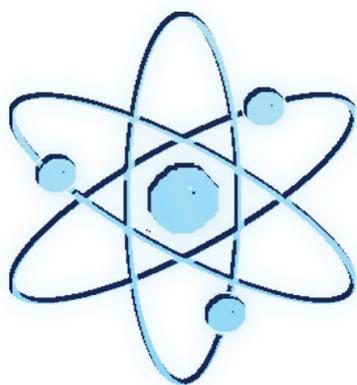


ASP ColourManagement.com

WEB-BASED COLOUR SOLUTIONS



CMI
Hybrid Rendering Intent™



Version 1.1
Language: English



Table of Contents

What is a Hybrid Rendering Intent	3
Prerequisites	4
1.0) Optimize	5
2.0) Create new 'Hybrid' workflow on ASPColourManagement.com.....	5
3.0) Hyrbid Setting.....	7
3.1) Blend	7
3.2) Brightness	7
3.3) Contrast	7

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What is a Hybrid Rendering Intent

CMI Hybrid Rendering Intent™. A novel approach for ICC workflows.

Color and digital printing is a daily process of improvements. Every day, operators develop a little better understanding into the nuances of their workflows that continually push the quality of color reproduction forward. This is true both traditional, ink centric, approaches and the newer, more generalized, approach of ICC color management.

Today, ICC color management is a common tool in many facets of color reproduction. Over the past two decades, it has gradually gained acceptance throughout the graphic arts industry. During that time, the conventional ink-based approaches were also evolving as new printing technologies came to the market.

One challenge that both approaches to color reproduction struggle with is how make colors match when different substrates are involved. The challenge is more difficult when the substrates contain high levels of optical brighteners.

ICC color managed workflows address the need to match colors across multiple substrates through the use of rendering intents. Unfortunately, when printing on heavily optically brightened substrates, the rendering intents available to the graphic arts industry fail to deliver an acceptable match. Relative color rendering intent adds the color of the paper to all of the colors being printed. This solution works wonderfully for light colors where the color of the paper overwhelms the small amounts of ink that are required to render these colors. Unfortunately, relative color rendering intent falls apart when it comes to matching saturated colors. These dark colors cover up the color of the paper, so relative color rendering makes them appear too blue or too yellow depending on the substrate being matched. Absolute color rendering intent solves this problem for darker and more saturated colors, but falls apart for light colors because it is impossible to compensate for the color of the paper with the small amounts of ink required to print them.

An ink-based approach to solving this cross-media matching problem was developed by Graphic Communications Association in the late 90's. This led to the very popular G7 guidelines for GRACol publication. In recent years, these guidelines evolved into the ANSI/CGATS TR015:2012 G7 Specification.

While the G7 approach to cross-media matching has been very successful for traditional ink-based color management, it requires careful control of the printing process by highly trained practitioners. On the other hand, one of the big advantages to an ICC color managed approach is that the complex adjustments of the color reproduction process can be embodied in an ICC profile. In this case, the operator who selects the profile and its rendering intent does not need to be highly skilled to produce high quality results.

In recent years, ISO-13655 was established and specifies the "M" series of measuring modes for color measuring devices. This standard does remove some of the ambiguity in color measurements associated with ICC color workflows that involve media with optical brighteners. Unfortunately, the standard does not provide any specific solutions to the problem.

One of reasons that the ICC workflows struggle with this problem can be traced back to the early days of the ICC. In the early 90's, the graphic arts industry was not typically using media manufactured with optical brighteners. The relative colorimetric rendering intent provided a reasonable path to cross-render between processes that had white points and dynamic ranges that were similar. At that time, using the white point of the destination process to define what was perceived as neutral worked well.

More recently, media containing optical brighteners have become more popular. As a result, relative colorimetric renderings onto this media will appear too blue when using standard measurement techniques. While using various "M" settings (like the "M2" UV-cut setting) helps the problem by eliminating the effect of the brighteners, it doesn't really address the desire to have a perceptual match between two media having different white points and viewed under an illuminant that does have UV.

CMI saw that the success of the G7 approach, to solve site effects of optical brighteners, could be adapted to an ICC workflow, and we developed the Hybrid Rendering Intent™. We recognized that in terms of ICC rendering, the G7 approach does relative colorimetric rendering in the highlights and transitions to absolute rendering in the

shadows. Another big benefit of the G7 approach that CMI leverages are its ability to optimize the dynamic range between a source and destination processes.

The benefits are high:

- OBA can now better controlled with M0 and M1 measurements than M2 (UV-Cut). It simplifies the workflow of an operator to use only one type of measurement device.
- The gray balance is perceptually very neutral and is consistent with the requirements of the G7 approach
- Light colors and highlights have a much improved rendering across different substrates
- The full dynamic range of the source image is optimally matched to the full dynamic range of the output
- It works with any color managed output device on any type of substrate.

