5. International Prinect User Days, October 8th and 9th, 2014

PDF/X-4 & Co. successful processing with Prinect and other color management tips

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Content - PDF/X-4 & Color Management in Prinect

1. PDF/X-4 – What is it?

- PDF/X = International Standard defined in the ISO 15930
- Start 2001: with PDF/X-1,

  currently in preparation: PDF/X-5
- X means 'Exchange‘:

  defines the exchange of digital data in the graphical arts industry
- Eliminates issues from PDF not relevant for the print industry,

  Mainly used: PDF/X-1a, PDF/X-3 and PDF/X-4
- Focus on Color and Color Management:

  The destination Color is defined by the Output Intent (ICC-Profile)

1. PDF/X-4 – What is it?
Compared to PDF/X-1a and PDF/X-3

	PDF/X-1a (2003)	PDF/X-3	PDF/X-4
PDF-Version	PDF 1.3	PDF 1.4	PDF 1.6
Object Color	CMYK, Gray, spot colors	CMYK, Gray, spot colors, ICCBased and Lab	CMYK, Gray, spot colors, ICCBased and Lab
Output Color (only 'ptr')	CMYK	CMYK, Gray and RGB	CMYK, Gray and RGB
Transparency	No	No	**Yes**
Layers	No	No	Yes (only OCCD*)

* OCCD: optional content configuration dictionary

1. PDF/X – What is it?
The impact in practical work

General

- Responsibility for „Color-Adjustment“ moved from Data-Provider to print shop (Prepress-Department)
- Good Know how in Color Management is needed

PDF/X-4 supports media neutral workflow

- Color of Objects can be in Device Color Space
  (only CMYK, Gray, spot color, DeviceN)
  or in Device Independent Color Space (e. g. ICC-Based)
- ICC-Based Objects have to have an ICC-Profile attached

2. PDF/X-4 in Prinect
Where and how is it treated?

Preflighter (Qualify / Prepare) can

- check for PDF/X-Compliance
- create Errors, Warnings, Information regarding PDF/X-issues
- make a few corrections

Color Conversion (Prepare) (aka 'Color Carver')

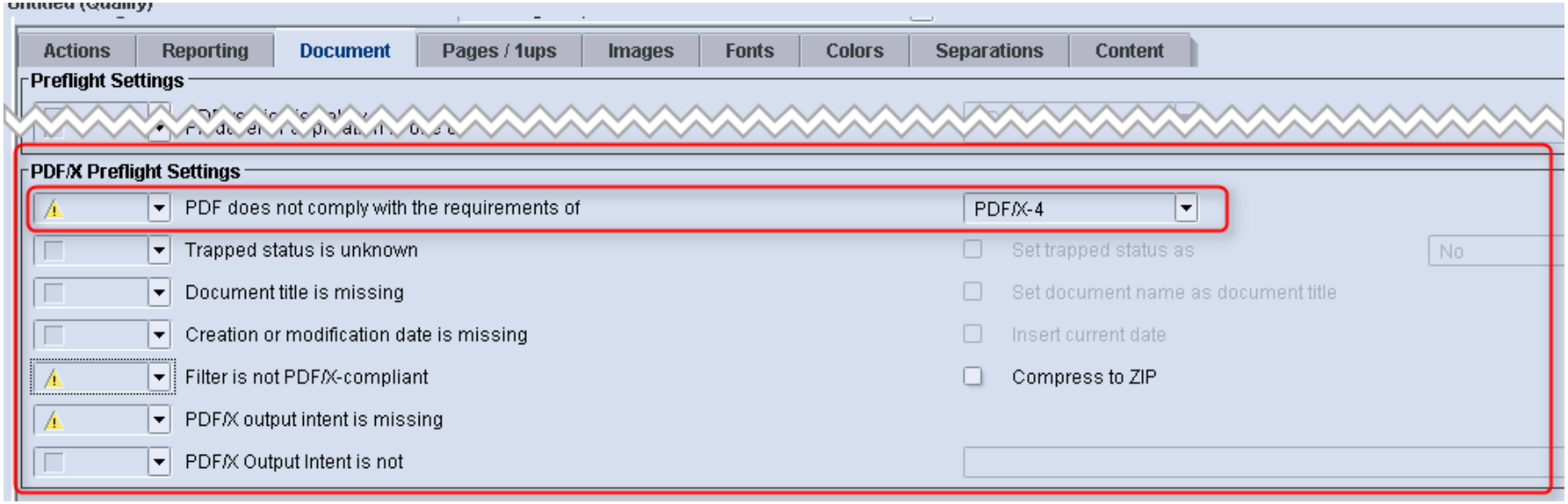
- Many Options to define the Color Management process

→ A chance for good results!

But also

→ A risk for 'just some result'
(Voodoo-Results)

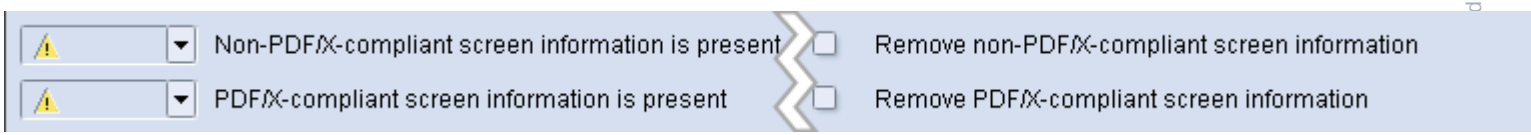
2.1 PDF/X-4 in Prinect – Preflight Settings especially for PDF/X (X-1a, X3 and X4)



- Pages:

- Colors:

- Content:



2.1 PDF/X-4 in Prinect – Preflight Settings
Resulting Preflight Report

- PDF/X-4
  → OK

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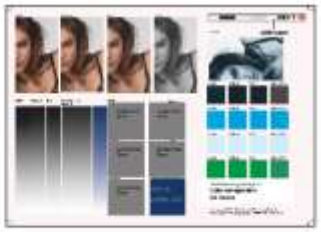
Document overview

File name:	DevLink_test_v2_ADAC_wGray.pdf
Title:	DevLink_test_v2.indd
Creator:	Adobe InDesign CS5 (7.0.4)
Producer:	Adobe PDF Library 9.9
Author:	-
Creation Date:	04/29/2011 12:33:19 PM
Modification Date:	10/06/2014 04:33:44 PM
File size:	21.8 MByte / 22358.4 KByte
Trapped:	No
Output Intent:	ISO Coated v2 (ECI)
PDF/X Version:	PDF/X-4
PDF Version:	1.6
Number of pages:	1
Media Box:	1237.56 x 888.90 pt
Trim Box:	1190.56 x 841.89 pt



Summary	Error	Warning	Fixed	Info
Document	-	-	-	-
PDF/X	-	-	-	-
Pages	-	-	-	-
Colors	-	-	-	-
Fonts	-	-	-	-
Images	-	-	-	-
Content	-	-	-	-

2.1 PDF/X-4 in Prinect – Preflight Settings
Resulting Preflight Report

- any PDF
  → Not OK

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Document overview

File name:	Keile_RGB_CMYK_Spot.pdf
Title:	-
Creator:	-
Producer:	Acrobat Distiller 4.0 for Windows
Author:	-
Creation Date:	12/07/2001 02:02:04 PM
Modification Date:	12/07/2001 02:02:05 PM
File size:	106.2 KByte / 108721 Byte
Trapped:	Unknown
Output Intent:	-
PDF/X Version:	-
PDF Version:	1.3
Number of pages:	1
Media Box:	595.00 x 842.00 pt
Trim Box:	595.00 x 842.00 pt

Summary	Error	Warning	Fixed	Info
Document	-	-	-	-
PDF/X	-	2	-	-
Pages	-	-	1	-
Colors	-	-	-	-
Fonts	-	-	11	-
Images	1	-	-	-
Content	-	-	8	-

PDF/X
- PDF does not comply with the requirements of PDF/X-4
- PDF/X output intent is missing

Pages
- Trim box is not set directly or identical to media box

Fonts
- ArialMT: Font is not embedded #11

Colorspace, the final Frontier, ...

