

# Use of static and dynamic device link profiles incidence on colorimetric accuracy and ink savings

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# Outline

1. Introduction
2. Methods
3. Results
4. Conclusions

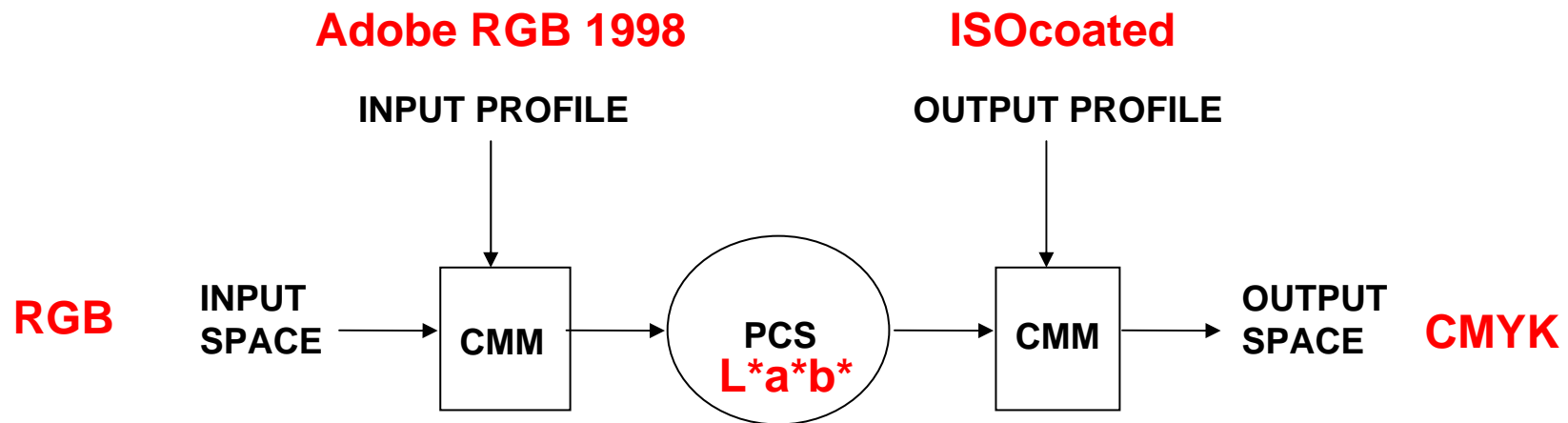
# 1. Introduction

- **Objectives**

- To test the performances of the device link profiles
- To compare dynamic and static device link profile (colorimetric rendering and ink savings)

# 1. Introduction

- **Profils ICC** : The architecture of a classical color management system



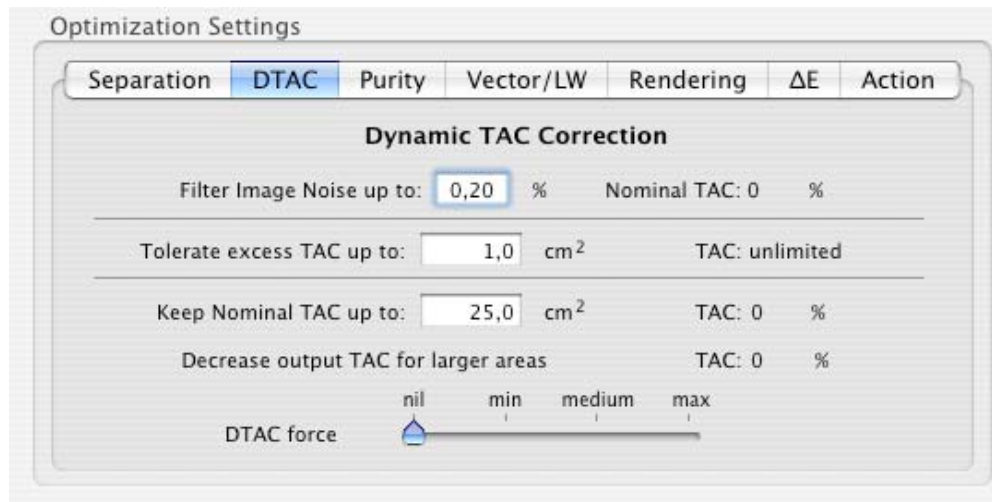
# 1. Introduction

- **Device link profile:** ICC profile between two ICC profiles ICC  
ex: ISOcoated >ISOnewspaper
- **Use:** To convert directly a CMYK space to an other CMYK space taking into account printability specifications (like color purity, TAC - Total Area Coverage).