To effectively integrate the G7 effect, CMI is now providing its users with the ability to create a new type of ICC profile: one that accommodates the white point and dynamic range differences of the source and destination processes. As such, these optimized profiles do not fit the classic device independent model that ICC profiles are supposed to have. These output profiles are typically optimized for standard reference printing conditions such as GRACol, ISO-CoatedV2, and SWOP but will work with any profiled CMYK process. It also works well with RGB data in custom color spaces or standards like sRGB or Adobe98.

Our new Hybrid Rendering Intent optimizes the default relative colorimetric rendering intent in an output profile in order to preserve the perceptual appearance as much as possible when going from one CMYK or RGB process to another. It also applies a similar appearance adjustment to the perceptual rendering intent. In both cases, the user is given full control for adjusting the relative to absolute colorimetric transition. For additional control, particularly for perceptual rendering, the user can adjust the brightness and contrast of the final reproduction.

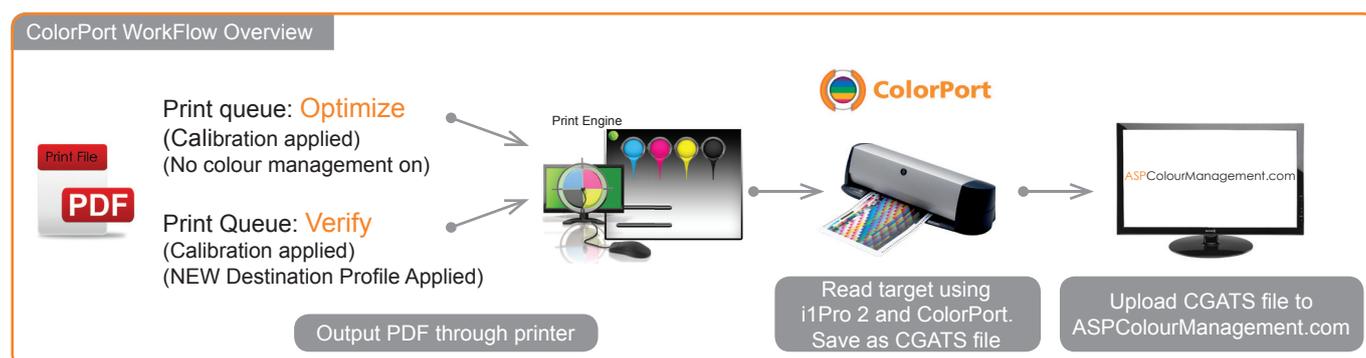
Also, CMI Process Corrected Aims will calculate the color aims for these advanced ICC profiles. Everything, from the beginning to the end, can be optimized and controlled by CMI.

The CMI Hybrid Rendering Intent is available exclusively in our Platinum version of ASPColourManagement.com

For more info contact Chris Trimbach, CEO via chris@cmicc.com

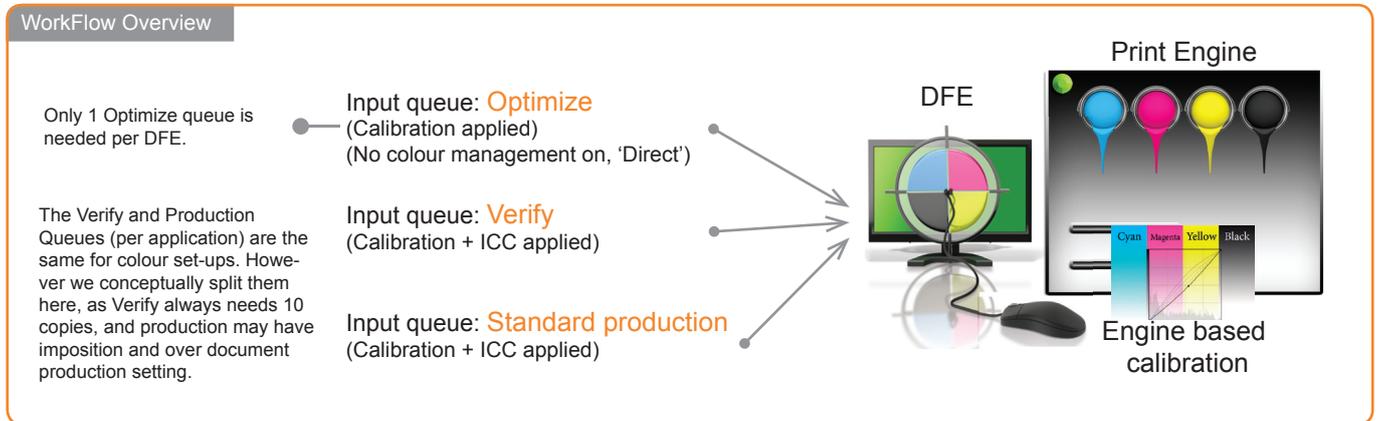
Prerequisites

- You have followed the standard ASPColourManagement.com set-up routine and have successfully created a [OPTIMIZE] & [Verify]queue on your DFE and used those queues.
- You have configured and successfully used the solution where you have a successful CYMK workflow.
- Please download the related manuals if you did not succeed in this.