2.2 PDF/X-4 in Prinect – Color Management Settings

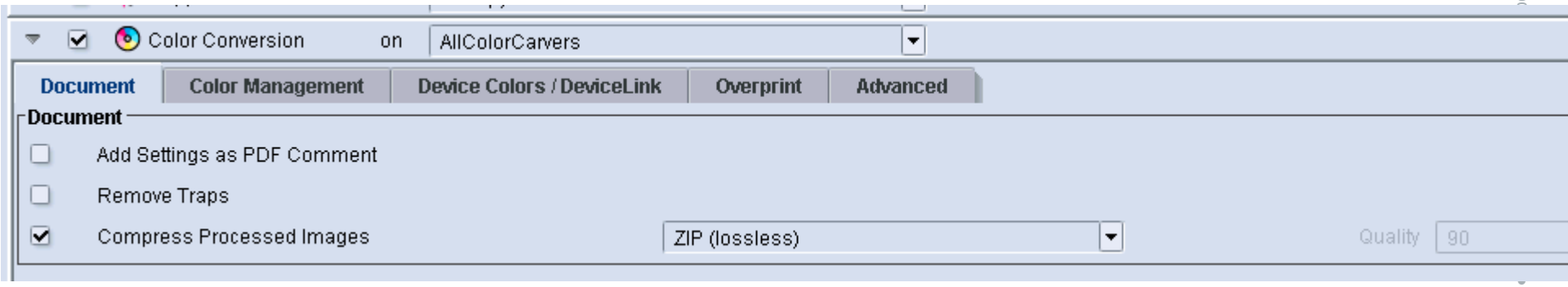
1. General Part for handling of the Document itself
2. Settings for the Target (Press-Profile)

   as well as Device Independent Colors
3. Settings for the Source-Data to be processed
4. Some general and special Overprint-Settings
5. Some Advanced settings for spot colors, Gray Colors and Marks

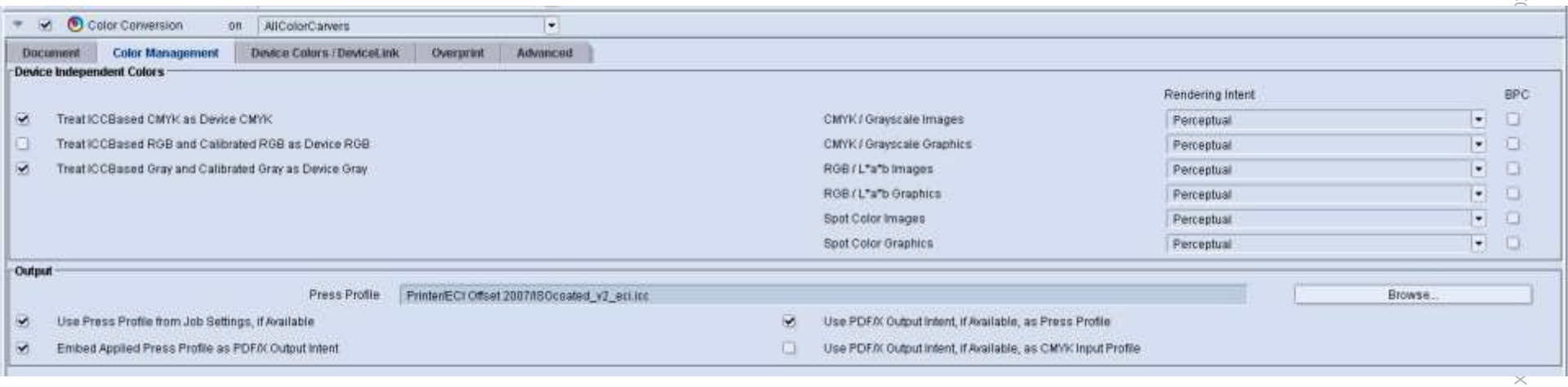
Hint: Tooltips are extremely helpful in Color Conversion!

2.2 PDF/X-4 in Prinect – Color Management Settings

- Document Settings (mainly self explaining)

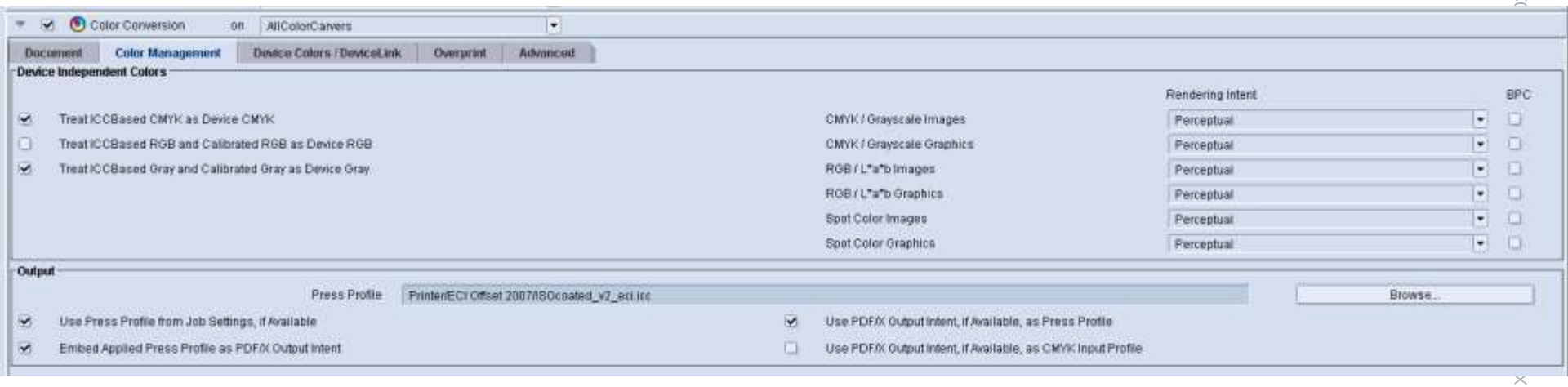


2.2 PDF/X-4 in Prinect – Color Management Settings Device Independent Colors



- ICC-Based Objects are Objects with a linked ICC-Profile.
  → therefore Device Independent
- For CMYK/Gray/RGB these linked ICC-Profiles can be ignored and then treated the way defined under „Device Colors/DeviceLink“
- 'BPC‘ means „Black Point Compensation“ and is normally only useful in case of „relative Colorimetric“ Rendering intent

2.2 PDF/X-4 in Prinect – Color Management Settings Output



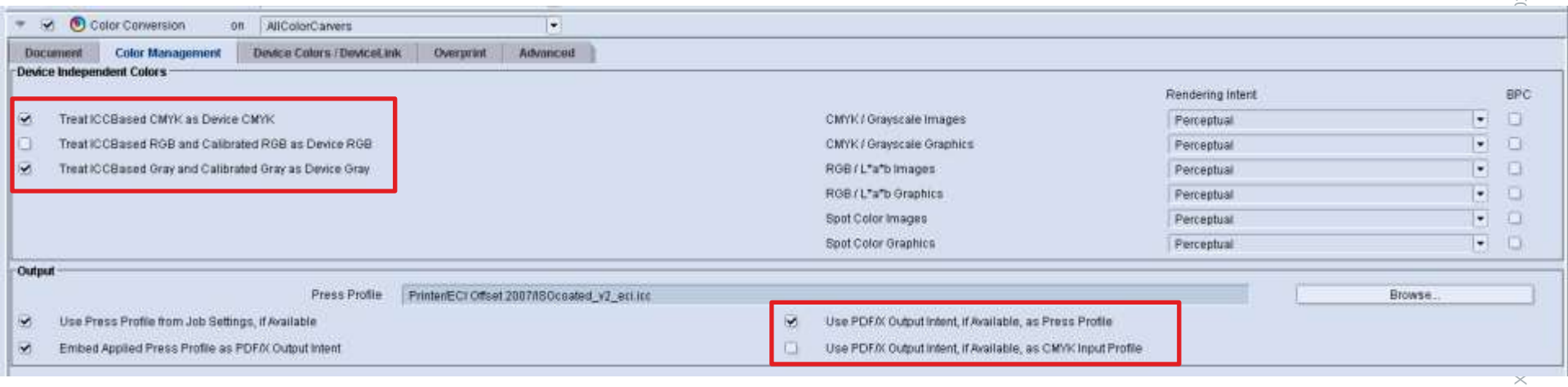
- Press-Profile is the general „Output“ Profile [Target, Destination, …] = the ICC-Profile for the final Output-Process!
- Output Intent-Settings should be used depending on the Workflow

Be careful with these settings:

The incoming PDF can contain an Output Intent.

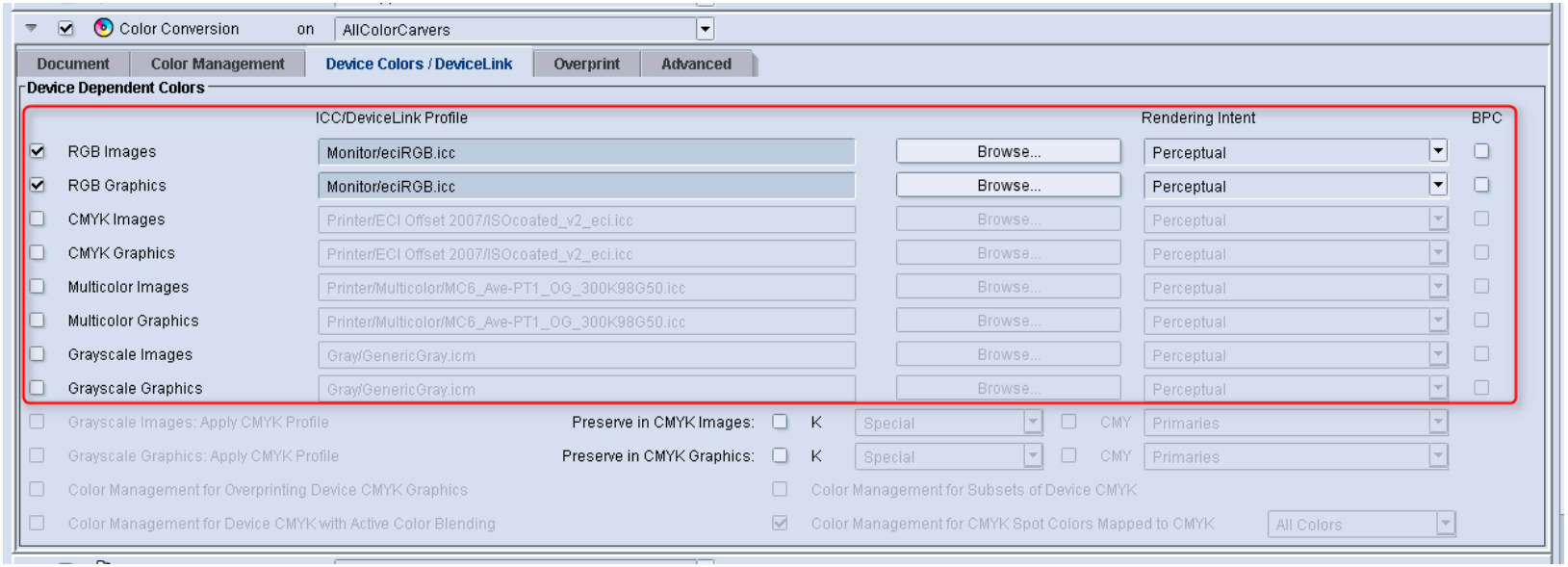
→ For PDF/X, it must contain one!