# 1. Introduction

Two options exist:

- static device link profile (the same adjustment for all files)
- dynamic device link profile (check the content of the file and optimize functions of the result)

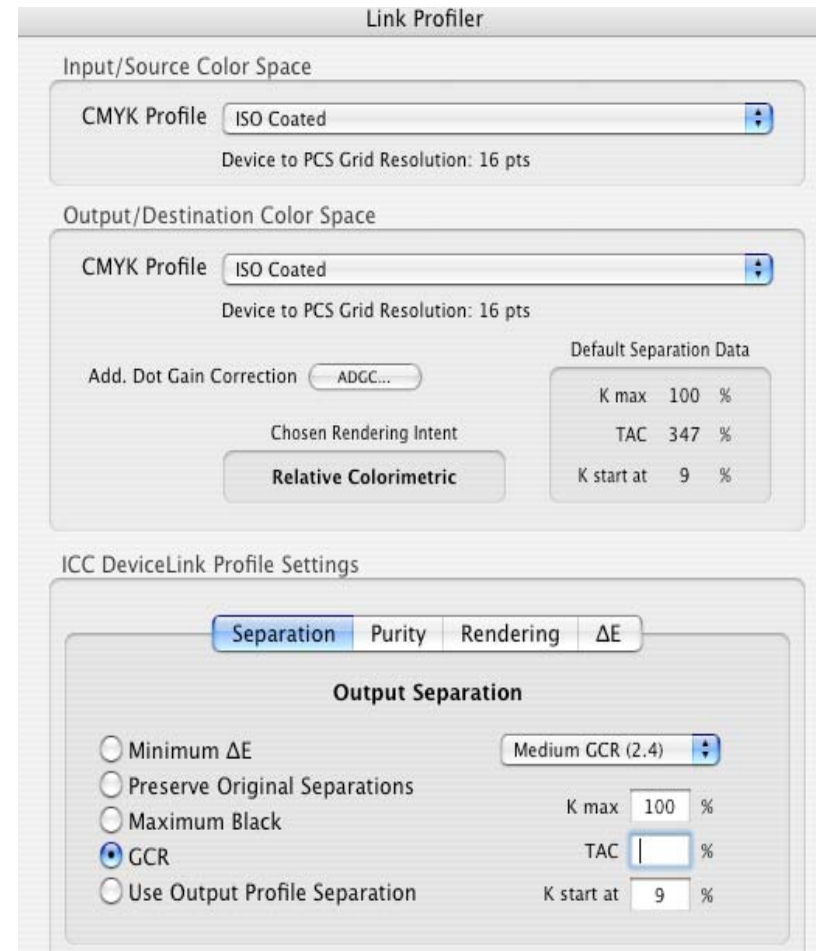


## 2. Methods

- **Softwares used:** Link profiler, CMYK optimizer, Color Pursuit, Photoshop, In design, Acrobat
- **Equipments used:** printer Epson stylus Pro 4000 – RIP Proofmaster, spectrophotometer Eye one IO (Gretag Macbeth)

## 2. Methods

**Link Profiler:** to create a static device link between two spaces



## 2. Methods

**CMYK optimizer:** to create a dynamic device link between two spaces

CMYK Optimizer Server (ACH\_HOTFOLDER)

**Input File Properties**

Use Embedded Profile(s)     Use Embedded Rendering Intent(s)

Default RGB Profile: Adobe RGB (1998)    Dest. CMYK...

Default CMYK Profile: ISO Coated

Dot Gain: C 11.5 % M 13.7 % Y 14.4 % K 17.0 %

**Output File Properties**

Output CMYK Profile: ISO Coated

Dot Gain: C 11.5 % M 13.7 % Y 14.4 % K 17.0 %

Output File Format: Same as Input

Embed Profile     Keep File Name Unchanged

Add. Dot Gain Correction: ADGC...    Compression...

**Rendering Relative Colorimetric**

K max 100 %  
TAC 347 %  
K start at 9 %

**Optimization Settings**

Separation    DTAC    Purity    Vector/LW    Rendering     $\Delta E$     Action

**Output Separation**

Minimum  $\Delta E$     Medium GCR (2.4)

