

# 以ICC為基礎的相機工作流程必要條件

深藍科技

張錫本

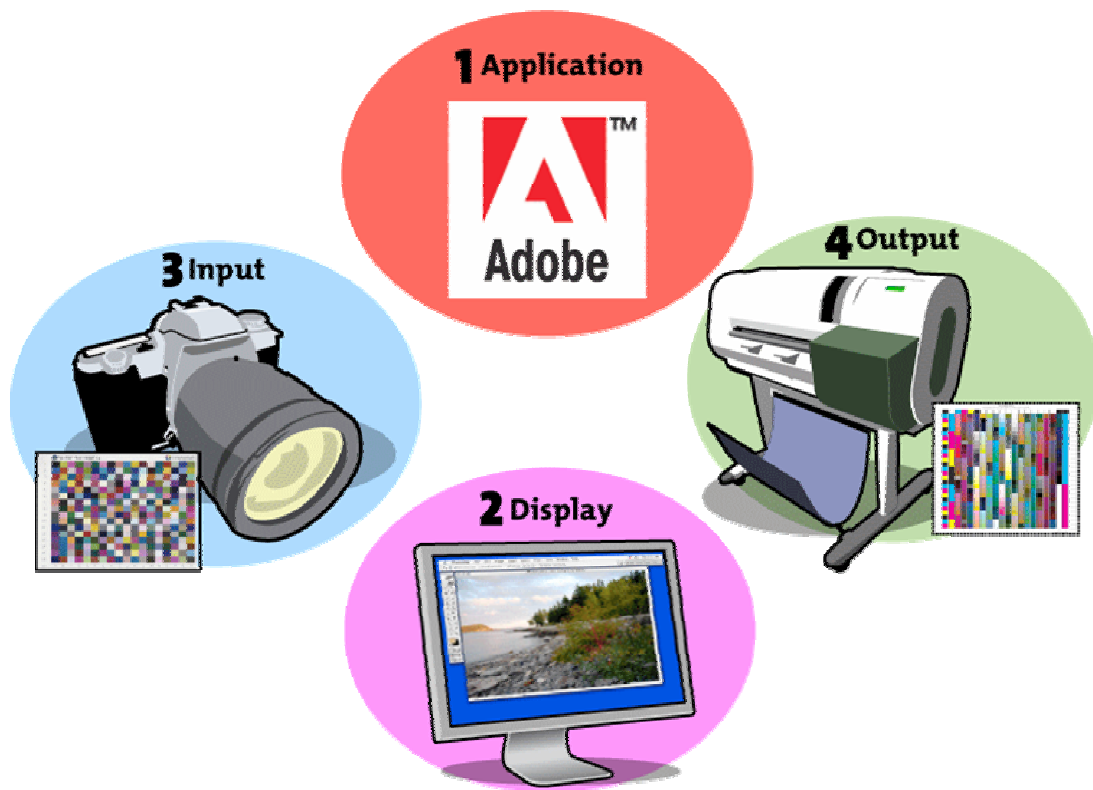
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## 數位相機

- 影像的品質決定在鏡頭及CCD和機身設計(60%)
- 軟體可以處理的問題更甚硬體結構(40%)
- 色彩的準確性不見得越貴越準
- 色彩管理不能只有一部分, 必須有完整的流程才能達到又快又準.
- 目前市面上的數位相機多以 sRGB作為標準的色彩輸出空間
- 高階DSLR可以用Adobe RGB, 數位機背則用Adobe RGB
- 理想狀態下則是專屬的色彩描述檔



- 產品描述
- 完整的解決方案
- 儀器
- 軟體
  - Eye-One Match
  - Eye-One Share
- 操作程序
- 檢驗效果



- **Eye-One Pro 分光光度計**
  - 在工作流程中量測及控制每一個色彩設備
  - 描述檔 – 顯示器, 掃描器, 印表機, 數位相機和數位投影機
  - 量測和擷取 – 特別色, 閃光燈和環境光源
  - 針對顯示器和光源測量並不需要購買額外的的設備
  - 全系列都是相同的高精準測量儀器
  - 全自動化的iO掃描平台

## •Eye-One Match

- 超簡易使用介面, 含簡單螢幕上求助導引
- 每套Eye-One包裝包含相同軟體, 但每一個都有特定的產生描述檔的模組
  - 功能升級簡單, 可透過採購授權碼來符合不同的需求
  - 不須重新學習
- 簡易模式和進階模式
  - 單鍵操作適合初學者
  - 針對進階使用者有更多的控制和調整方式
- 基於高階ProfileMaker 5演算法則來符合最佳品質的色彩描述檔