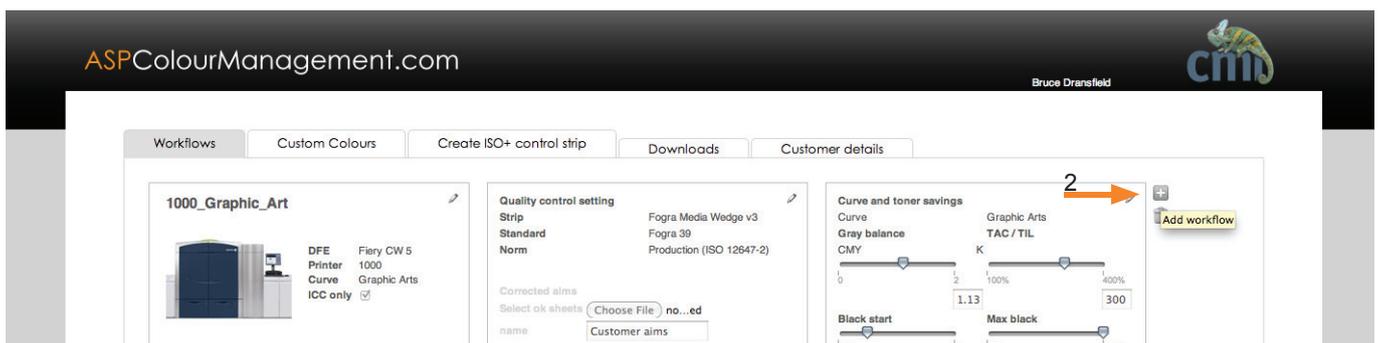
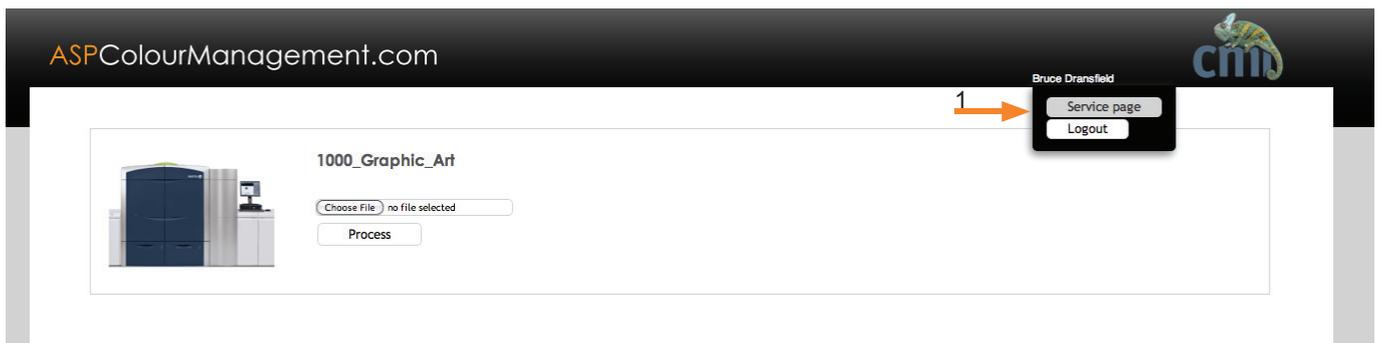
1.0) Optimize

If you have created and used the optimized queue you DO NOT need to make another queue on the DFE for this process. The same CGATS.txt file you create when following the optimized process can be used for creating both standard GraphicArts Profiles and PhotoOptimized profiles and Device Links with or without an CMI Hybrid Rendering Intent™.