Preserve Original Separations    K max 100 %

Maximum Black    TAC | %

GCR    K start at 9 %

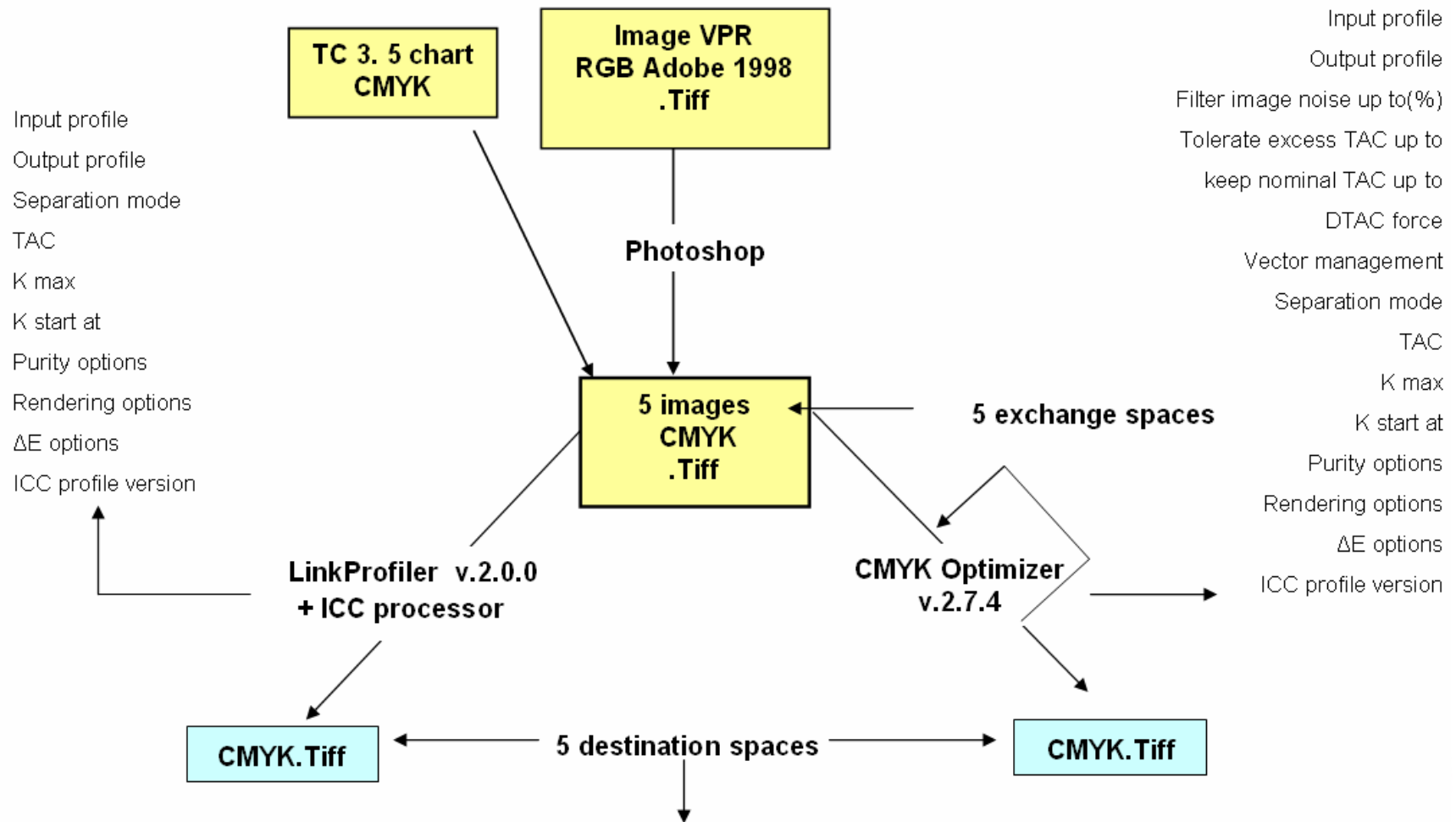
Use Output Profile Separation

## 2. Methods

### **Part one: tests on tiff images**

- TC 3.5 chart for colorimetric measurements
- Visual part

# 2. Methods



Isocoatedv2, ISOwebcoated, ISOnewspaper26v2, SWOP 2006 coated 5v2, JAPAN color 2001 coated