- Eye-One Display LT (入門的螢幕校正儀器)
- Eye-One Display 2 (進階的螢幕校正儀器)
- Eye-One Design
- Eye-One Photo
- Eye-One Photo SG
- Eye-One Proof
- Eye-One XT Bundle
  
- Eye-One iO
  
- i1 Match 3.6 模組



## Color Management Solutions

- Eye-One Pro / Eye-One Display2
- Semi automatic chart measurement
- Emission measurements / Reflective measurements
- Ambientlight / Flashlight measurement head
- New Eye-One Carrying case
- New Ruler with Back board
- Monitor Profiling (CRT, LCD)
- Scanner Profiling (Reflection / Transmission)
- RGB Easy (small test chart)
- RGB Output profiling
- CMYK Easy (small test chart)
- CMYK output profiling
- Hexachrome, CMYK RG & CMYK RB printer profiling
- Fogra medie wedge: Measurement and Evaluation
- Eye-One Match Profile Editor/ PMS Profile Editor
- Digital Camera Profiling (Software)
- Digital Projector Profiling (Software)
- ColorPoint PowerPoint Plugin
- Eye-One Share Freeware (full version)
- Color Picker
- Measure Tool Basic / Complete
- Density / Post linearization / Test chart generator
- Digital Pantone Library
- Eye-One Gold protection Plan (3 year warranty)
- Device Link
- Scanner targets (Reflection / Transmission)
- Digital ColorChecker SG (Chart) (For Digital Camera Module)
- Mini ColorChecker (Chart)
- Nik Photographic filters
- Beamer holder
- Eye-One iO Automated Scanning table