2.2 PDF/X-4 in Prinect – Color Management Settings for PDF/X-4



- Leave „Treat ICCBased RGB … as Device RGB“ unchecked!
- Does your incoming PDF contain ICCBased CMYK and/or Gray? What is it supposed to be?
  → Depending on the answer,
  switch Checkboxes for ICCBased CMYK / Gray ON or OFF!
- Is the Output Intent of the Incoming PDF really your desired Output or do you need a Process-Conversion (e.g. coated → uncoated)?
  → Check „Use Output Intent as Press Profile“ or „.. As CMYK-Input-Profile“)

2.2 PDF/X-4 in Prinect – Color Management Settings
Device Colors / DeviceLink

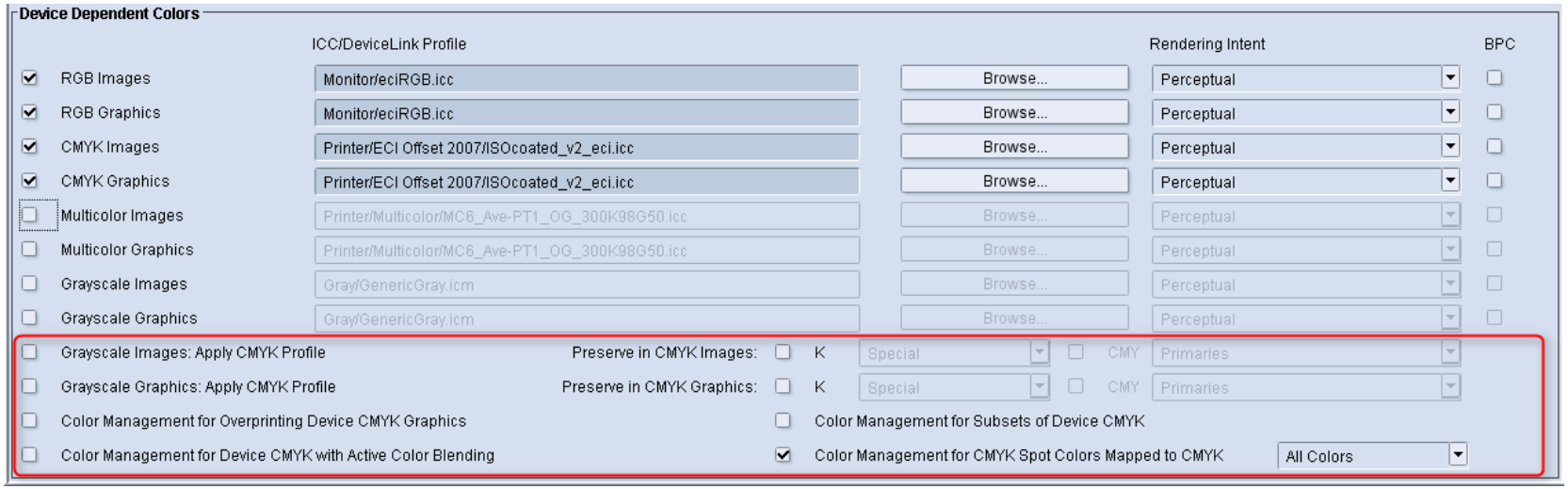


- Upper Part defines the Incoming Data, including Rendering Intent and BPC (Black Point Compensation).
- Using ICC-Profiles or Device Link-Profile is possible.
  When using DeviceLink-Profiles, Rendering intent and BPC have no influence!

2.2 PDF/X-4 in Prinect – Color Management Settings Device Colors / DeviceLink

- What is a Device Link Profile?
  - A Device Link is a profile that contains exactly one predefined transformation from input- to output-channel.
  - No Device-Independent color spaces referenced
- Is there a need to use Device Link Profiles?
  - Only in some specific cases. Device Link profiles
    - might be generated with options that are not available in the Color Carver. (e.g. “Keep GCR”)
    - Can enable the Color Carver to use different Press profiles
    - ? Do you utilize them for other purposes?
- What is the Risk of DeviceLink?
  - Color conversion settings are not transparent in the Color Carver

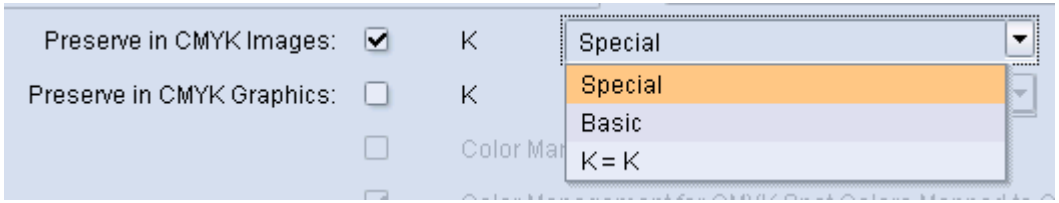
2.2 PDF/X-4 in Prinect – Color Management Settings Device Colors / DeviceLink



- Special Settings for:
  - Gray-Color Handing, Black-Preservation and Color-Preservation (for Gray and CMYK-Conversion)
  - Special Cases

2.2 PDF/X-4 in Prinect – Color Management Settings Black Preservation

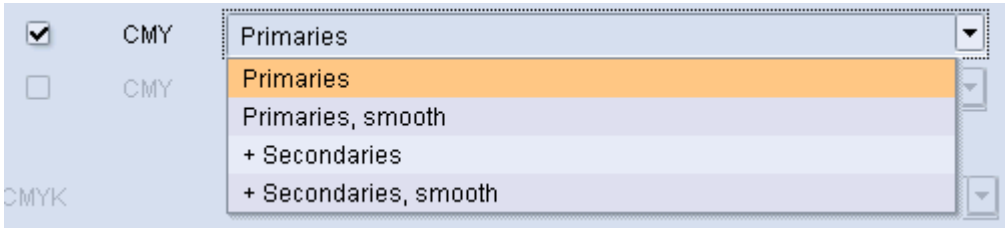
- Preserve Black tries to preserve the K-Values from the Source-Data in the final result:



  - K = K :
    Keeps the K-Value the same as before. All other color are matched „normally“.
    → Mainly for Text and Line-Art, but not images
  - Basic:
    Same as K=K plus adjustment of the Gradation of the K-channel. (not max Dot!)
    → Mainly if average in document is Text and/or Line
  - Special:
    a 4 Dimensional matching method to keep the K-Values plus taking into account the Lightness and gradation to get smooth results in all colors.
    → Used most frequently!