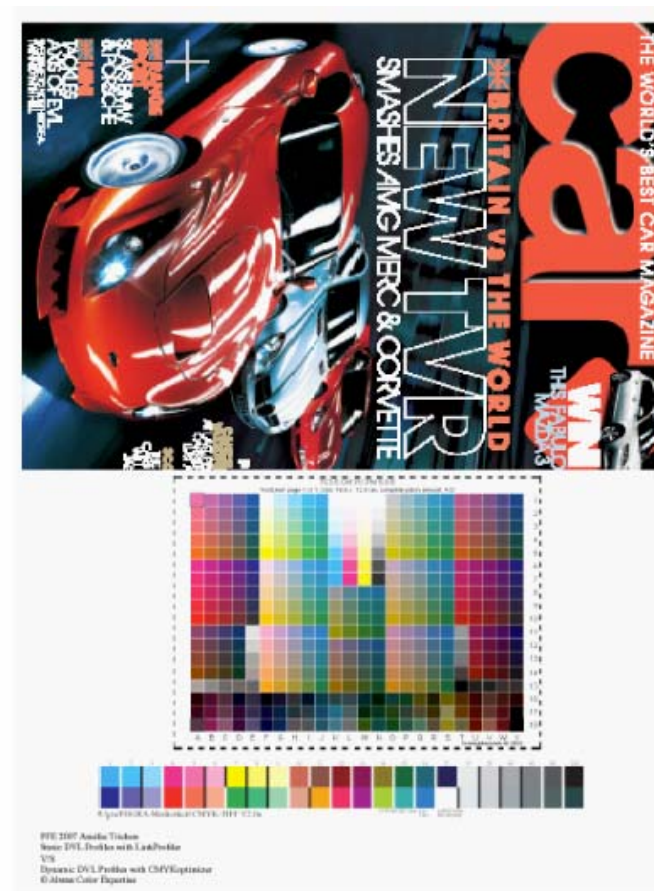
## 2. Methods

### **Part two: tests on pdf document**

- TC 3.5 chart for colorimetric measurements
- Visual part

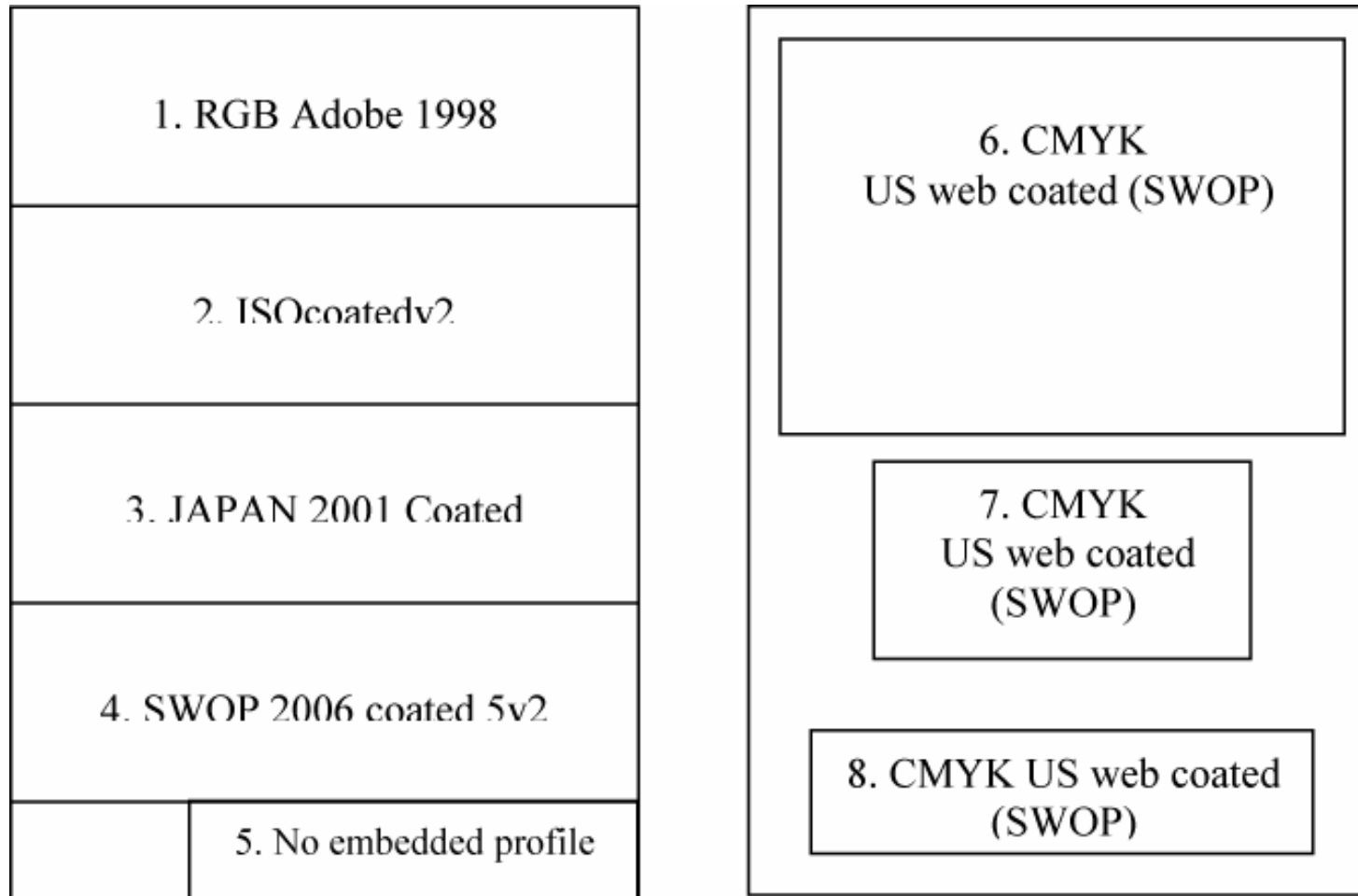
