right selection of profiles when making conversions. By creating and selecting good profiles, and the proper rendering intent, along with good process control, your separations and other conversions for output will be significantly better, resulting in superior image reproduction.

Also, ICC profiles contain a perceptual rendering intent table that will perform better conversions when outputting highly saturated images to output devices with a small gamut. Images that contain out of gamut color for the intended output device will reproduce as good as that device will allow. Other kinds of

conversions try to force the output device into producing colors it simply can't, resulting in less than ideal color reproduction. Perceptual rendering sacrifices the saturation of in-gamut colors to make room for out of gamut colors, while preserving hue.

4. Accurate in-house proofing

Color management allows suitable devices to simulate other devices. For example, an inkjet printer can be made to simulate the color reproduction of a printing press. So in terms of color, it brings highly accurate and reliable color proofing where otherwise it wouldn't be possible. In high-end configurations, it can simulate intended output better than analog alternatives. Plus, it's possible for a single proofer to simulate a variety of output conditions; i.e., different ink sets, dot gain, paper stock, and press behavior.

5. Soft Proofing

Photoshop 6, QuarkXPress 4, PageMaker 6.5.2,InDesign 1.5.2, and Illustrator 9 and 10 can be made to display images accurately on-screen, simulating a CMYK output device. Photoshop 6, by design, can display soft proofing for RGB output devices as well.

6. Saves Time

All of the above items, predictable color, consistent color, better conversions, in-house proofing, soft proofing, and cross-media output, plus many other benefits means color problems can be avoided, or solved much earlier in the initial design process. It can eliminate a significant portion of unnecessary color correction, improving turn around time, and reduce the wait for service bureau or printer proofs until a contract proof is needed. Also, there can be significant waste savings in terms of materials: media and ink.

7. Cross-media output

In a conventional workflow, a transparency is scanned for each target output. In the case where an image is destined for magazine and Internet, for example, two scans are needed. One is scanned in-house and color corrected for web, and another is scanned for a specific kind of CMYK output. The two images will not only not look the same, they could look drastically different just because of the color correction techniques that will differ.

With a color managed workflow a single RGB scan captures more color and range of the original image, and can be converted for web, magazine, high quality hi-fi, waterless, newspaper advertising, film recorders, gravure, packaging, dye sublimation, and many other kinds of output. One scan is all that is needed. Primary color correction is applied to this single image prior to conversion for use with specific media.

This also works for legacy CMYK images already designed for a specific kind of output. Magazine images can be quickly converted for newsprint, web or other media.

8. Saves Money

Avoiding color problems in the initial design process, and solving them earlier in the production cycle will result in far fewer delays and reworks. It will increase productivity and maximize equipment and personnel. Number of outsourced proofs will go down as well.

9. *Better communication*

Monitors that display the same image reasonably the same allows for better communication within an organization. The benefit increases dramatically when customers and vendors also have calibrated/profiled displays and also see a given image displayed consistently.

Better, more accurate proofs help communicate color by eliminating common conversations such as “well the color won’t look like that, it will look like this,” while pointing to a swatch book, or actual product.

10. Happier Customers

Customers will be happier with shorter turn around times, and better separations that will result in better color reproduction. Customers who choose to calibrate/profile their display will be pleased seeing significantly better color matching from their display to the output you provide them. They will also see your incorporation of the latest color management technology as a commitment to them, and your desire to accurately reproduce their artwork.

Top Ten Color Management Cons (common complaints)

1. *High learning curve to reach full understanding*

Full understanding of color management, color space conversions, terminology, and essentially what's *really* going on, has a high learning curve. High-end color matching requires in-depth knowledge of a wide assortment of issues, as well as learning how to use related software and hardware.

At the consumer-end, things are getting better and easier to understand and implement, while at the same time cost is coming down. However, it's still not as simple as push button color.

2. *Consultant usually needed, at least initially*

Due to the high learning curve, it is often necessary to hire a trainer/consultant who can plan a workflow, make recommendations, put it all together, and then provide effective training. A good consultant will implement workflow that can be effectively used very quickly, recouping the investment in their time rapidly.