2.2 PDF/X-4 in Prinect – Color Management Settings CMY Preservation

CMY-Preservation



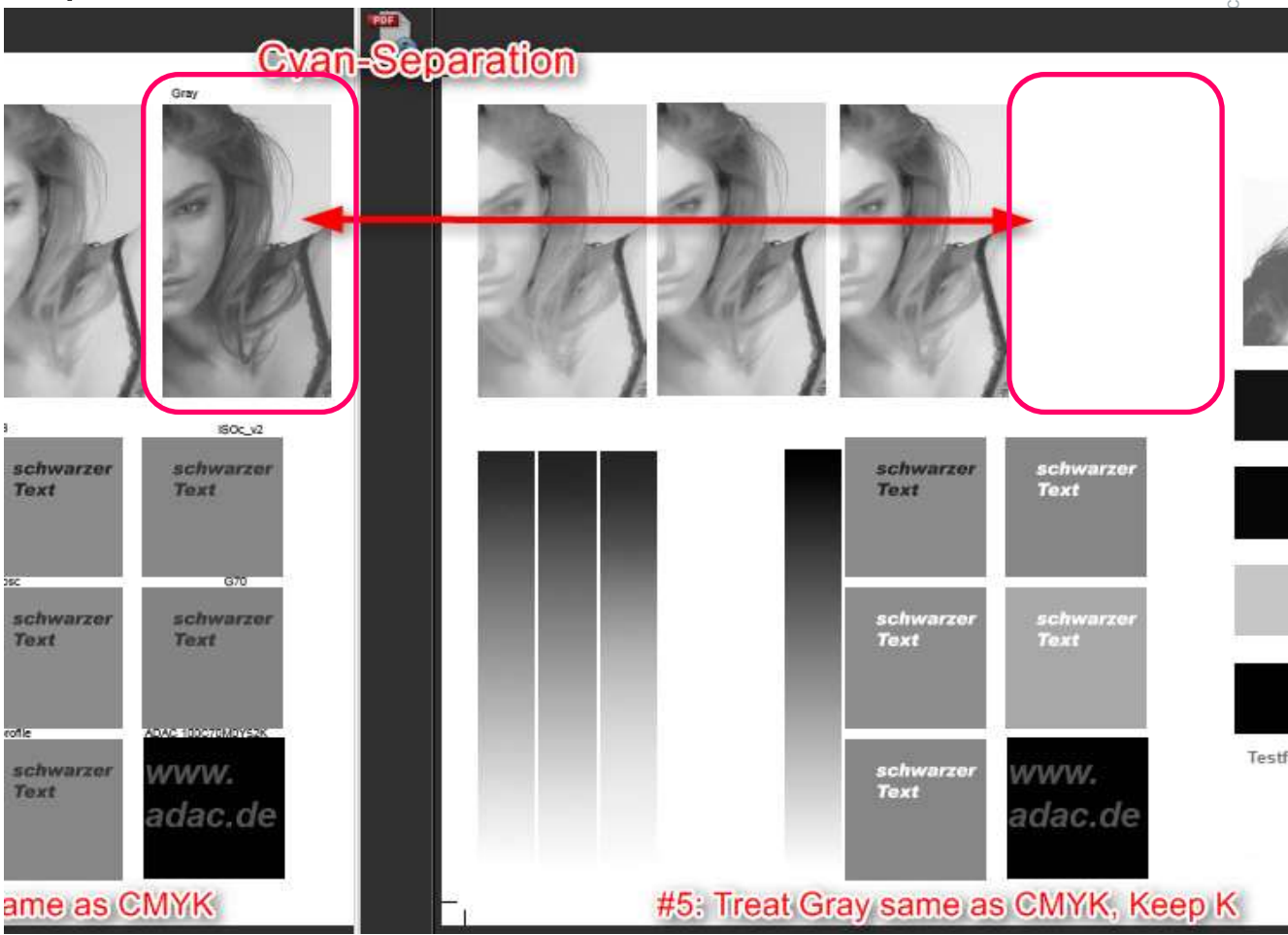
can be used to :

- Keep the primary colors (CMY) (100%)
- Keep the primary colors (CMY) and their tonal values (0-100%)
- Additionally keep the secondary colors (RGB, 100%)
- Additionally keep the secondary tonal values (RGB, 0-100%)

2.2 PDF/X-4 in Prinect – Color Management Settings Example: Preserve K (Special) for Gray Image-conversion

Display of the Cyan-separation:

- Left:
  Standard
  → Gray → 4C
- Right:
  Pres. K Special
  → Gray → only K



2.2 PDF/X-4 in Prinect – Color Management
Device Colors / DeviceLink (lower part)

- … for Overprinting Device CMYK-Graphics
  → as by default Overprinting CMYK-Graphics are not color matched
- … for Device CMYK with Active Color Blending“
  → When (CMYK-) Blending is used in Design Application, these objects are not touched by the Color Management.
  With this option, they can be matched
- … for Subsets of Device CMYK
  → Objects with for example Magenta and Black (DeviceN) can be treated like normal CMYK-Objects.
- … for CMYK Spot Colors Mapped to CMYK
  → Uncheck if you want to effect process conversion but need to respect pre-defined CMYK output values for spot colors set in Color Table

2.2 PDF/X-4 in Prinect – Color Management Settings
Device Colors / DeviceLink – for PDF/X-4

- Is your PDF/X-4 delivered for your output process?
  = Is the Output Intent the Press Profile you use?

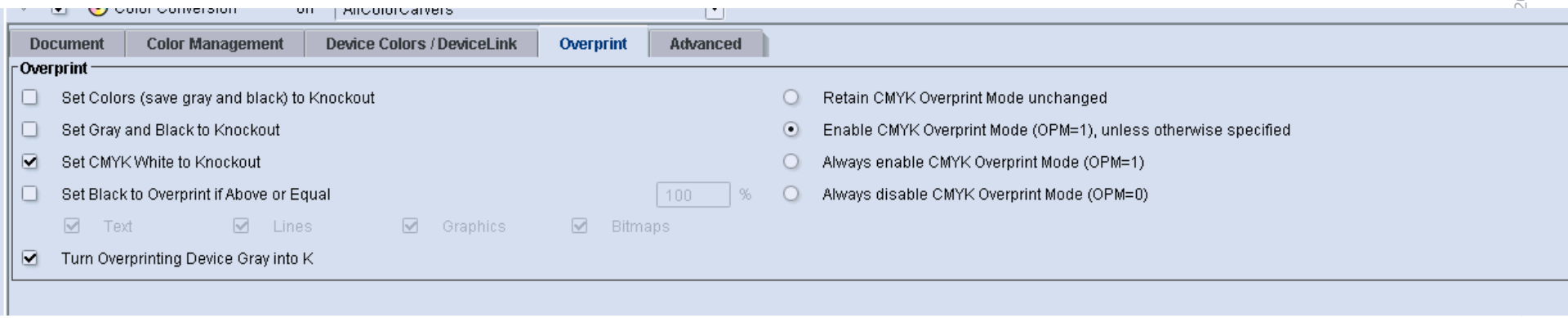
  → Yes! Then no need to define anything.

  → No, the Output Intent is not your desired Press Profile!

  A Process-Conversion is needed:
  Activate the CMYK-Profiles.
  Ensure to check „Use PDF/X Output Intent as CMYK-Input-Profile“.
  How shall DeviceGray-Data be treated?
  Untouched? → Don‘t activate Grayscale Options.
  Conversion? → Make settings (e. g. Keep Black could be sensible)

- Device RGB is not allowed
  – thus RGB-Input-channels do not take effect.

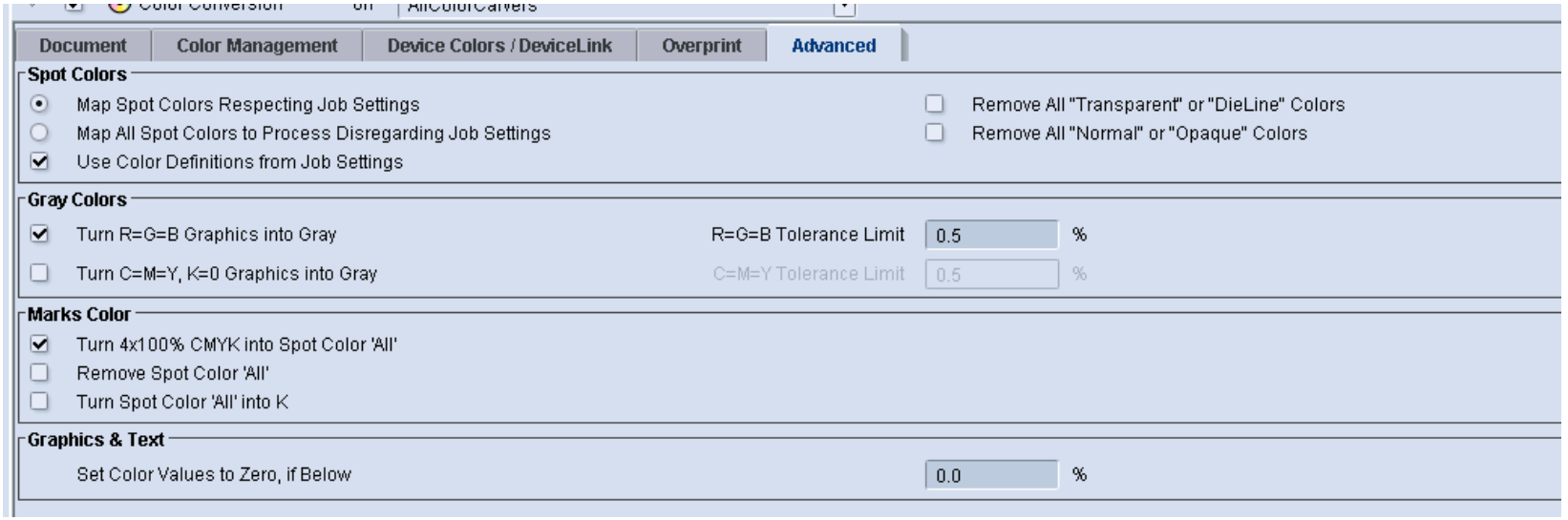
2.2 PDF/X-4 in Prinect – Color Management Settings
Special Settings for Overprint and Knockout



- Self explaining? Tooltips should help …
- PDF/X-4 does not need special settings.