# 2. Methods

PDF test form: *PDF X3/2002*

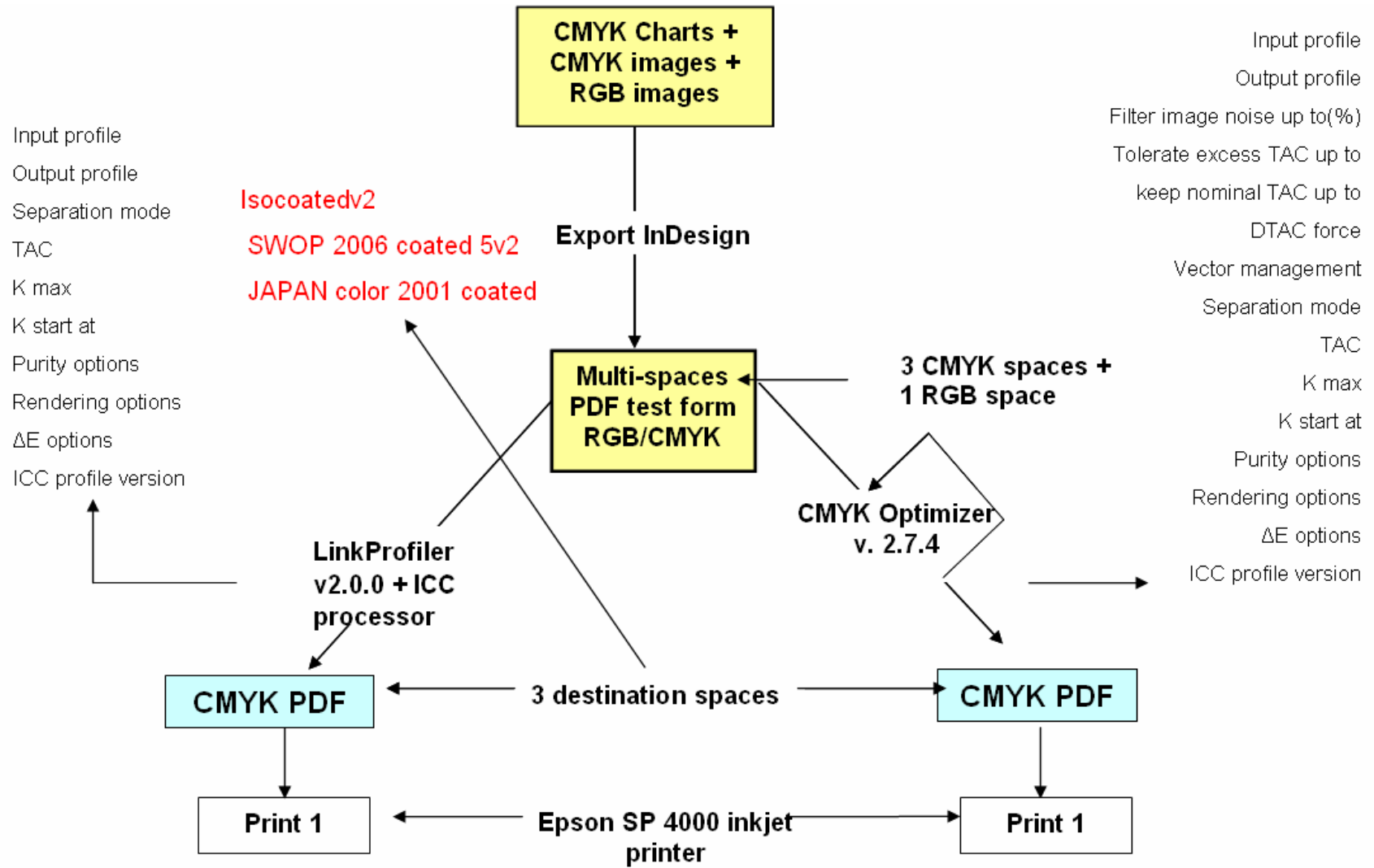


## 2. Methods

**PDF test form:** *ICC profiles assigned at each part of test form*

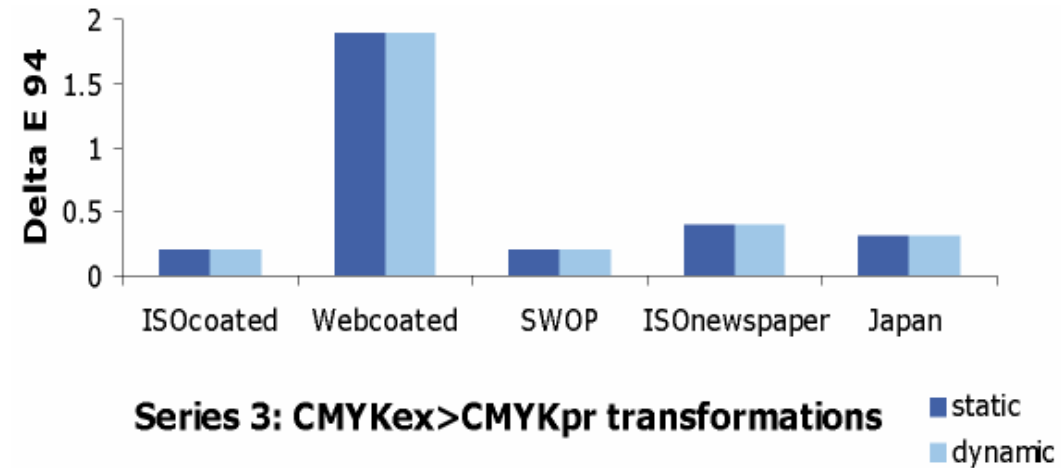


