



INTERNATIONAL
PRINECT USER DAYS

8th and 9th October 2014

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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HEIDELBERG

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

1. PDF/X-4 – What is it?
2. PDF/X-4 in Prinect
 - 2.1 PDF/X-4 in Prinect – Preflight Check
 - 2.2 PDF/X-4 in Prinect – Color Management Settings
3. Color Toolbox quick info
4. Other Color issues in Prinect (e.g. spot color)

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

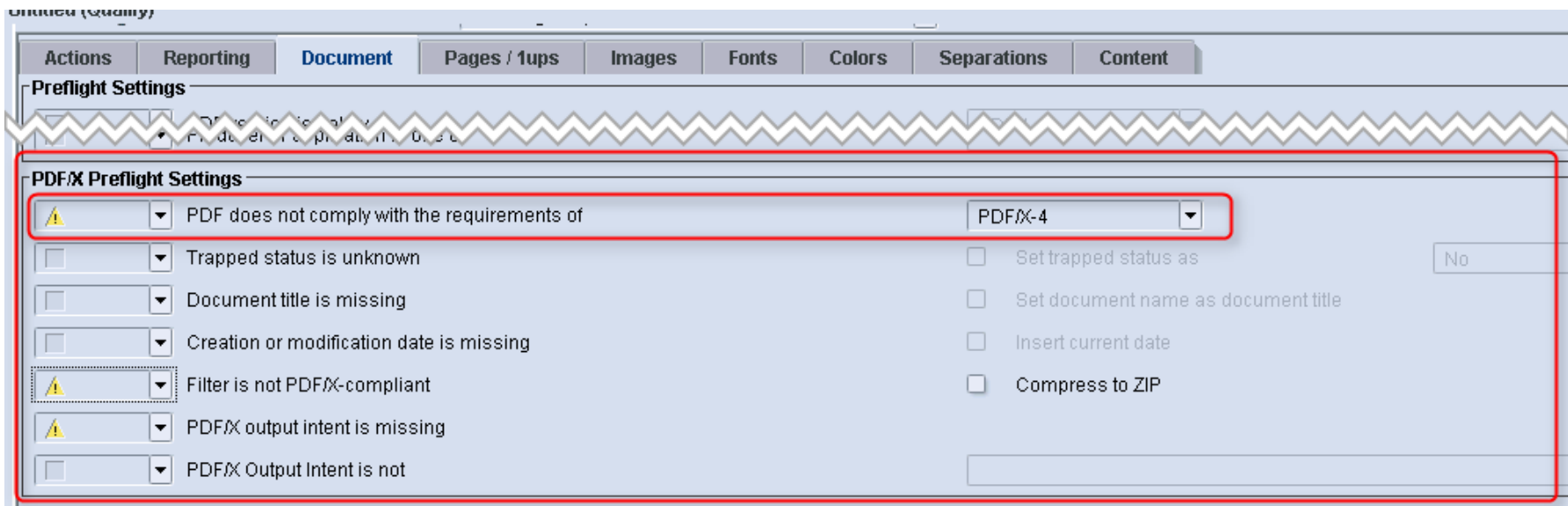
→ A chance for good results!

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)



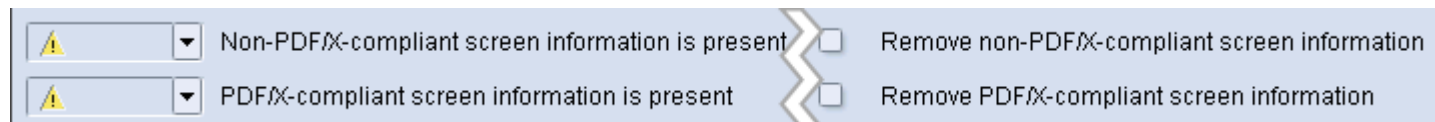
- Pages:



- 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	ℹ Info
① Document	-	-	-	-
① PDF/X	-	-	-	-
① Pages	-	-	-	-
① Colors	-	-	-	-
① Fonts	-	-	-	-
① Images	-	-	-	-
① 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	ℹ Info
ℹ 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, ...



Prinect

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

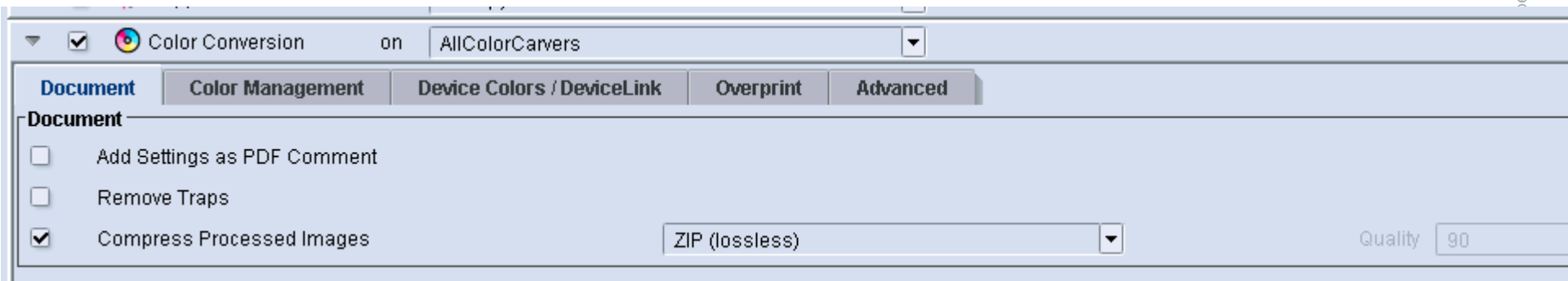


1. General Part for handling of the Document itself
2. Settings for the Target (Press-Profile) as well as Device Independent Colors
3. Settings for the Source-Data to be processed
4. Some general and special Overprint-Settings
5. Some Advanced settings for spot colors, Gray Colors and Marks