2.2 PDF/X-4 in Prinect – Color Management Settings

General Settings (Advanced: for spot colors, Marks and Gray-Colors)

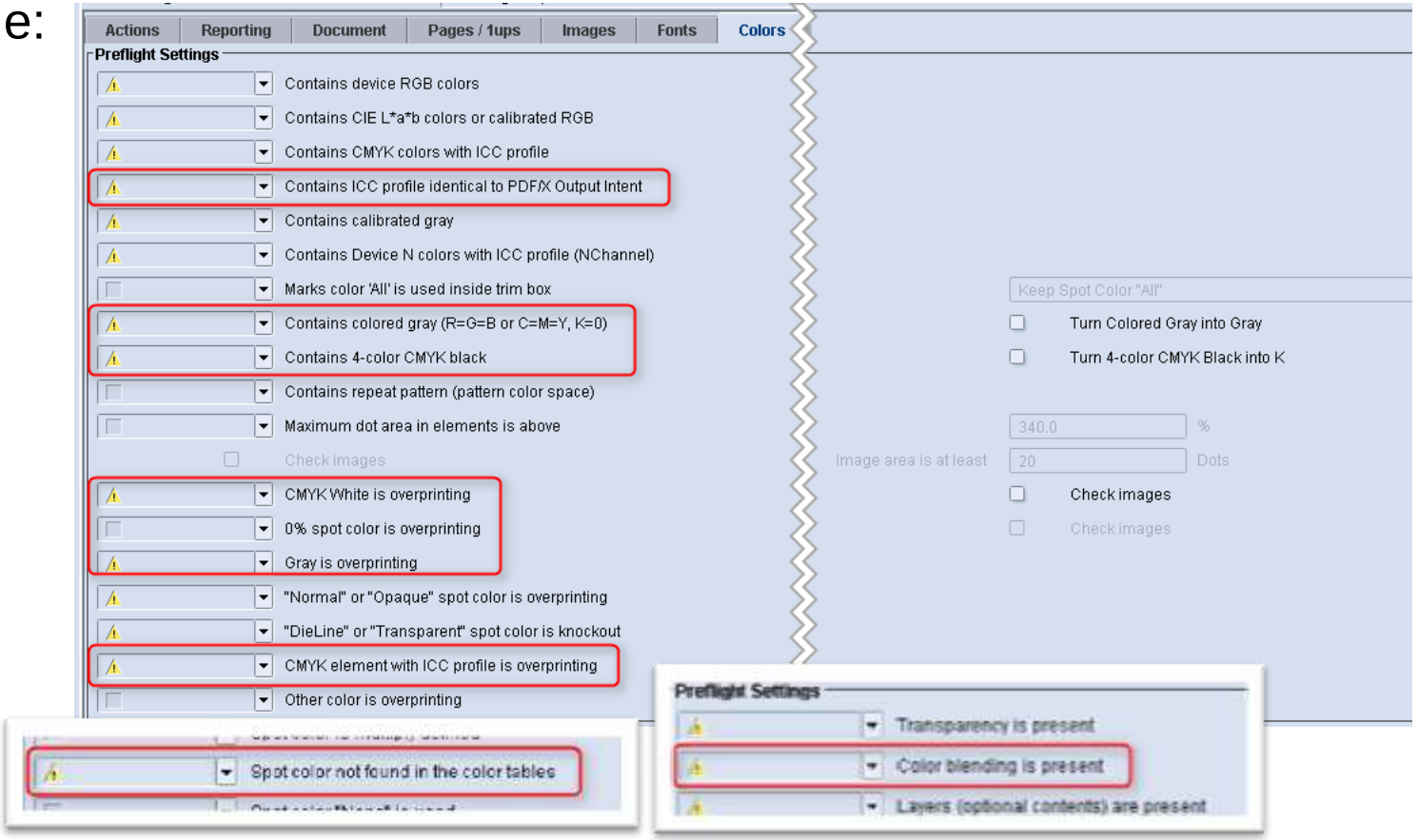


- Spot Colors:
  General decision for using spot colors are converting them into process Colors.
- Gray Colors:
  Specialties for Gray-Colors defined in RGB and/or CMY(K)
- Marks Color: Some special settings, self explaining?

→ PDF/X-4 needs spot color-use settings only

2.2 PDF/X-4 in Prinect – Color Management Settings

- Some Special Color Management Features can be checked in advance during Preflight.
  → Advance note that Color Carver special settings could be required
- Example:



2.2 PDF/X-4 in Prinect – Color Management Settings Specialist notes

- Keep K, also for ICC Based CMYK.
- Keep K, also working for Gray-Conversion
- Preserve K does not take into account any Ink-limits of Target Profile; it just tries to keep the K-numeric value the same.
- Some customers link two Prepare Sequences:
  1. sequence to convert incoming data into their Process Standard.
  2. sequence for conversion with an Ink-Reduction-ICC-Profile (for the same Print-Process / see also Color Toolbox)

3. Color Toolbox is powerful!

You can:

- create and modify ICC-Profiles
- create Ink Reduction Profile
- use existing ICC-Profiles to „import“ Measuring values (for creating own ICC-Profiles)
- create Device Link Profile
- illustrate and compare Measurement Data (and/or ICC-Profile)

- create Profile with „Inverse Gamut-Mapping“-Feature (always)
- compare with Process Standard
- create Multi color ICC Profiles

…

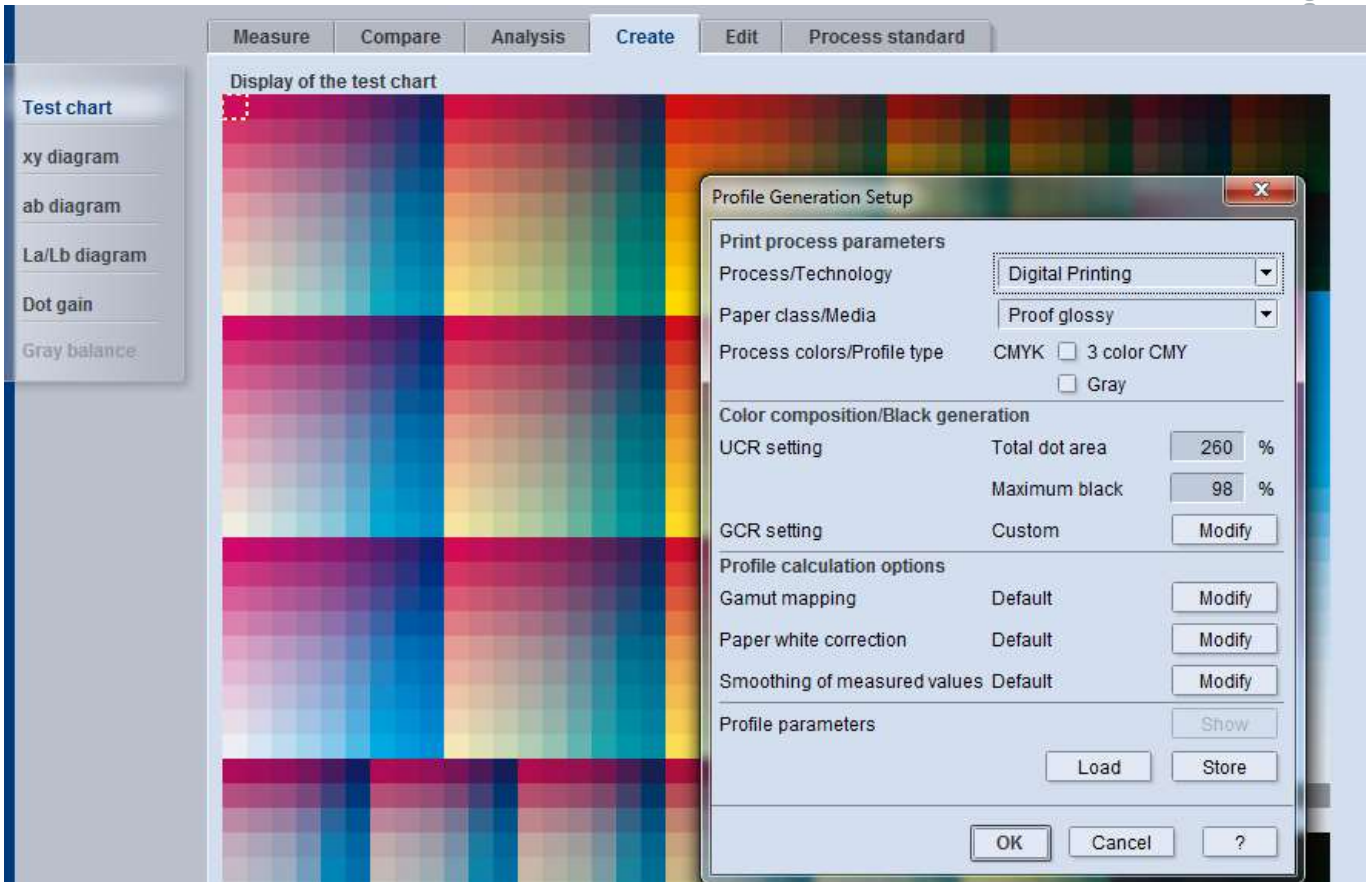
… more in the Color Toolbox Workshop …

3. Color Toolbox

Create ICC-Profile

- with Illustration of Color Data
- Several Predefined Settings for most Use cases, but:

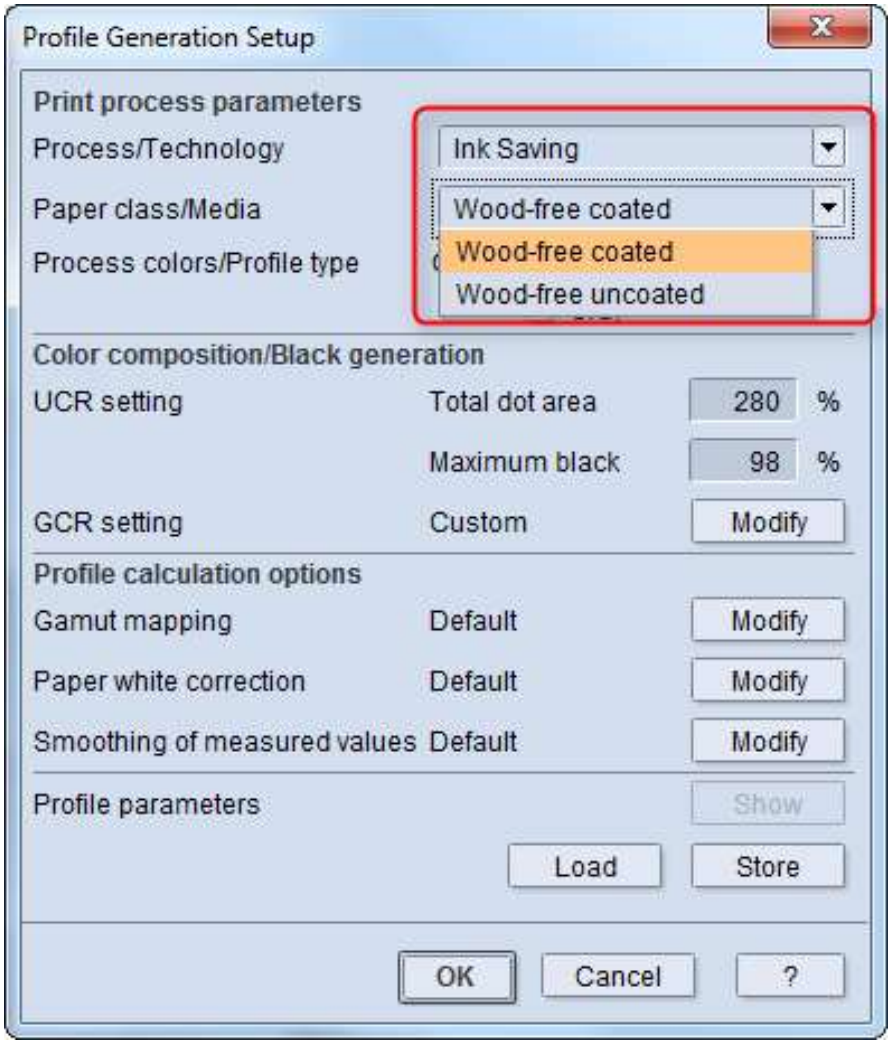
All Settings can be overwritten



3. Color Toolbox

create Ink Reduction Profile

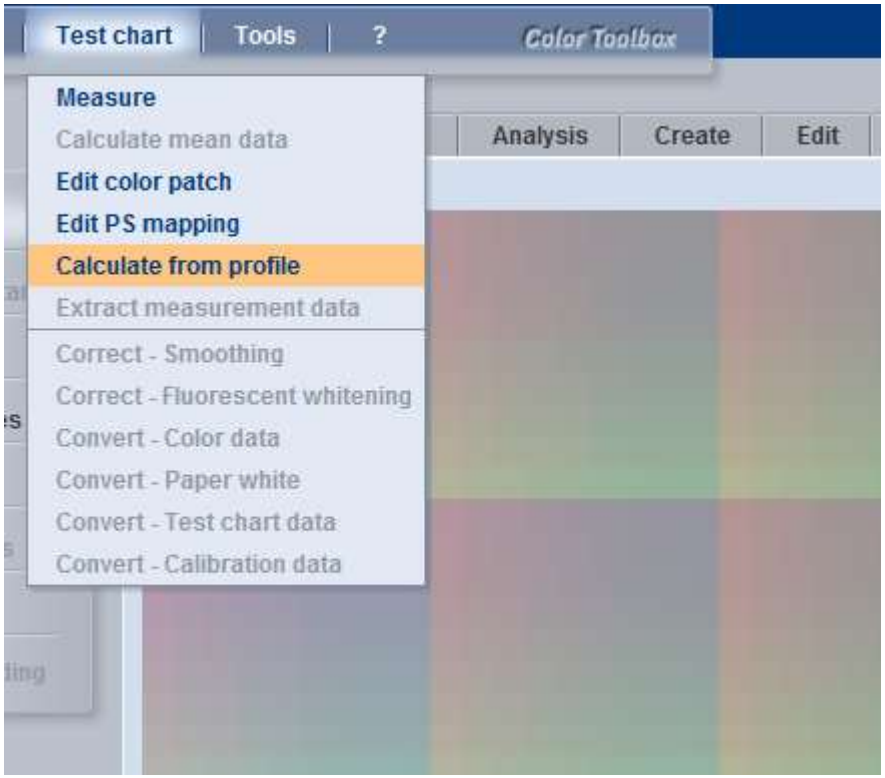
- Presetting is inside
- own GCR-Values
  as well as UCR-Values
  can be set



3. Color Toolbox

modify existing ICC profiles

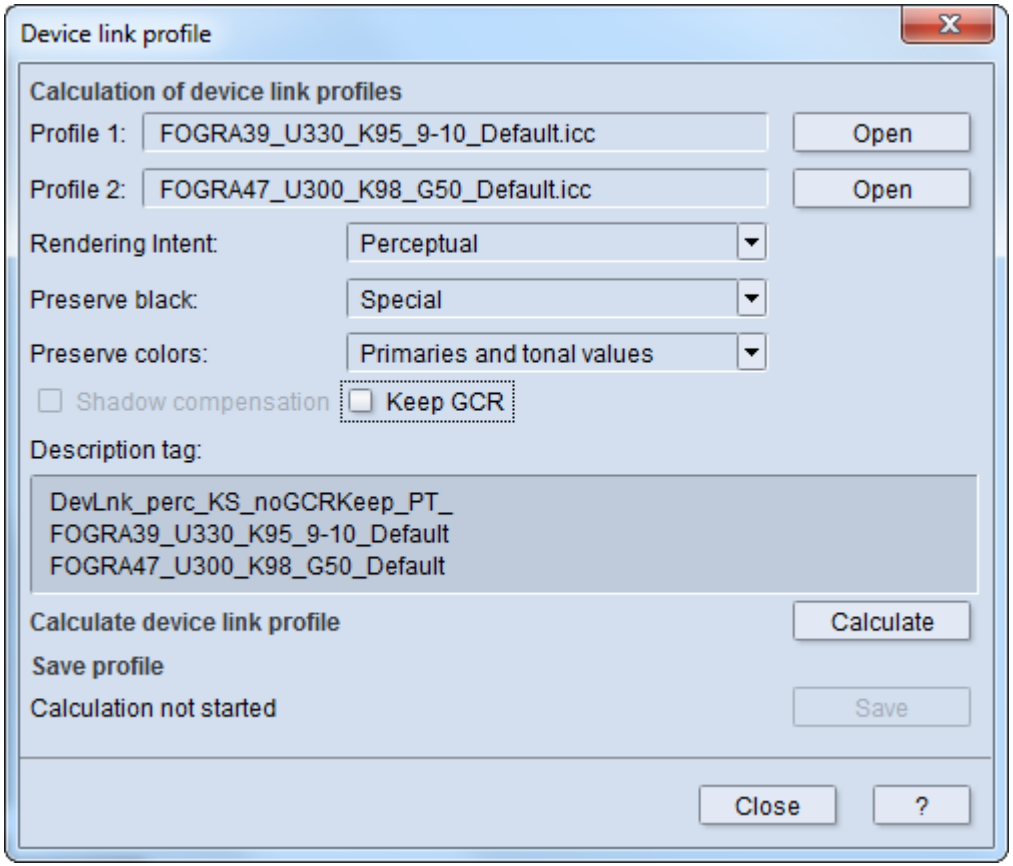
- Use existing ICC-Profiles to „import“ Measuring values to create own ICC-Profiles