# 2. Methods



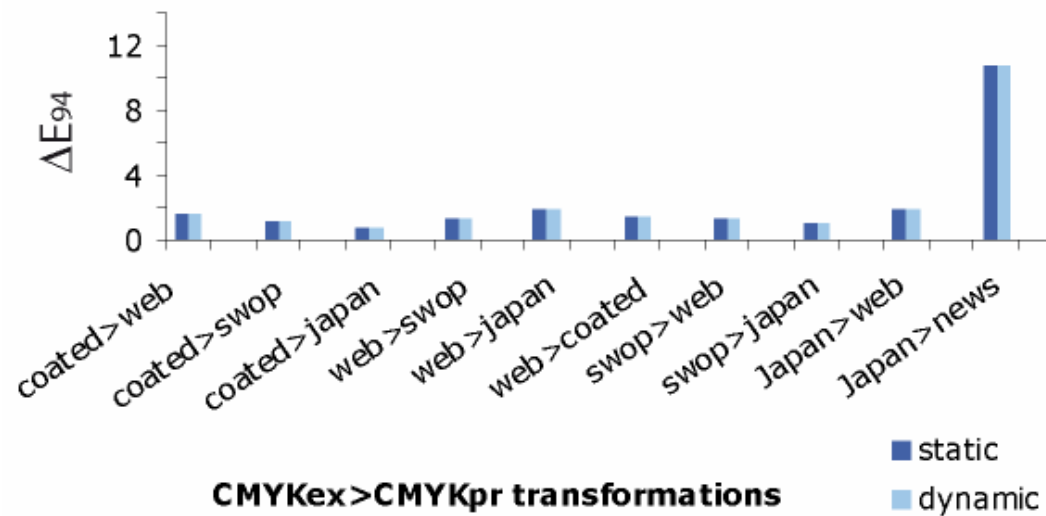
# 3. Results

**Tests on tiff image – Part 1** : *Medium  $\Delta E_{94}$  on the TC3.5 chart with a strong GCR (1.0) settings - input and output spaces are identical*