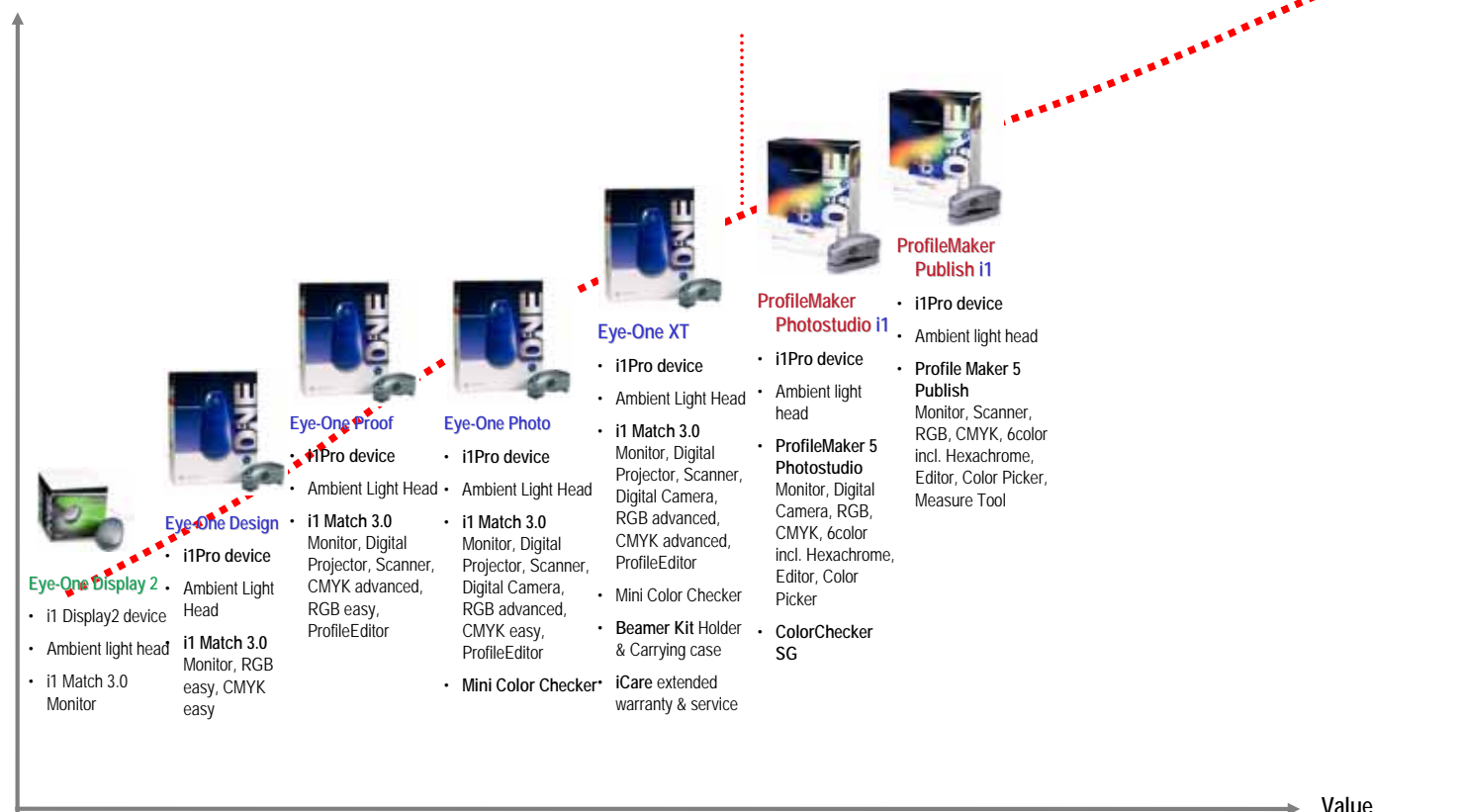
	Eye-One Match (Software)						ProfileMaker5 (Software)	
	Eye-One Display2	Eye-One Design	Eye-One Photo	Eye-One Photo SG	Eye-One Proof	Eye-One XT	Eye-One PMS Photostudio	Eye-One PMS Publish
Hardware	● / ●	● / ●	● / ●	● / ●	● / ●	● / ●	● / ●	● / ●
Semi automatic chart measurement	●	●	●	●	●	●	●	●
Emission measurements / Reflective measurements	● / ●	● / ●	● / ●	● / ●	● / ●	● / ●	● / ●	● / ●
Ambientlight / Flashlight measurement head		● / ●	● / ●	● / ●	● / ●	● / ●	● / ●	● / ●
New Eye-One Carrying case		●	●	●	●	●	●	●
New Ruler with Back board		●	●	●	●	●	●	●
Monitor Profiling (CRT, LCD)	● / ●	● / ●	● / ●	● / ●	● / ●	● / ●	● / ●	● / ●
Scanner Profiling (Reflection / Transmission)		○	● / ●	● / ●	● / ●	● / ●	● / ●	● / ●
RGB Easy (small test chart)		●	●	●	●	●		
RGB Output profiling		○	●	●	○	●	●	●
CMYK Easy (small test chart)		●	●	●	●	●		
CMYK output profiling		○	○	○	●	●	●	●
Hexachrome, CMYK RG & CMYK RB printer profiling							●	●
Fogra medie wedge: Measurement and Evaluation		○	○	○	○	○	●	●
Eye-One Match Profile Editor/ PMS Profile Editor		○ / ●	● / ●	● / ●	● / ●	● / ●	● / ●	● / ●
Digital Camera Profiling (Software)		○	●	●	○	●	●	○
Digital Projector Profiling (Software)		○	●	●	●	●	○	○
ColorPoint PowerPoint Plugin			●	●	●	●	●	●
Eye-One Share Freeware (full version)		●	●	●	●	●	●	●
Color Picker							●	●
Measure Tool Basic / Complete		○ / ●	○ / ●	○ / ●	○ / ●	○ / ●	○ / ●	○ / ●
Density / Post linearization / Test chart generator							● / ● / ●	● / ● / ●
Digital Pantone Library		●	●	●	●	●	●	●
Eye-One Gold protection Plan (3 year warranty)		○	○	○	○	●	○	○
Device Link							○	○
Scanner targets (Reflection / Transmission)		● / ○	● / ○	● / ○	● / ○	● / ○	○ / ○	● / ●
Digital ColorChecker SG (Chart) (For Digital Camera Module)		○	○	●	○	●	●	○
Mini ColorChecker (Chart)		○	●	●	●	●	○	○
Nik Photographic filters	●	●	●	●	●	●		
Beamer holder		○	○	○	○	○	○	○
Eye-One iO Automated Scanning table			○	○	○	○	○	○