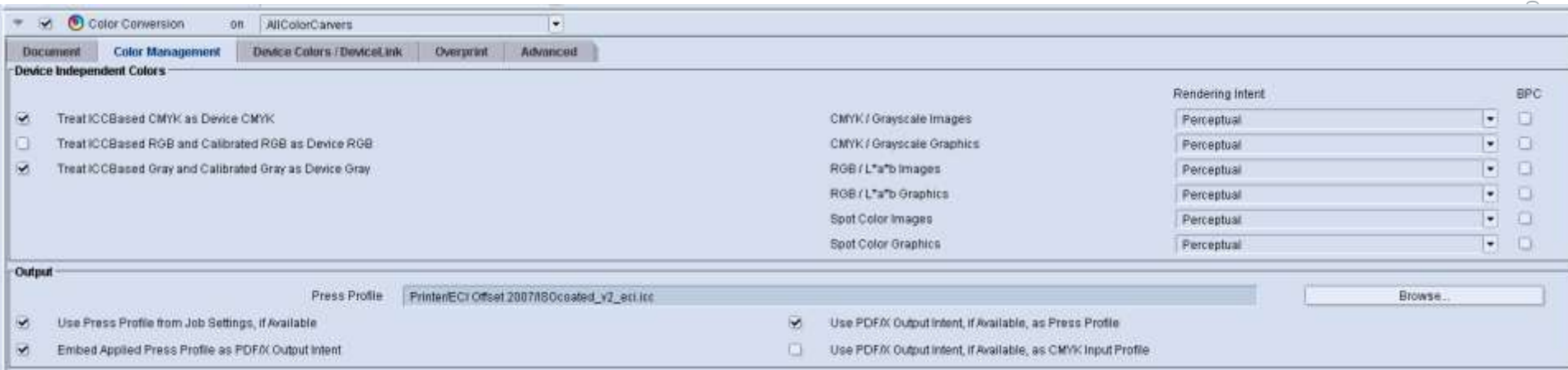
Hint: Tooltips are extremely helpful in Color Conversion!

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

- Document Settings (mainly self explaining)

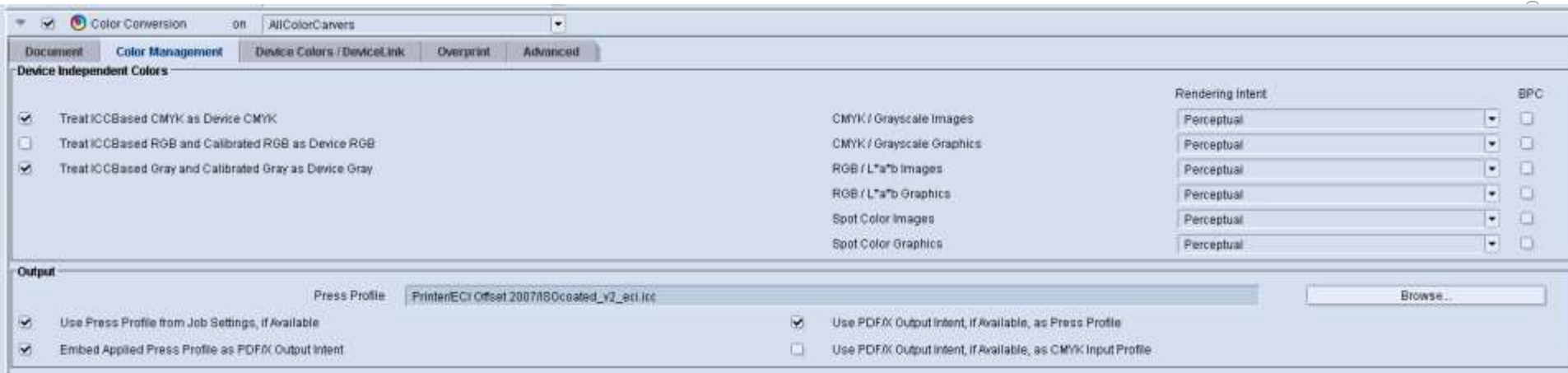


2.2 PDF/X-4 in Prinect – Color Management Settings Device Independent Colors



- 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



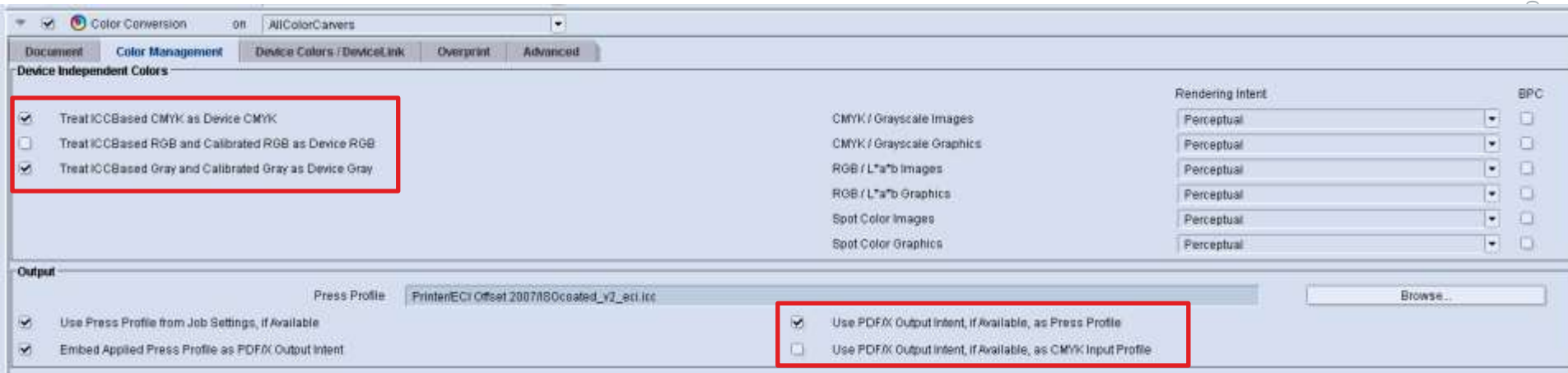
- Press-Profile is the general „Output“ Profile [Target, Destination, ...] = the ICC-Profile for the final Output-Process!
- Output Intent-Settings should be used depending on the Workflow

Be careful with these settings:

The incoming PDF can contain an Output Intent.