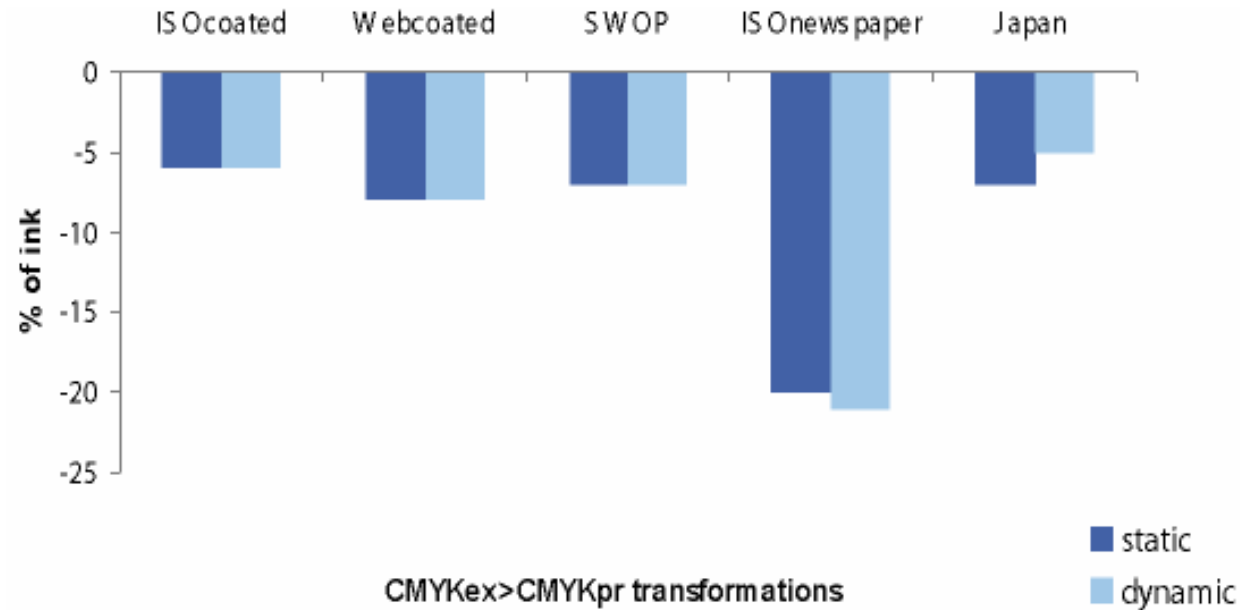
# 3. Results

**Tests on tiff image – Part 1** : *Medium  $\Delta E_{94}$  on the TC3.5 chart with a strong GCR (1.0) settings - input and output spaces are different*