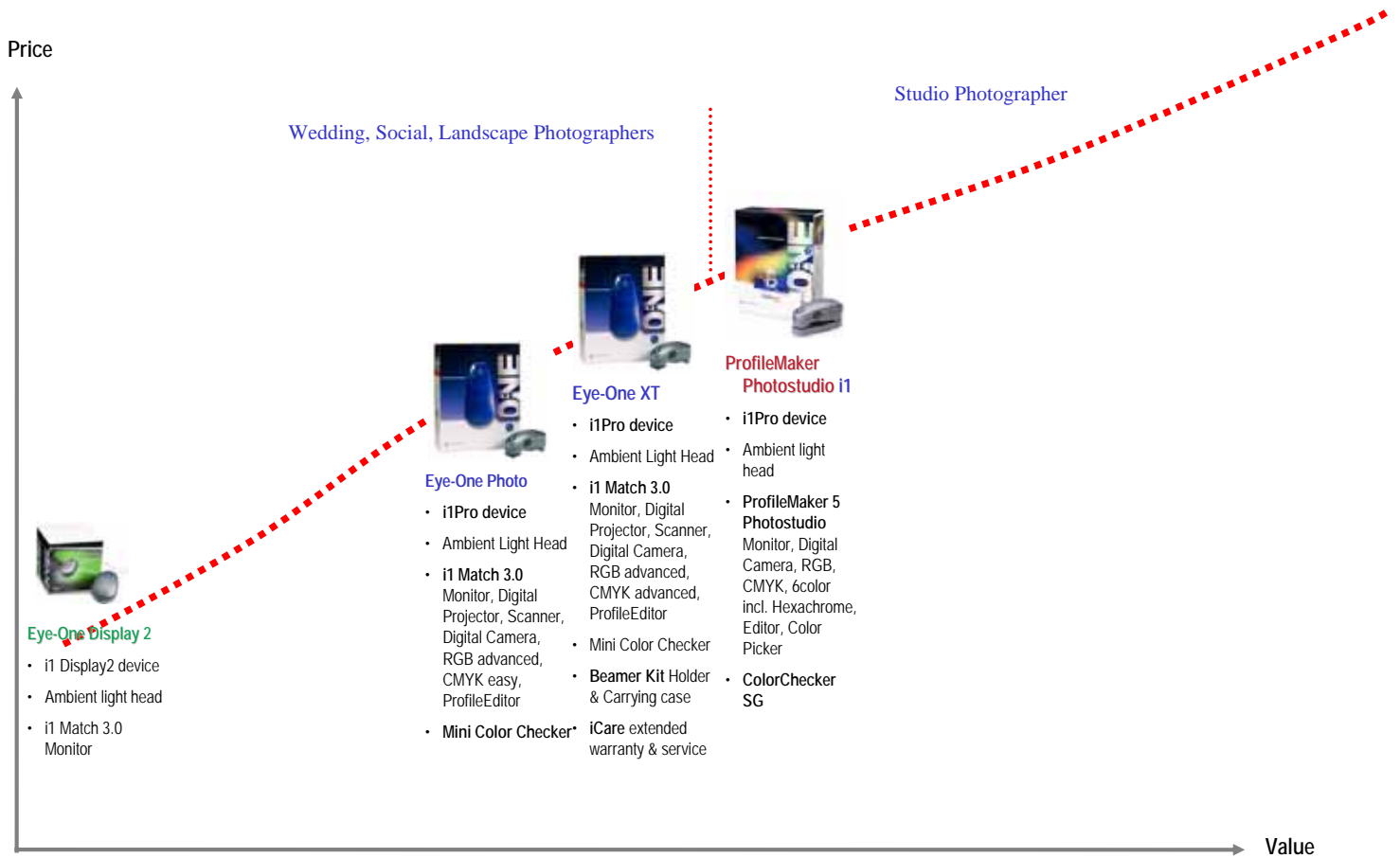
DESIGN  
PHOTO  
PREPRESS

## 完整解決方案產品線

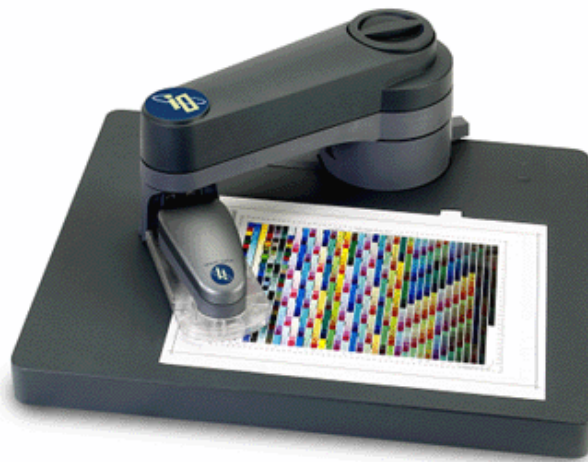
Price



Value



## • Eye-One iO



- 快速, 自動化, 多功能和負擔得起的掃描平台

- 速度快
- 讀取 928 個色塊 (IT8.7/3) 費時約 2.2 分鐘  
→ 超過 400 個色塊 / 分鐘
- 自動化
- 不需要多餘的手動掃描
- 多功能的
- 支援多種不同材質, 從最薄到 10 mm, 例如.: 塗佈紙, 非塗佈紙, 相片紙, 透明薄膜, 塑膠, 卡片, 紡織品
- 定位面積 / 導表尺寸: 32cm(寬) x 24 cm(高) 包含A4, Letter尺寸, 約 1500個色塊
- 支援全部的Eye-One Pro分光光度計, 從A版本到現在的D版本