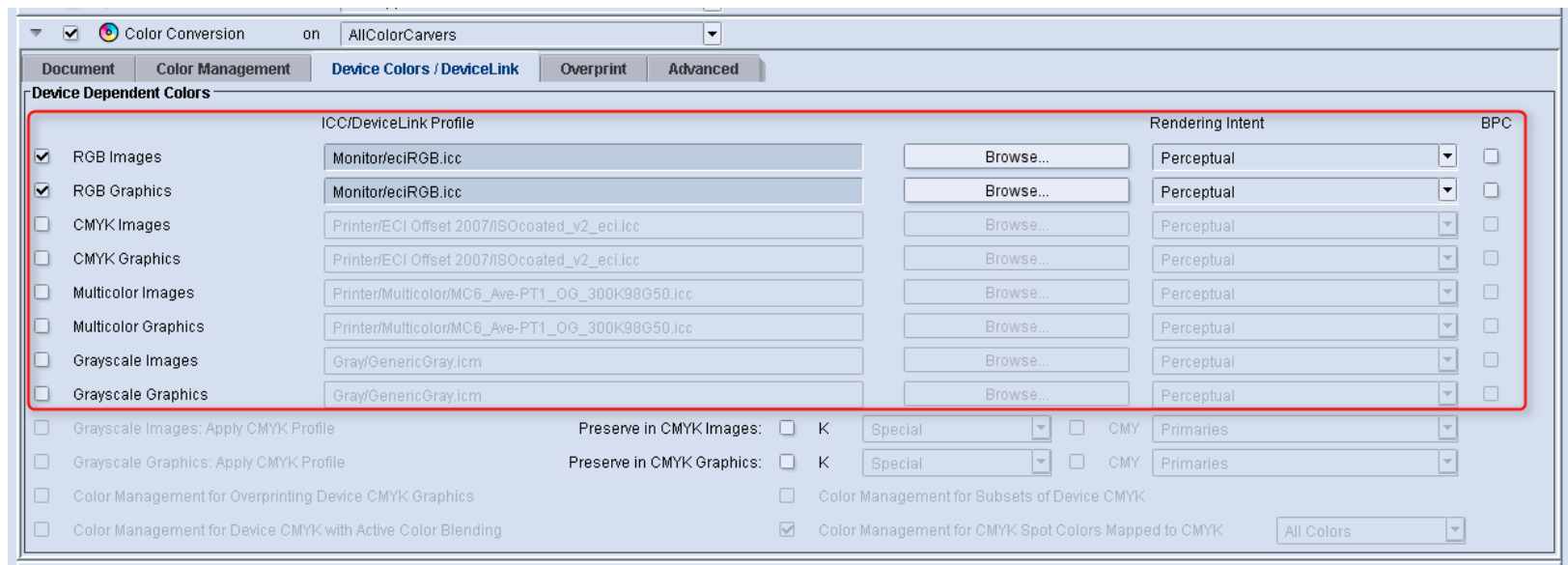
→ For PDF/X, it must contain one!

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

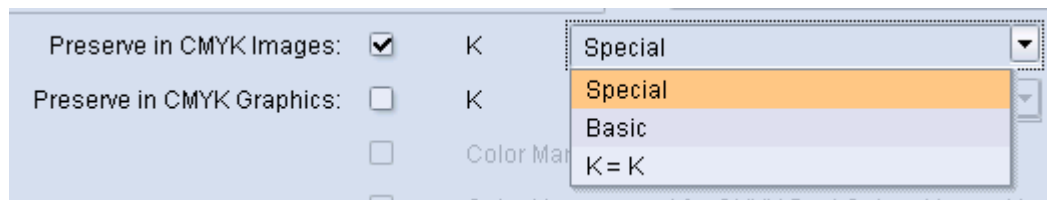
2.2 PDF/X-4 in Prinect – Color Management Settings Device Colors / DeviceLink

Device Dependent Colors		ICC/DeviceLink Profile	Browse...	Rendering Intent	BPC
<input checked="" type="checkbox"/>	RGB Images	Monitor/eciRGB.icc	Browse...	Perceptual	<input type="checkbox"/>
<input checked="" type="checkbox"/>	RGB Graphics	Monitor/eciRGB.icc	Browse...	Perceptual	<input type="checkbox"/>
<input checked="" type="checkbox"/>	CMYK Images	Printer/ECI Offset 2007/ISOcoated_v2_eci.icc	Browse...	Perceptual	<input type="checkbox"/>
<input checked="" type="checkbox"/>	CMYK Graphics	Printer/ECI Offset 2007/ISOcoated_v2_eci.icc	Browse...	Perceptual	<input type="checkbox"/>
<input type="checkbox"/>	Multicolor Images	Printer/Multicolor/MC6_Ave-PT1_OG_300K98G50.icc	Browse...	Perceptual	<input type="checkbox"/>
<input type="checkbox"/>	Multicolor Graphics	Printer/Multicolor/MC6_Ave-PT1_OG_300K98G50.icc	Browse...	Perceptual	<input type="checkbox"/>
<input type="checkbox"/>	Grayscale Images	Gray/GenericGray.icm	Browse...	Perceptual	<input type="checkbox"/>
<input type="checkbox"/>	Grayscale Graphics	Gray/GenericGray.icm	Browse...	Perceptual	<input type="checkbox"/>
<input type="checkbox"/>	Grayscale Images: Apply CMYK Profile	Preserve in CMYK Images:	<input type="checkbox"/> K Special	<input type="checkbox"/> CMY Primaries	
<input type="checkbox"/>	Grayscale Graphics: Apply CMYK Profile	Preserve in CMYK Graphics:	<input type="checkbox"/> K Special	<input type="checkbox"/> CMY Primaries	
<input type="checkbox"/>	Color Management for Overprinting Device CMYK Graphics	<input type="checkbox"/> Color Management for Subsets of Device CMYK			
<input type="checkbox"/>	Color Management for Device CMYK with Active Color Blending	<input checked="" type="checkbox"/> Color Management for CMYK Spot Colors Mapped to CMYK		All Colors	