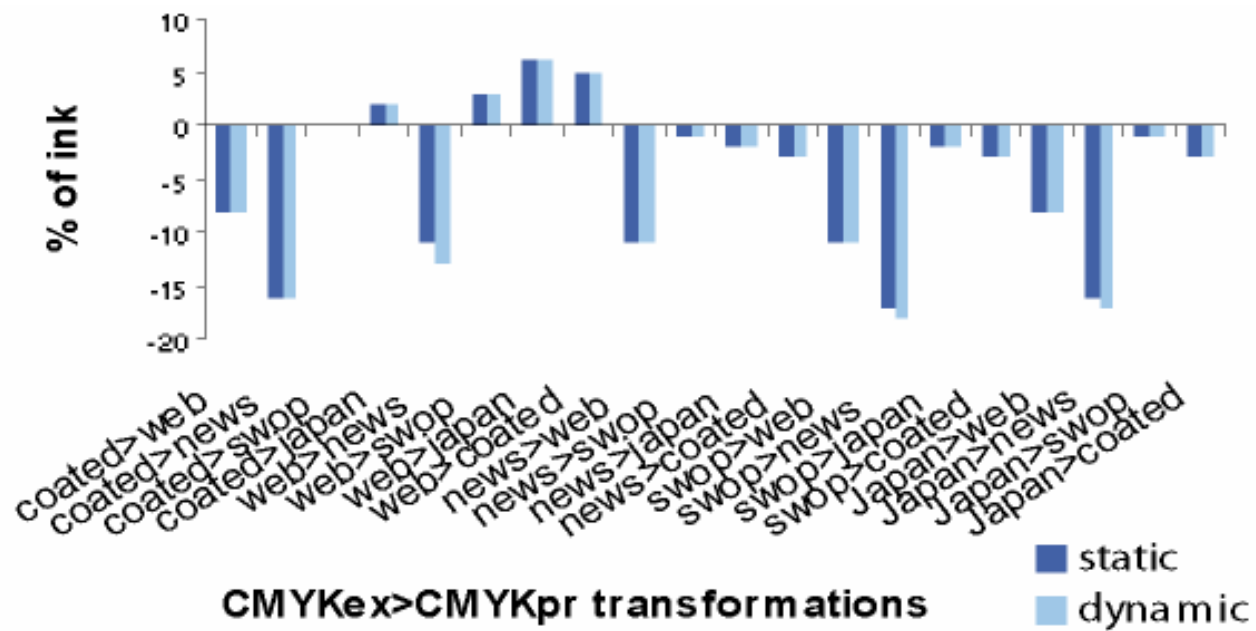
# 3. Results

## Tests on tiff image – Part 1: *ink savings - input and output spaces are identical (GCR 1.0)*



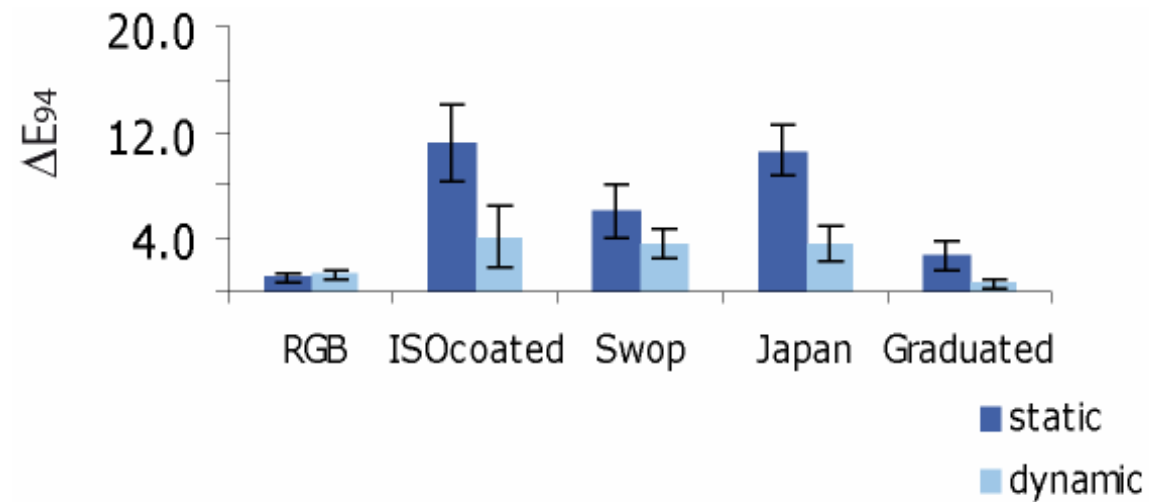
# 3. Results

## Tests on tiff image – Part 1: ink savings - input and output spaces are different (GCR 2.4)



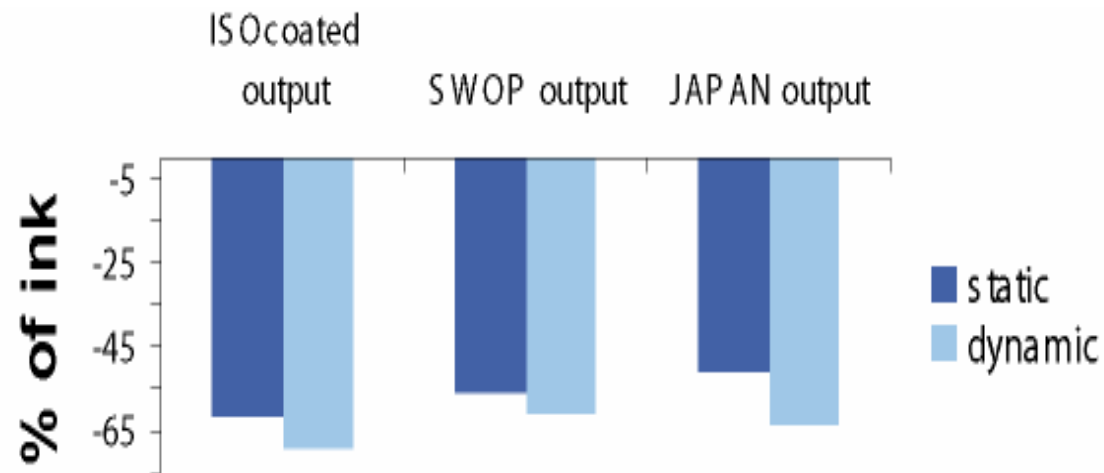
# 3. Results

**Tests on PDF document – Part 2:** *Medium  $\Delta E_{94}$  on images from page1 of PDF test form (Maximum black)*



# 3. Results

**Tests on pdf document – Part 2: ink savings -**  
*input and output spaces are identical (Maximum black)*



# 3. Results

## **Visual evaluation**

- 74% of people say they see a difference between proofs treated by static profile and proofs treated by dynamic profile.
- 75% of people who saw a difference find the use of dynamic device link profile rendering nearer than static link profile.

## 4. Conclusions

- The reduction of the inking from 8 to 10% has little influence on the colorimetric result

Ink savings: 8 – 10%      Delta E94: 1 – 2 (part 1, static and dynamic)

Ink savings: 50%      Delta E94: 4 – 5 (part 2, dynamic)

- The dynamic profiles are more powerful - adapting the TAC according to the analyzed document that involves better results

Colorimetric precision

Ink savings more important

# Thank you for your attention !

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