## •Eye-One Match v3 Monitor

Eye-One Match

Eye-One Match 3

Monitor Type

Help

Monitors

**Select Monitor Type**

- Calibration Settings
- Calibrate Eye-One
- Ambient Light Check
- Remove Light Head
- Calibrate Eye-One
- Position Eye-One
- Calibrate Contrast
- Calibrate Brightness
- Calibrate RGB
- Measuring
- Save ICC Profile

Select your monitor type:

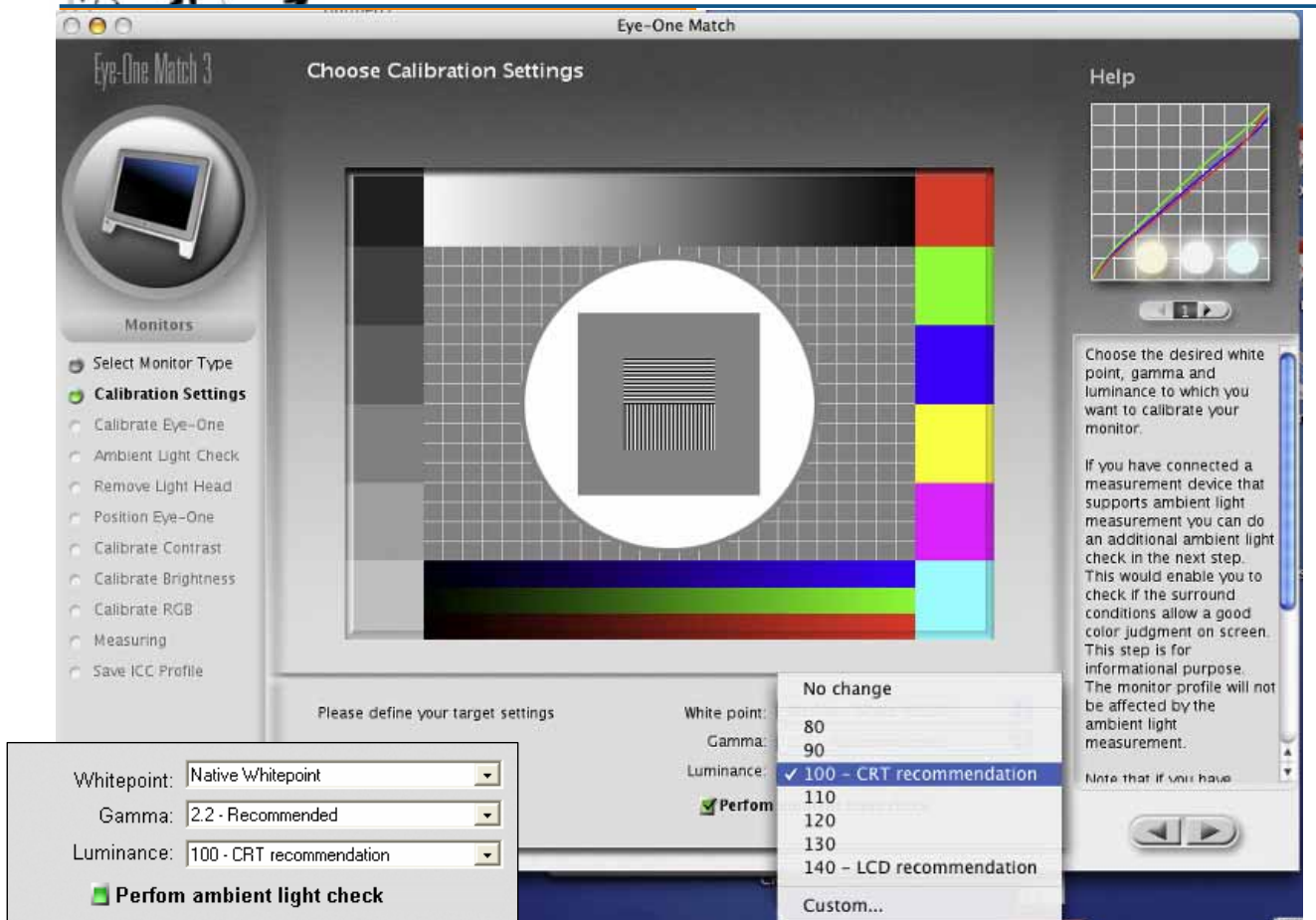
- LCD
- CRT
- Laptop

Choose your monitor type and click the right arrow to continue.