3. Color Toolbox

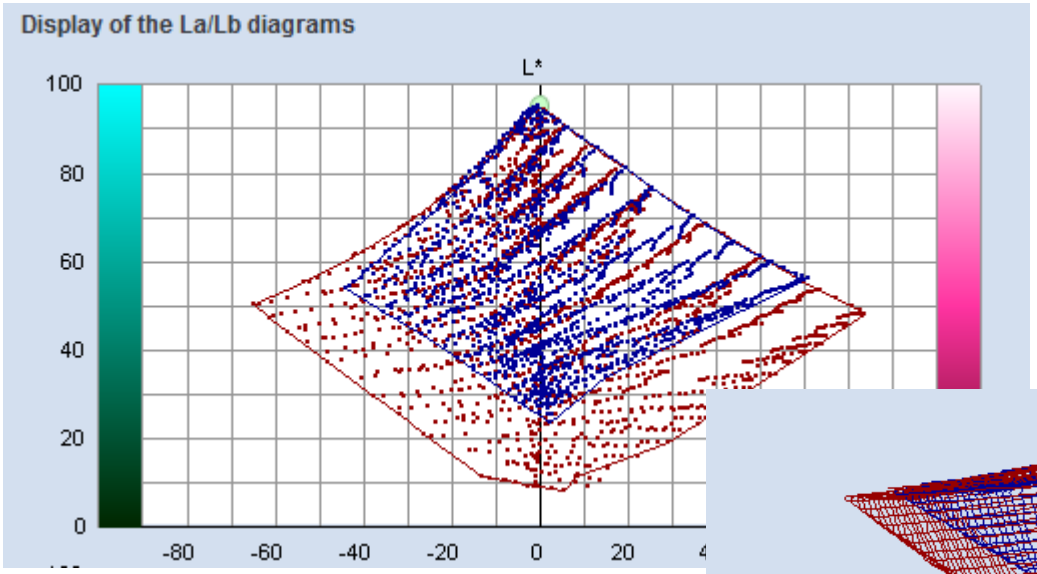
Create Device Link Profiles

- New feature:
  Keep GCR
  inside the max
  dot area of the Target
  Profile.
- Preserve Black –Feature
- Preserve Colors

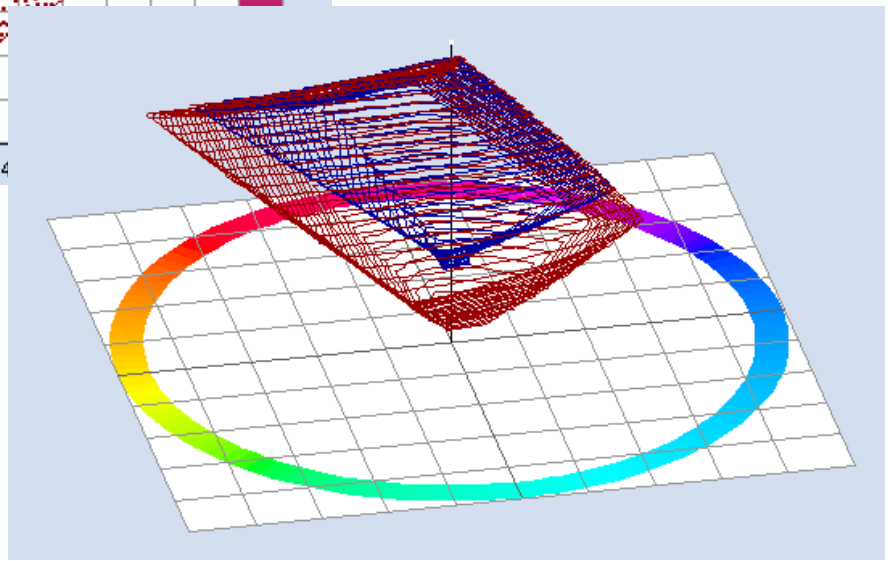


3. Color Toolbox

- Illustrate and Compare Measurement Data

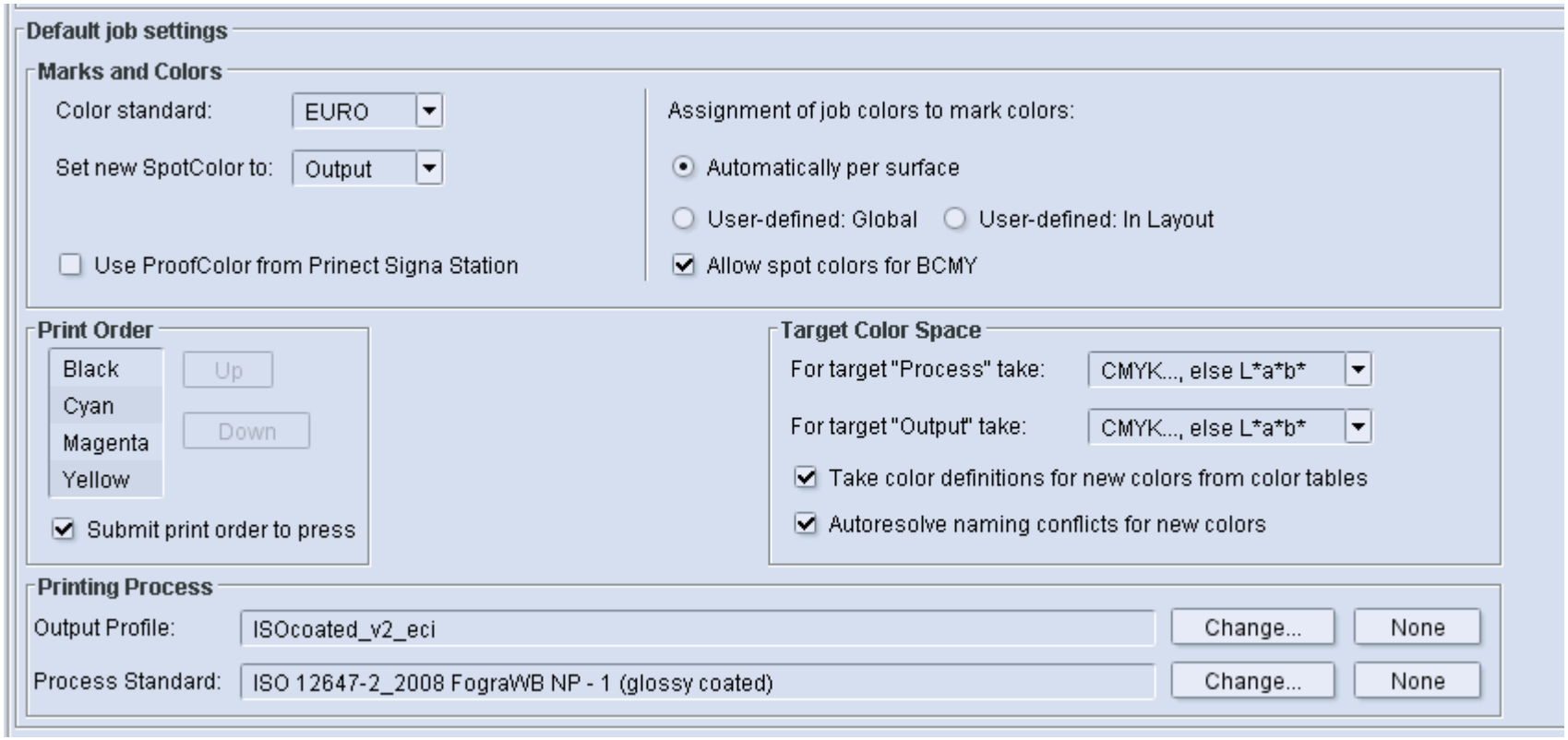


to check Process Conversion in advance



4. Other Color issues in Prinect

Preferences



- Some predefinitions regarding Color can be made here as Presetting for new Jobs.
- It can still be changed inside the Job at a later stage.

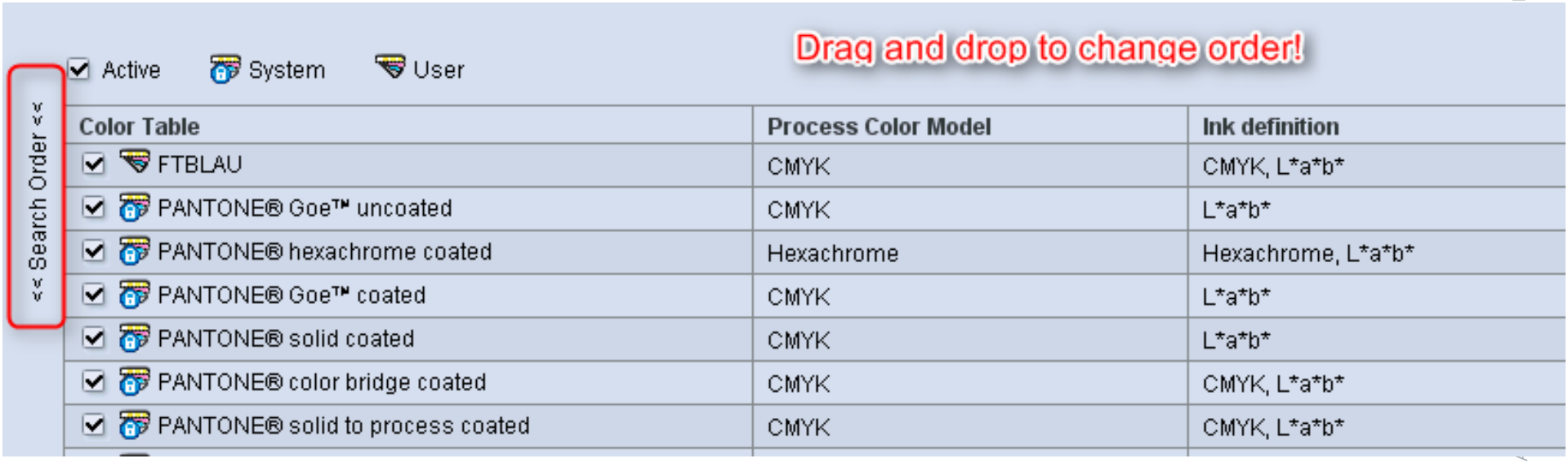
4. Other Color issues in Prinect

Color Tables …

- Are defined in the Administration-Area
- Color Tables can contain CMYK and/or Lab-Values for spot colors. In case of Multicolor, Color Tables can contain Hexachrome-Values instead of CMYK
- Prinect contains all Pantone-Tables as well as HKS-Tables.
- User Color Tables can be defined (CMYK or Hexachrome and Lab)
- Search order for spot colors in spot color-Tables is from Top to Bottom (Can be changed by Drag and Drop)