- 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

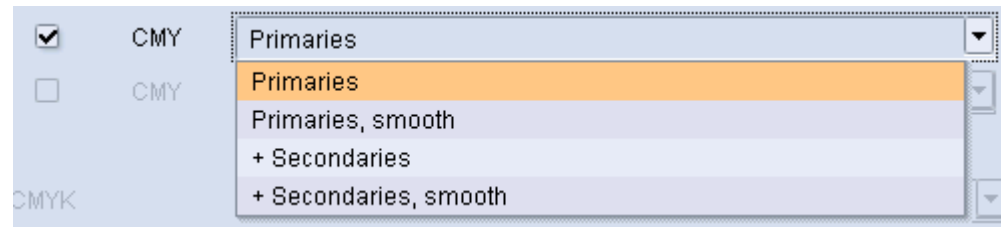
- Special:

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 :

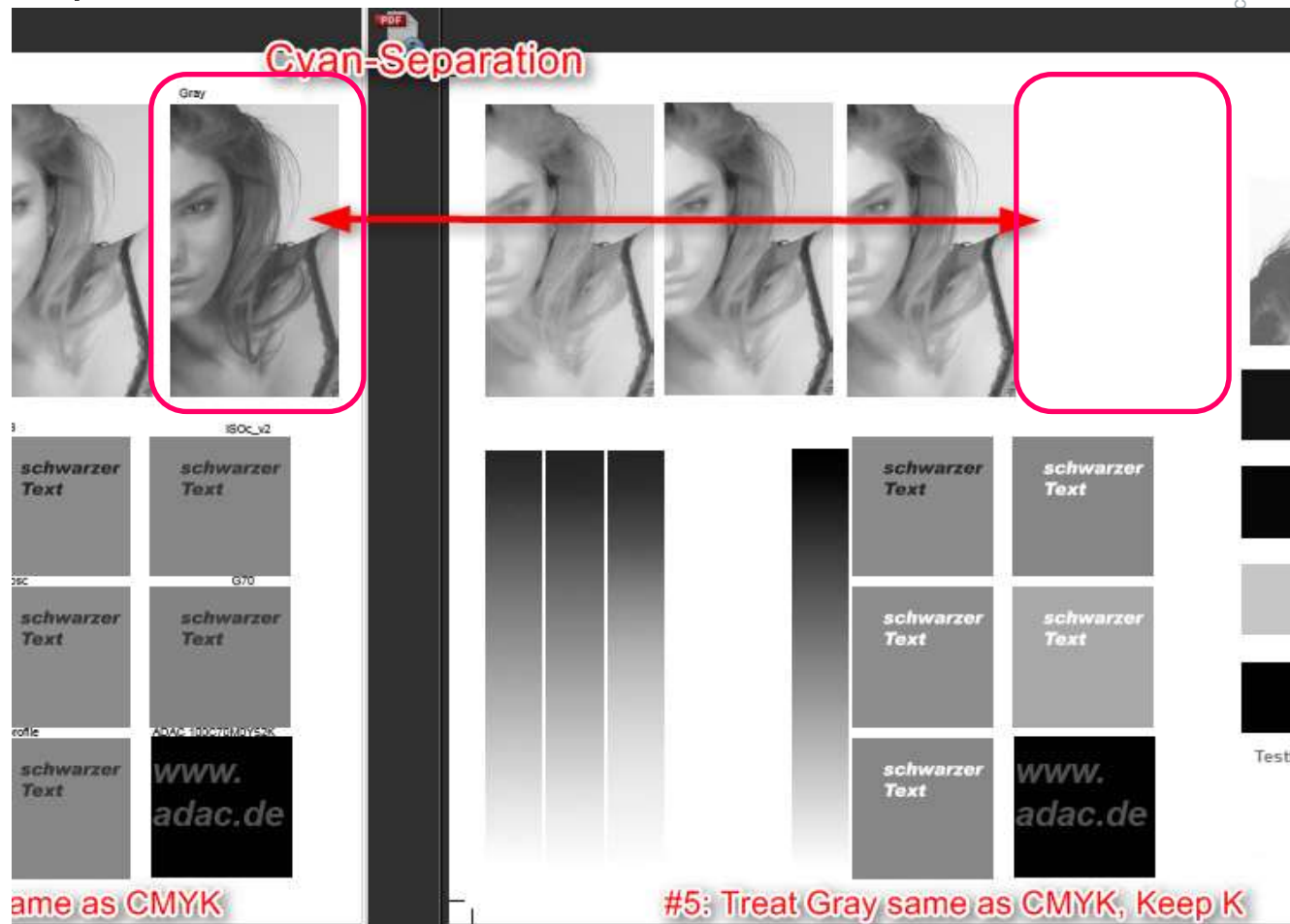
- Keep the primary colors (CMY) (100%)
- Keep the primary colors (CMY) and their tonal values (0-100%)
- Additionally keep the secondary colors (RGB, 100%)
- Additionally keep the secondary tonal values (RGB, 0-100%)

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

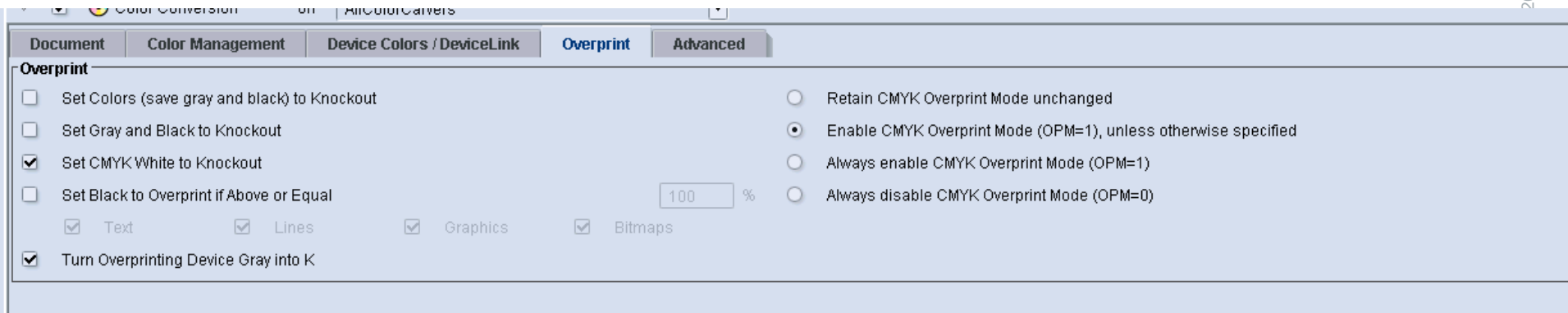
2.2 PDF/X-4 in Prinect – Color Management Settings

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

2014



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

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

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

The screenshot shows the 'Advanced' tab of the Color Management settings. It is divided into four sections: Spot Colors, Gray Colors, Marks Color, and Graphics & Text.