互動式求助功能

清楚地先後順序指引/位置

# •Eye-One Match v3 Monitor



# •Eye-One Match v3 Monitor





DESIGN  
PHOTO  
PREPRESS

# •Eye-One Match v3 Monitor



Automatic Calibration



DESIGN  
PHOTO  
PREPRESS

# •Eye-One Match v3 Monitor





DESIGN  
PHOTO  
PREPRESS

# •Eye-One Match v3 Monitor

Eye-One Match

Eye-One Match 3 Save ICC profile and summary screen Help

Monitors

- Select Monitor Type
- Calibration Settings
- Calibrate Eye-One
- Ambient Light Check
- Remove Light Head
- Position Eye-One
- Calibrate Contrast
- Calibrate Brightness
- Calibrate RGB
- Measuring
- Save ICC Profile**

<b>Color Temperature:</b>			
Target:	6500 K	Luminance:	100.0 cd/m <sup>2</sup>
Current:	6500 K	Current:	100.2 cd/m <sup>2</sup>
		Minimum:	0.2 cd/m <sup>2</sup>
<b>Gamma:</b>		<b>Ambient Light</b>	
Target:	2.2	Color Temperature:	3700 K
Current:	2.2	Illuminance:	171 Lux

Monitor\_5-11-04\_1.icc

Click the right arrow to save your Monitor profile.

Activate reminder for the monitor calibration

1 Week

The monitor profile has been calculated successfully. Click the right arrow to save your monitor profile. The profile will automatically be set as standard profile for your monitor.



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# •Eye-One Match v3 Monitor

Eye-One Match

Eye-One Match 3 Select the device you wish to profile Help

Monitors

The profile "Monitor\_5-11-04\_1.icc" was saved in the directory "Macintosh HD:Users:Fried\_G5:Library:ColorSync:Profiles:" and set as standard profile for your monitor.

OK

Select your profiling mode and click the right arrow.

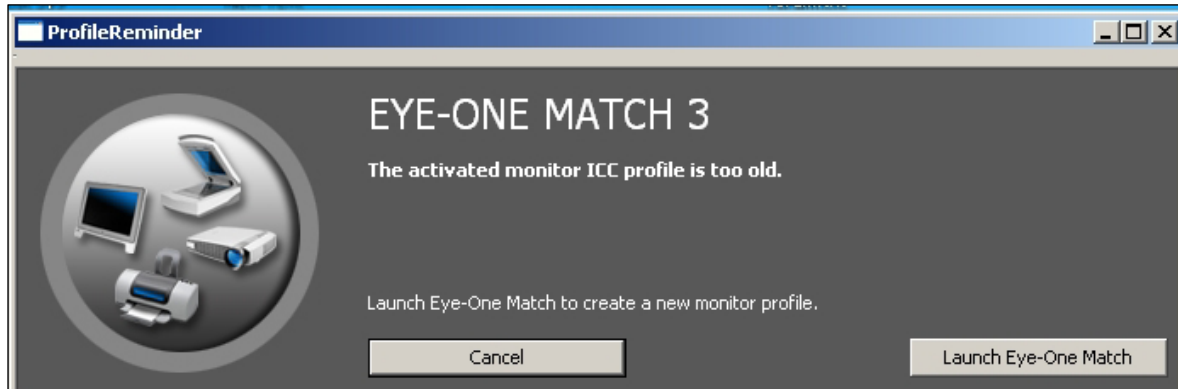
Easy

Advanced

This is the online help! It will guide you through every step of the profiling process.

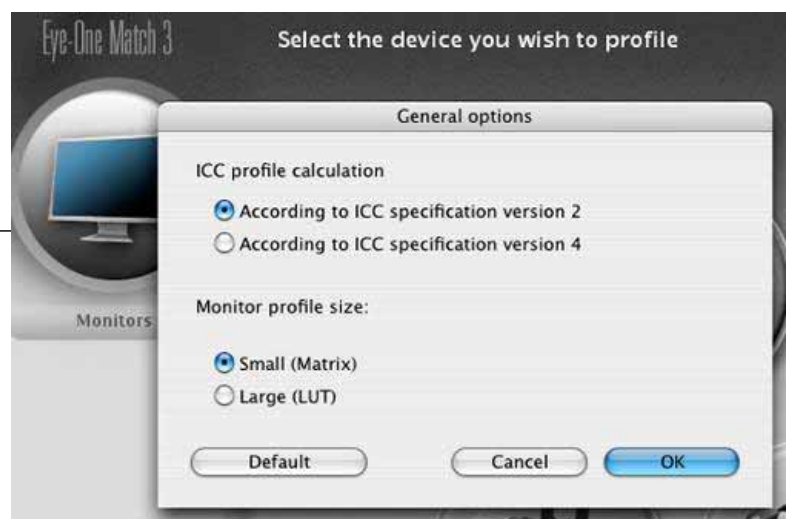
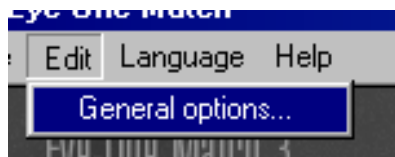
Choose the device you wish to profile from the options on the left. Browse through the help to learn more about the different options.