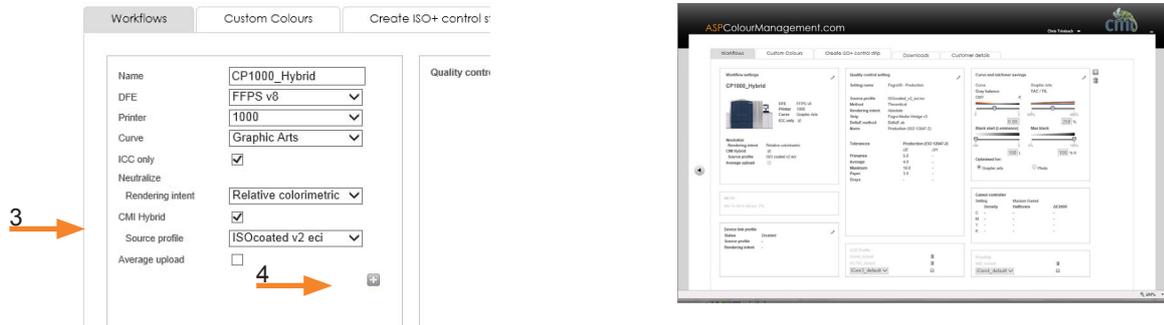


2.0) Create new 'Hybrid' workflow on ASPColourManagement.com

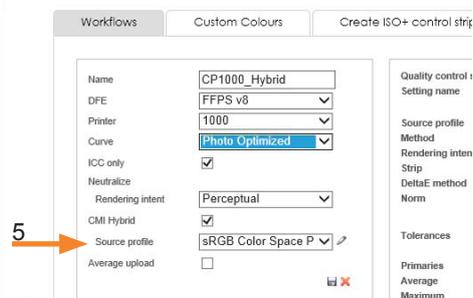
1. Log into your account as normal and select [Service Page].
2. Click the [+] the add workflow button



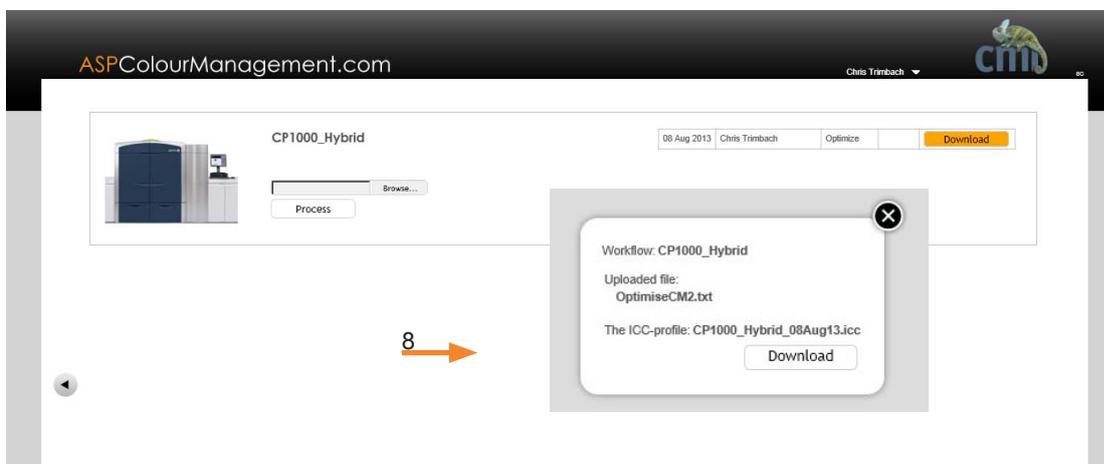
3. Create a Workflow, choosing the curve. [TIP! Choose Graphic Arts for offset look and feel or Photo for RGB] When Graphic Art is selected and Hybrid enabled it shows default the IsoCoatedv2 ECi as source for the Hybrid. Please select the applicable source used in your application. (Not listed, contact support@aspcolourmanagement.com)



4. Click the [+] icon.
5. When a workflow is selected with Photo Optimized the pre-set of the Hybrid shows sRGB.



6. Go back to your home page and go to the new workflow.
7. Up load your CGATS file and wait for download, click the orange Download button.
8. Click the download button.



3.0) Hybrid Setting

Default the hybrid rendering intent is based on default settings. There are three levels which can be changed to optimize output

Click on the edit button in the Hybrid section



3.1) Blend

Minimum is 0.25 max is 5, default is 1.0

The blend is the place where the Absolute rendering starts. We start with relative to have a clean white point in the output (0,0,0,0) and will be smoothly moved to absolute. The blend factor is the location we go to absolute. Low value: small content relative and high content absolute as weight in the algorithm. A low value increases the amount of influence of the source white point, a high value increases the influence of the output white point.

3.2) Brightness

Minimum is -2 max is +2. Default is 0.

A negative value will darken the output, a positive value will lighten the output.

3.3) Contrast

Minimum is -2 max is +2. Default is 0.

A negative value will give less contrast in the output, a positive value will increase the contrast in the output.

After saving the setting your change is used with your next upload for this workflow only.