- Spot Colors:**
 - Map Spot Colors Respecting Job Settings
 - Map All Spot Colors to Process Disregarding Job Settings
 - Use Color Definitions from Job Settings
 - Remove All "Transparent" or "DieLine" Colors
 - Remove All "Normal" or "Opaque" Colors
- Gray Colors:**
 - Turn R=G=B Graphics into Gray (R=G=B Tolerance Limit: 0.5 %)
 - Turn C=M=Y, K=0 Graphics into Gray (C=M=Y Tolerance Limit: 0.5 %)
- Marks Color:**
 - Turn 4x100% CMYK into Spot Color 'All'
 - Remove Spot Color 'All'
 - Turn Spot Color 'All' into K
- Graphics & Text:**
 - Set Color Values to Zero, if Below (0.0 %)

- **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:

The screenshot shows the 'Colors' tab of the 'Preflight Settings' dialog. The following options are highlighted with red boxes:

- Contains ICC profile identical to PDF/X Output Intent
- Contains colored gray (R=G=B or C=M=Y, K=0)
- Contains 4-color CMYK black
- CMYK White is overprinting
- 0% spot color is overprinting
- Gray is overprinting
- "Normal" or "Opaque" spot color is overprinting
- "DieLine" or "Transparent" spot color is knockout
- CMYK element with ICC profile is overprinting
- Spot color not found in the color tables
- Transparency is present
- Color blending is present

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
- ...

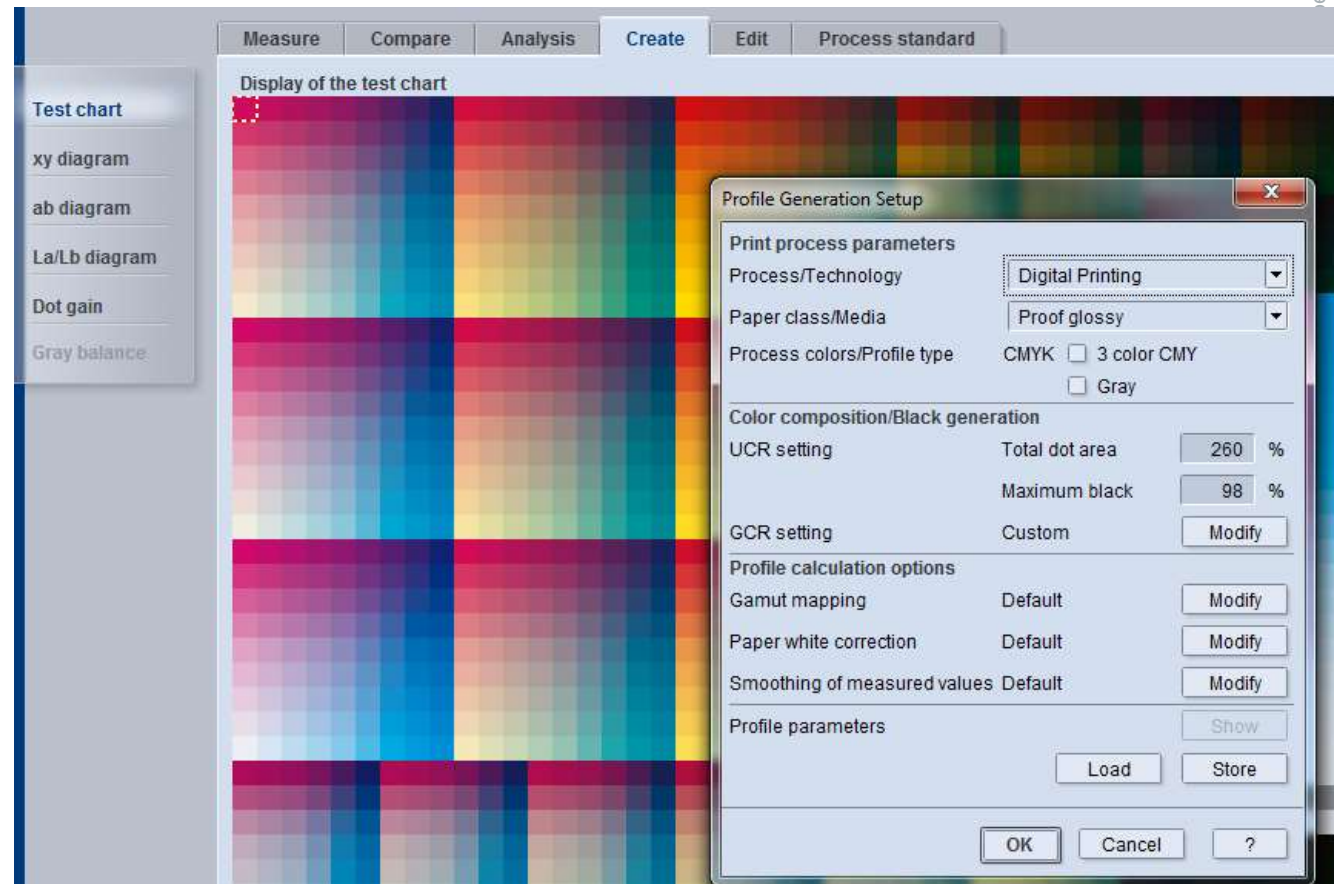
... more in the Color Toolbox Workshop ...