3. *It's not automatic or push button; users must be trained (downtime)*

Color space conversions themselves are automatic. However, the user must understand how to select various device profiles, and in what sequence, and the nature of rendering intents in order for images to reproduce effectively and predictably. Proper training is often underestimated. Without training, users can have a negative experience with color management. Good training does not need to be prohibitive in terms of cost or downtime to the employee. Creative and targeted lesson planning ought to be employed by any professional color management trainer.

4. *Conversions aren't perfect matches*

Color space conversions (separations) do not generate perfect matches. This is a common complaint about color management, but is extremely misleading. Color management is not about color matching. Color matching is a fallacy. In the clear majority of cases, the output device has a different gamut (in size and shape) than the original image. Therefore, exact color matching is impossible. This is not the

fault of color management. It is simply a limitation of most output devices. Color management is about predicting these limitations.

5. The need for custom profiles

At this point, scanners, monitors, and inkjet printers don't have enough consistency within the same models to have their own model specific profile that you can just get from a manufacturer. So-called "canned profiles" sometimes hurt more than they help, but are provided because of market demand. Custom profiles work better than canned ones when it comes to describing the behavior of a specific device.

A profile made for scanning transparencies will not work for scanned reflective artwork on the same scanner. A profile made for glossy coated paper will not work with uncoated paper, or vice versa. Same goes for different inksets. These items affect device behavior and must be taken into account in order for image reproduction to be accurate.

Subjectivity, creativity, and experience are not eliminated with this process. Color management simply makes the more mundane tasks of image reproduction easier, and faster. Just because you have custom profiles for each device does not mean you will have fantastic color. It means you gain a large amount of predictability.

6. Application support still somewhat awkward and immature

Only Photoshop 6 recognizes either RGB output or RGB proofing devices. Other applications assume CMYK output and proofing. Accurate on screen soft proofing of solid colors such as Pantone and FocolTone is non-existent without work arounds. User interface is not consistent in terms of color management settings from application to application. QuarkXPress 3 has no color management without 3rd party software. QuarkXPress 4 is limited to color managing TIFF images; EPS images are not color managed, unless you use 3rd party software. Some applications have very limited color management support, or none at all.

7. Profiles must be edited, they don't just work out of the box

Some packages do a better job than others do with certain devices. One package may do a great job for presses, and another may do a better job profiling inkjets. Nearly all custom profiles must be edited in order to get the desired results for separations or proofing. This can be tedious, but is a function of how complex color reproduction really is. Color management isn't about a measuring device making decisions and leaving humans out of it. Profile editing is a visual process, and incorporates the desires and expectations of the people who will be using the profile.

8. Need newer applications, and sometimes 3rd party software to make it work

Photoshop 6 makes color management better and easier than ever before. While more complicated than previous versions, it does a better job of baby sitting the uninitiated so color problems as a result of not knowing what you're doing is rare.

QuarkXPress needs 3rd party software for version 3 and 4 if you need color managed EPS files; accurate conversion of Pantone colors (for proofing, or in final output as process versions).

Often, output devices don't know what ICC profiles are, and certain workflows make it difficult, annoying, or impossible to use color management at the application level. This means purchasing color server software in order to setup simulation/proofing queues, or hot folders, to batch process images and jobs.

Arguably, color management is not workable in Acrobat 4, therefore upgrading to Acrobat 5 is necessary for color managed PDF.

9. Expensive start-up cost to do it yourself

The best products aren't inexpensive. $224 for monitor calibration/profiling software; $500 for scanner/digital camera profiling software; and $2000 and up for profiling output devices like printers and presses. Measurement devices for making profiles for printers and presses start at $1000.

Production quality profiles take experience and time to make.

10. Color management does not solve all color-related problems.

Some color management problems are not easily solved or solvable with color management. It is still a new technology, yet growing rapidly in the industry. As time goes on, it will continue to mature, and have solutions that are more complete.

For example, Pantone colors can be printed accurately with 3rd party software, but not viewed accurately on-screen. Spot colors are difficult to predict when they are not printed at 100%. Pantone and your printer will recommend press checks for these kinds of jobs whether or not color managed.

PDF 1.3 has support for per image ICC profiles and rendering intents; yet it the implementation is frought with problems when using grayscale profiles with PDF.