4. Other Color issues in Princt

Color Tables …



Color Table	Process Color Model	Ink definition
FTBLAU	CMYK	CMYK, L*a*b*
PANTONE® Goe™ uncoated	CMYK	L*a*b*
PANTONE® hexachrome coated	Hexachrome	Hexachrome, L*a*b*
PANTONE® Goe™ coated	CMYK	L*a*b*
PANTONE® solid coated	CMYK	L*a*b*
PANTONE® color bridge coated	CMYK	CMYK, L*a*b*
PANTONE® solid to process coated	CMYK	CMYK, L*a*b*

4. Other Color issues in Prinect
Color Tables (ctd)

- Preferences define the spot color-Handling for new Jobs

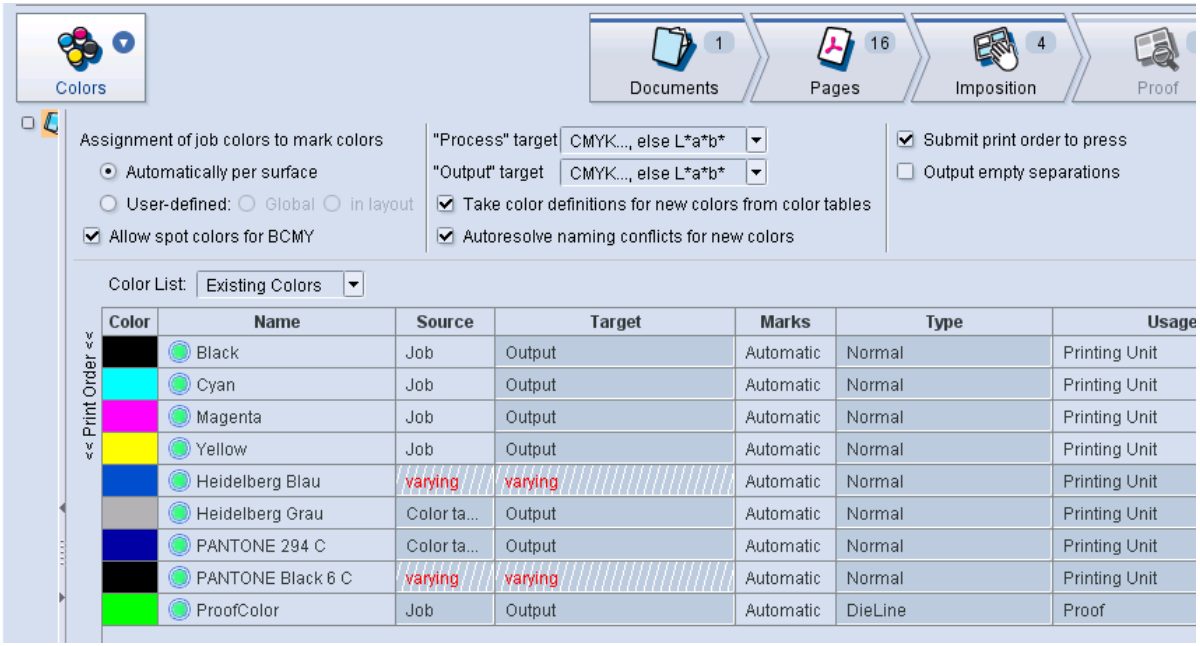
But can be changed inside the Job at a later stage

- Take color definition for new colors from color tables
  define whether to take the Color Definition out of the incoming PDF or out of a Color Table
  (Preflight can check for spot colors not defined in Color Tables!)
- Autoresolve naming conflicts
  is an option for mismatching Pantone spot color names in incoming Data.

4. Other Color issues in Prinect

Spot Color inside a Job (1)

- General Color Table of Job

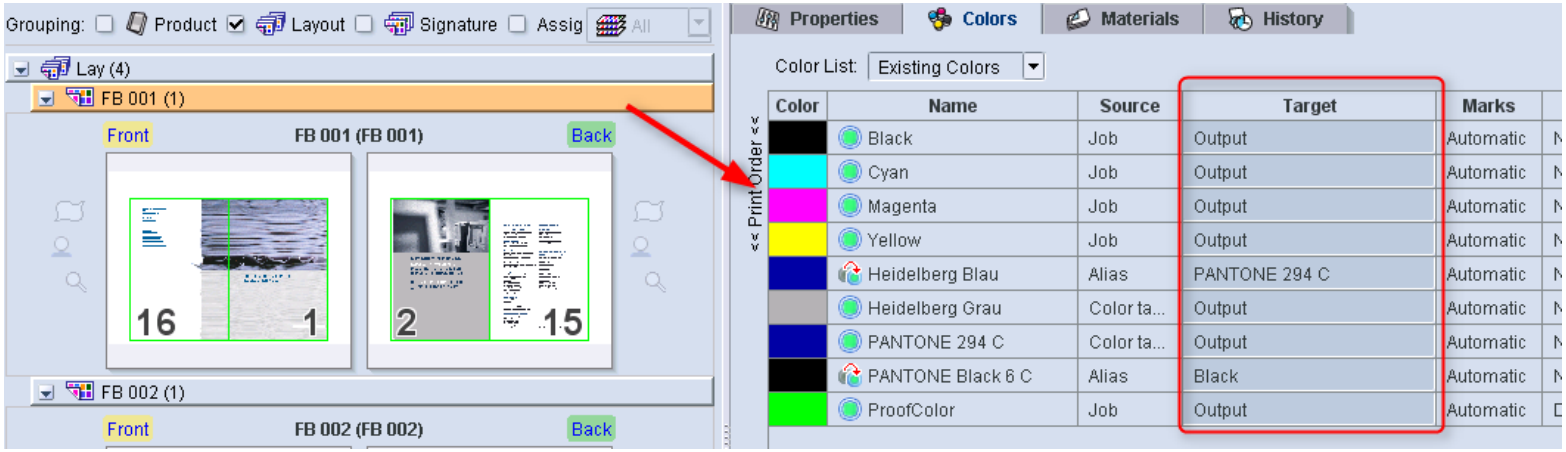


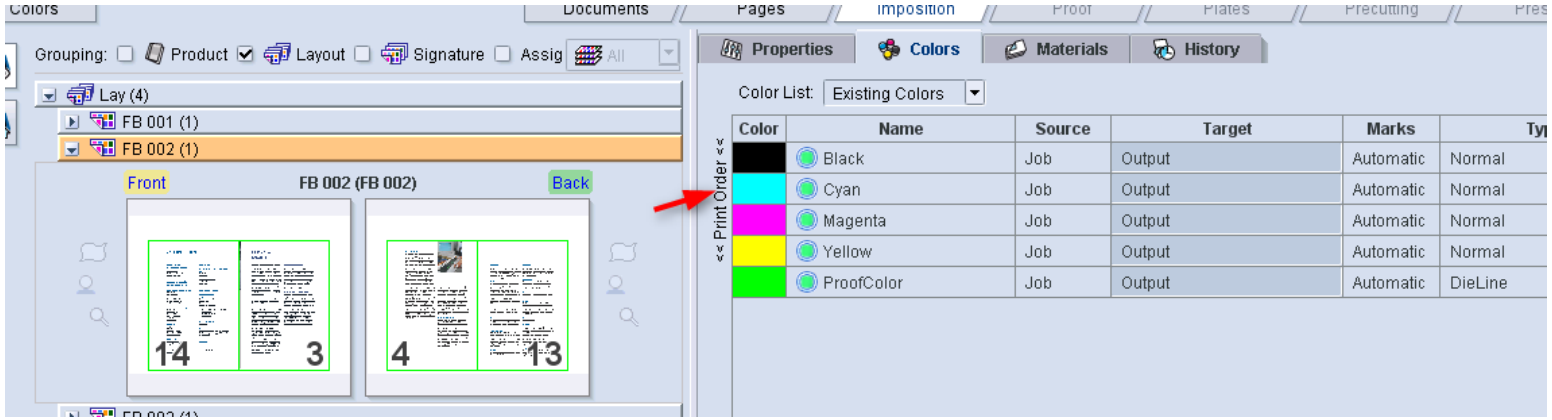
- Remark: In some cases when changing entries in the Color Tables a new Prepare is necessary.
  But users will get informed.

4. Other Color issues in Prinect

Spot Color inside a Job (2)

- Surface depending Color Table





Thank you for your attention!

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