3. Color Toolbox

Create ICC-Profile

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

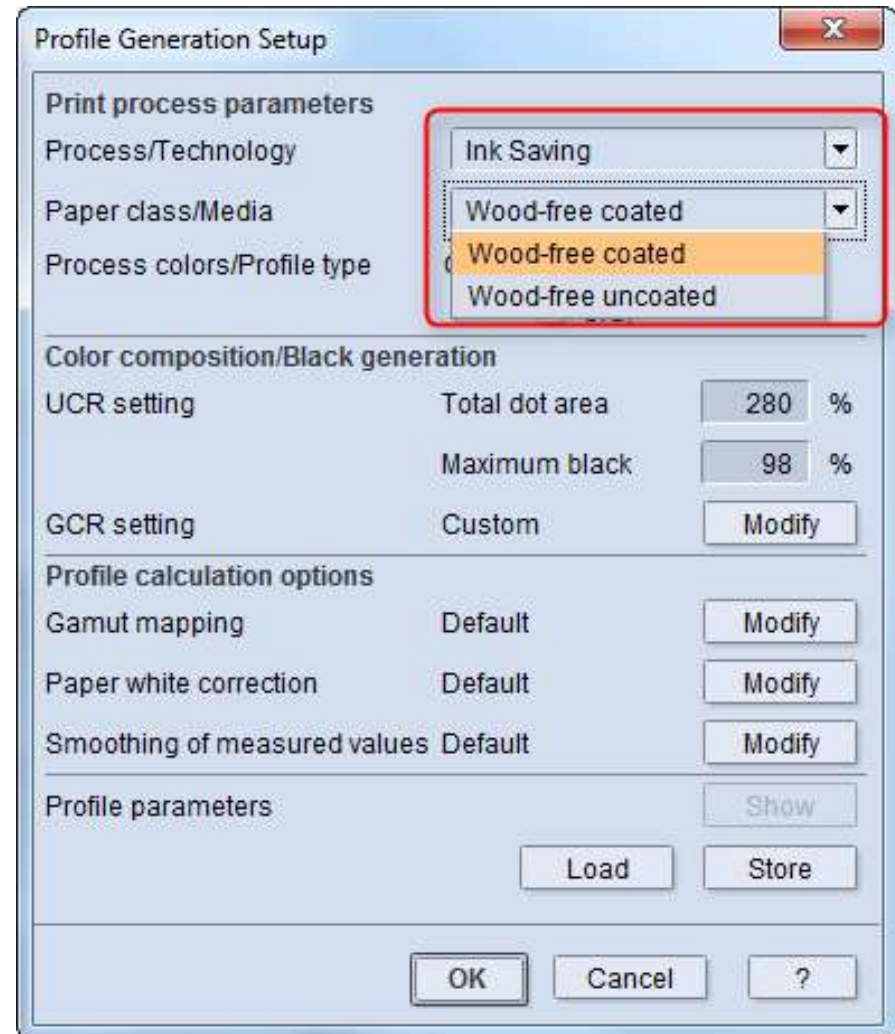
All Settings
can be
overwritten



3. Color Toolbox

create Ink Reduction Profile

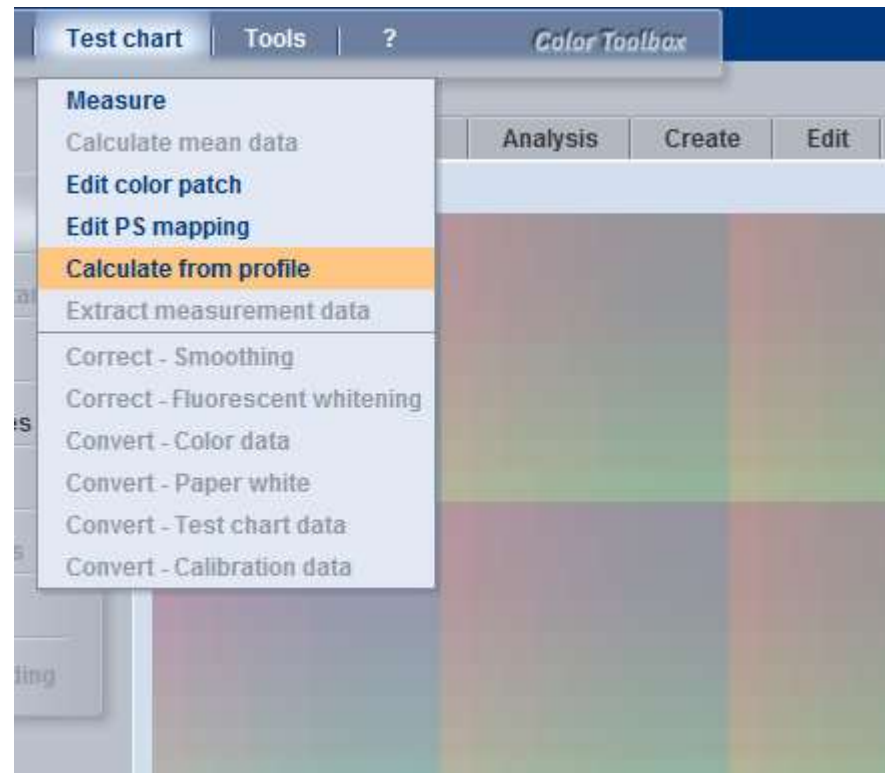
- Presetting is inside
- own GCR-Values as well as UCR-Values can be set