## 提醒重新校準



## 新功能

- Options menu added



- Create Matrix or LUT profiles.在此應用程式可經由選單來得到

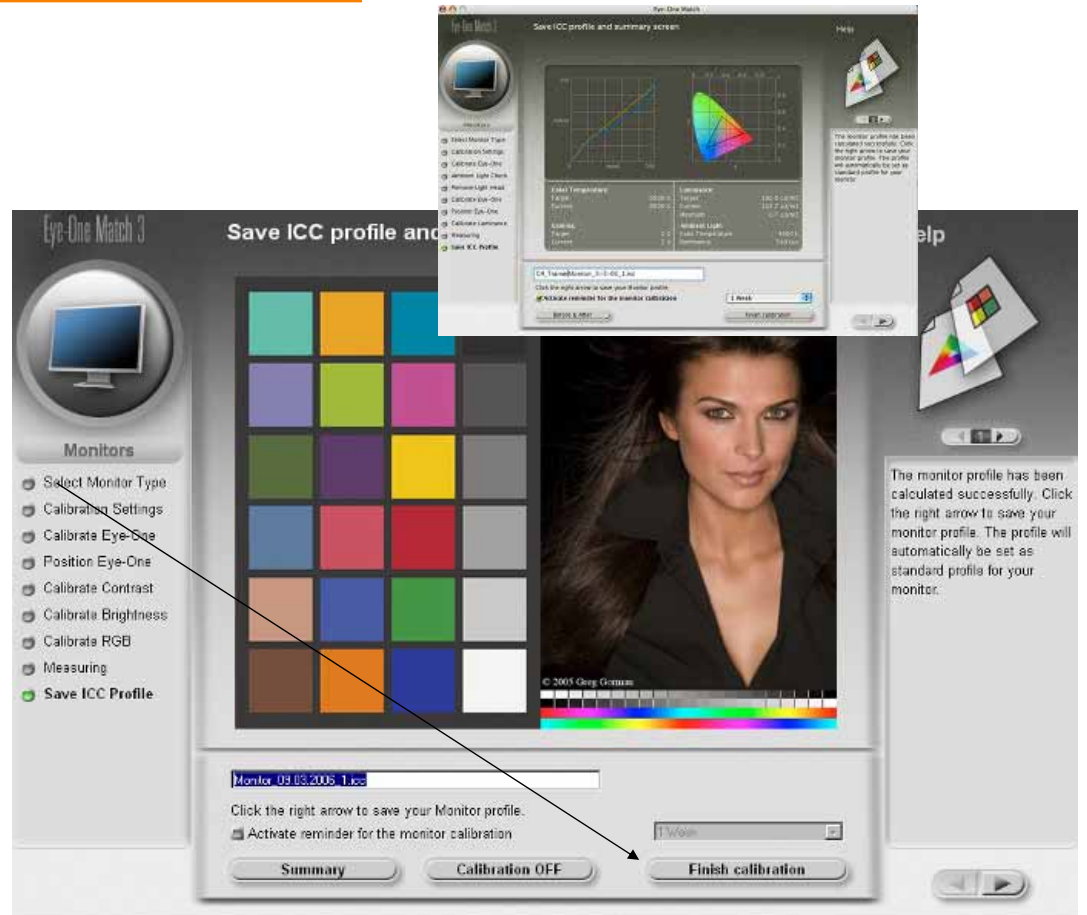


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## •Eye-One Match v3 Monitor

### 新功能

- 之前之後螢幕的色差  
校正資料能夠啟用或關閉, 為了看透過Eye-One Match校正前後的不同色彩.