3. Color Toolbox

modify existing ICC profiles

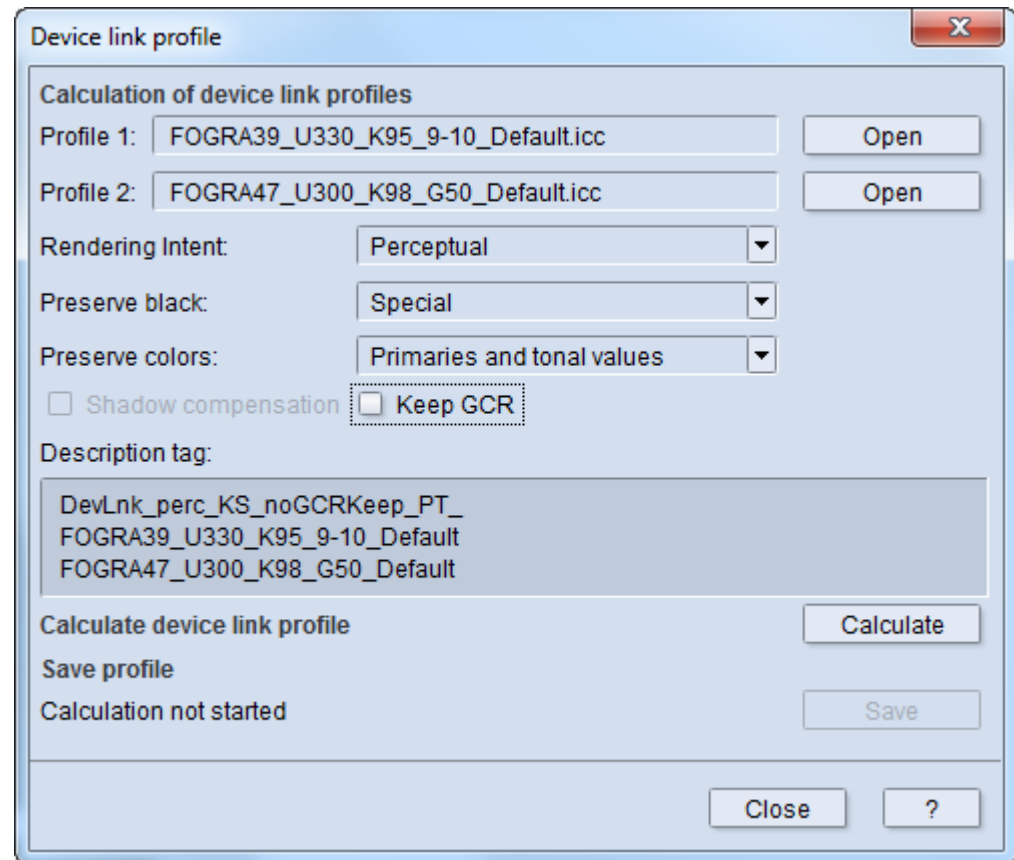
- Use existing ICC-Profiles to „import“ Measuring values to create own ICC-Profiles



3. Color Toolbox

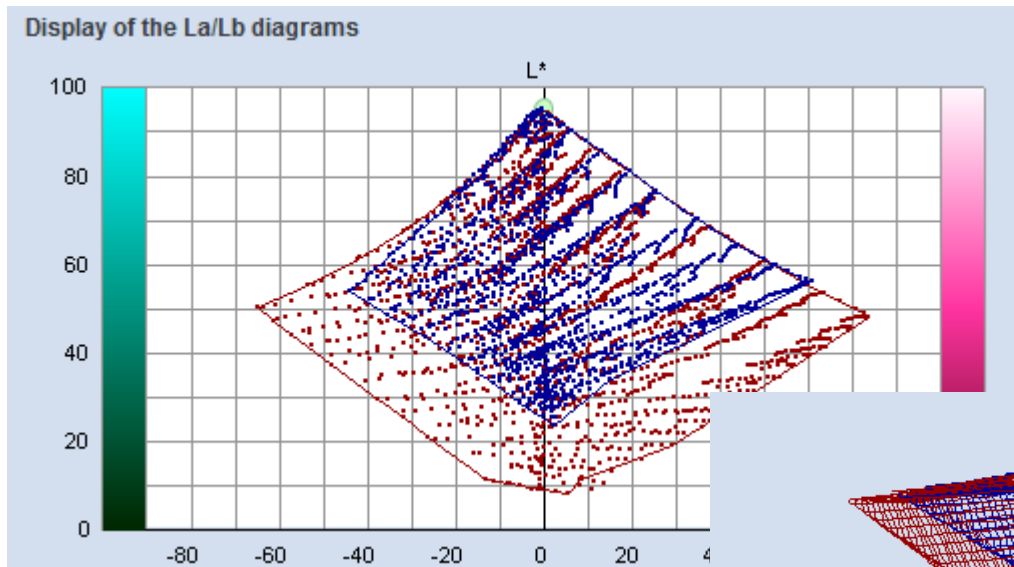
Create Device Link Profiles

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

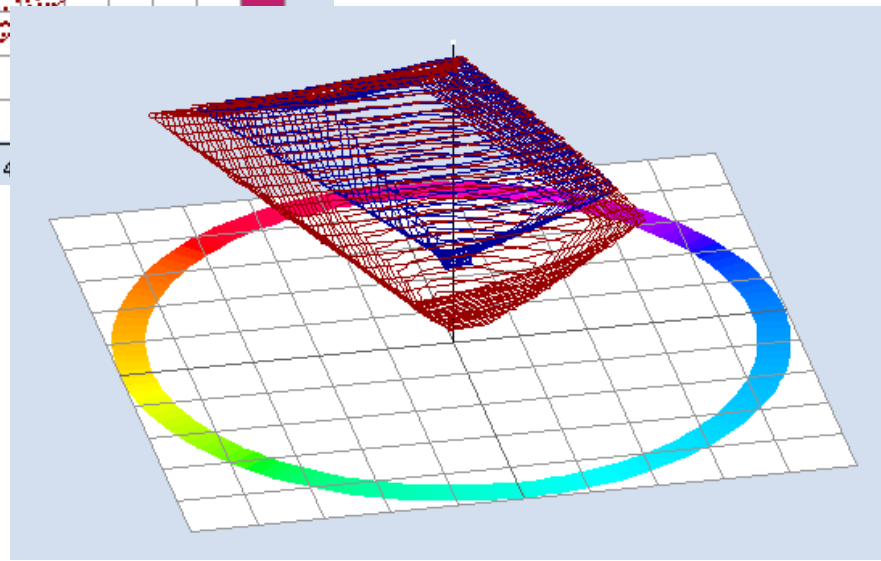


3. Color Toolbox

- Illustrate and Compare Measurement Data



to check Process
Conversion in advance



4. Other Color issues in Prinect Preferences

The screenshot shows the Prinect Preferences dialog box, specifically the 'Default job settings' section. It is divided into several sub-sections:

- Marks and Colors:**
 - Color standard: EURO (dropdown)
 - Set new SpotColor to: Output (dropdown)
 - Use ProofColor from Prinect Signa Station
 - Assignment of job colors to mark colors:
 - Automatically per surface
 - User-defined: Global
 - User-defined: In Layout
 - Allow spot colors for BCMY
- Print Order:**
 - Black (Up button)
 - Cyan
 - Magenta (Down button)
 - Yellow
 - Submit print order to press
- Target Color Space:**
 - For target "Process" take: CMYK..., else L*a*b* (dropdown)
 - For target "Output" take: CMYK..., else L*a*b* (dropdown)
 - Take color definitions for new colors from color tables
 - Autoresolve naming conflicts for new colors
- Printing Process:**
 - Output Profile: ISOcoated_v2_eci (dropdown) [Change... None]
 - Process Standard: ISO 12647-2_2008 FograWB NP - 1 (glossy coated) (dropdown) [Change... None]

- 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 Prinect Color Tables ...

ber 2014

Drag and drop to change order!

Active  System  User

Color Table **Process Color Model** **Ink definition**

Color Table	Process Color Model	Ink definition
<input checked="" type="checkbox"/>  FTBLAU	CMYK	CMYK, L*a*b*
<input checked="" type="checkbox"/>  PANTONE® Goe™ uncoated	CMYK	L*a*b*
<input checked="" type="checkbox"/>  PANTONE® hexachrome coated	Hexachrome	Hexachrome, L*a*b*
<input checked="" type="checkbox"/>  PANTONE® Goe™ coated	CMYK	L*a*b*
<input checked="" type="checkbox"/>  PANTONE® solid coated	CMYK	L*a*b*
<input checked="" type="checkbox"/>  PANTONE® color bridge coated	CMYK	CMYK, L*a*b*
<input checked="" type="checkbox"/>  PANTONE® solid to process coated	CMYK	CMYK, L*a*b*

Search Order

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4. Other Color issues in Prinect

Color Tables (ctd)

- Preferences define the spot color-Handling for new Jobs



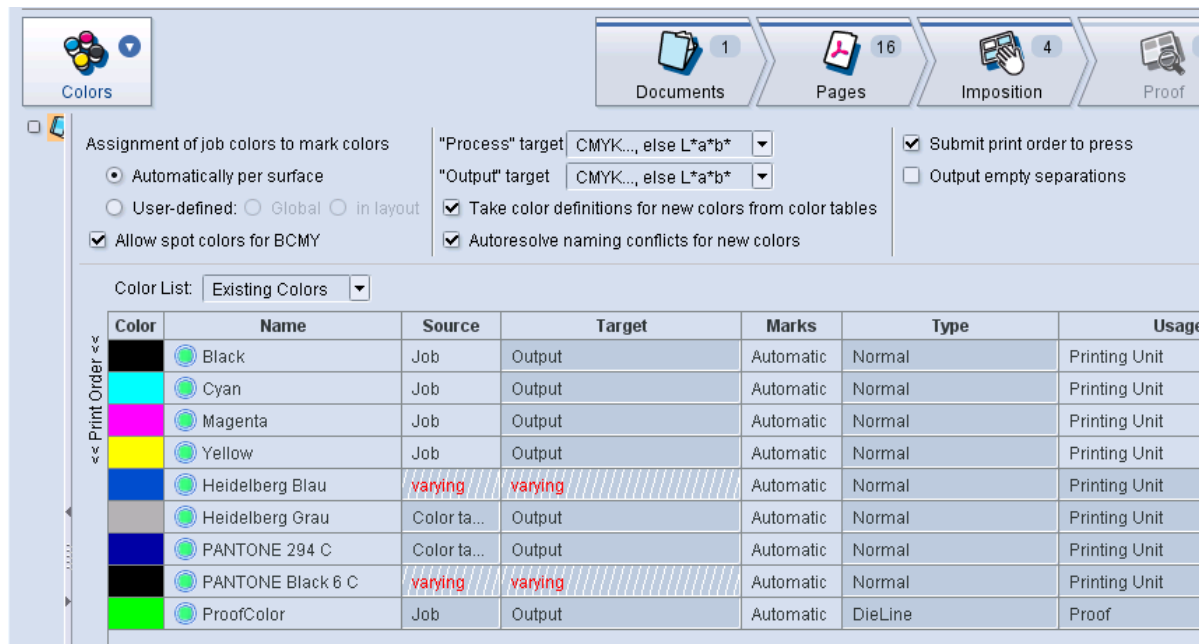
But can be changed inside the Job at a later stage

- 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



Assignment of job colors to mark colors

Automatically per surface

User-defined: Global in layout

Allow spot colors for BCMY

"Process" target: CMYK..., else L*a*b*

"Output" target: CMYK..., else L*a*b*

Submit print order to press

Output empty separations

Take color definitions for new colors from color tables

Autoresolve naming conflicts for new colors

Color List: Existing Colors

Color	Name	Source	Target	Marks	Type	Usage
Black	Black	Job	Output	Automatic	Normal	Printing Unit
Cyan	Cyan	Job	Output	Automatic	Normal	Printing Unit
Magenta	Magenta	Job	Output	Automatic	Normal	Printing Unit
Yellow	Yellow	Job	Output	Automatic	Normal	Printing Unit
Heidelberg Blau	Heidelberg Blau	varying	varying	Automatic	Normal	Printing Unit
Heidelberg Grau	Heidelberg Grau	Color ta...	Output	Automatic	Normal	Printing Unit
PANTONE 294 C	PANTONE 294 C	Color ta...	Output	Automatic	Normal	Printing Unit
PANTONE Black 6 C	PANTONE Black 6 C	varying	varying	Automatic	Normal	Printing Unit
ProofColor	ProofColor	Job	Output	Automatic	DieLine	Proof

- 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

Color List: Existing Colors

Color	Name	Source	Target	Marks
Black	Black	Job	Output	Automatic
Cyan	Cyan	Job	Output	Automatic
Magenta	Magenta	Job	Output	Automatic
Yellow	Yellow	Job	Output	Automatic
Heidelberg Blau	Heidelberg Blau	Alias	PANTONE 294 C	Automatic
Heidelberg Grau	Heidelberg Grau	Color ta...	Output	Automatic
PANTONE 294 C	PANTONE 294 C	Color ta...	Output	Automatic
PANTONE Black 6 C	PANTONE Black 6 C	Alias	Black	Automatic
ProofColor	ProofColor	Job	Output	Automatic

Color List: Existing Colors

Color	Name	Source	Target	Marks	Typ
Black	Black	Job	Output	Automatic	Normal
Cyan	Cyan	Job	Output	Automatic	Normal
Magenta	Magenta	Job	Output	Automatic	Normal
Yellow	Yellow	Job	Output	Automatic	Normal
ProofColor	ProofColor	Job	Output	Automatic	DieLine



INTERNATIONAL
PRINECT USER DAYS

8th and 9th October 2014

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

Thank you for your attention!

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