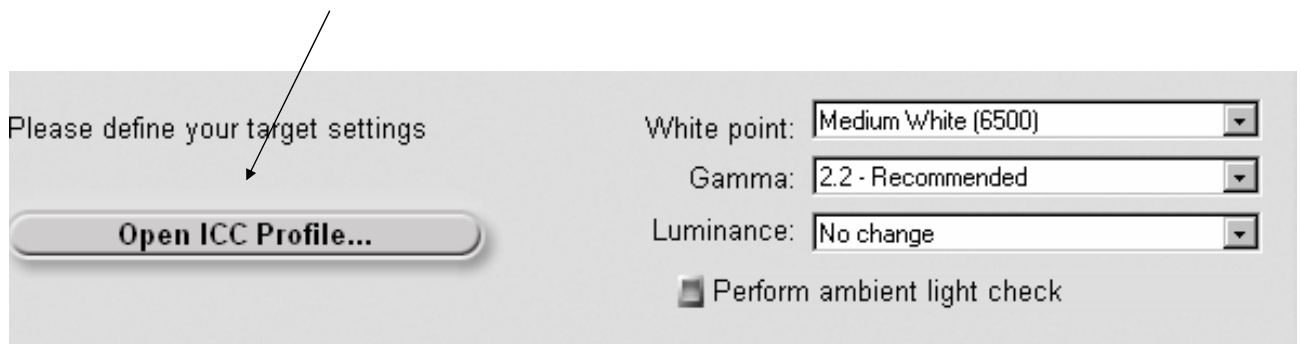


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PHOTO  
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## •Eye-One Match v3 Monitor

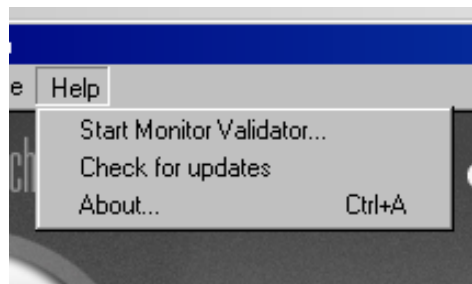
### 新功能

- 選用校正參數, 例如white point, gamma and luminance values 從以前產生過的GretagMacbeth顯示器色彩描述檔. (僅針對3.6或更高版本產生的色彩描述檔)



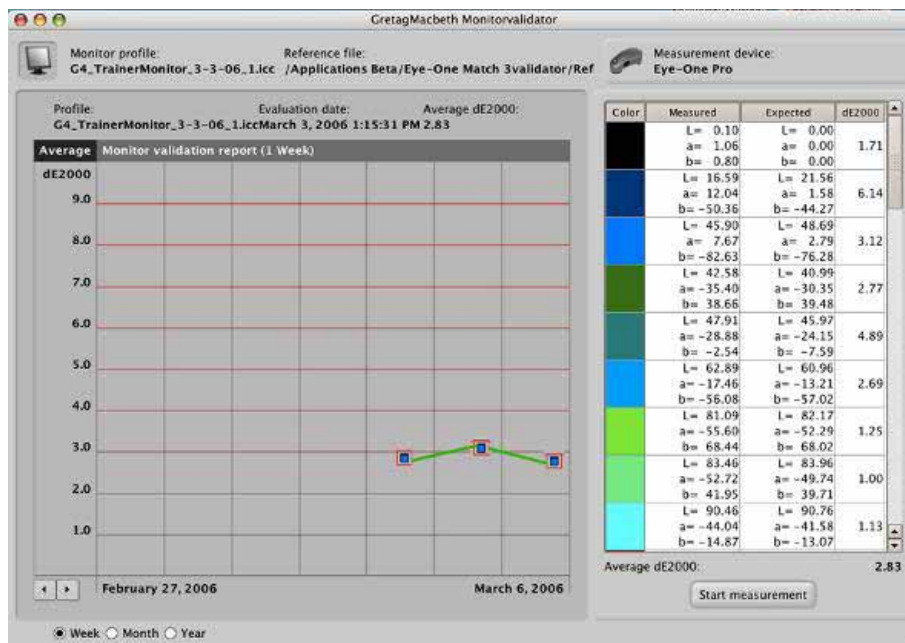
## 新功能

- 確認顯示器色彩描述檔
  - 在色差dE方面檢驗你色彩描述的品質和儲存結果用來追蹤資料庫. 這些允許你快速看出校準和描述檔的時間.
  - 僅能在啟動i1 Match螢幕上



## 新功能

- 確認顯示器色彩描述檔





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# •Eye-One Match Digital Camera



DESIGN  
PHOTO  
PREPRESS

# •Eye-One Match Digital Camera



拍攝ColorChecker SG

檢查照度

裁切

分析拍攝

環境光源  
(選項)



DESIGN  
PHOTO  
PREPRESS

# •Eye-One Match Digital Camera



載入參考影像



曝光值和對比度



飽和度



暗部  
&  
亮部



DESIGN  
PHOTO  
PREPRESS

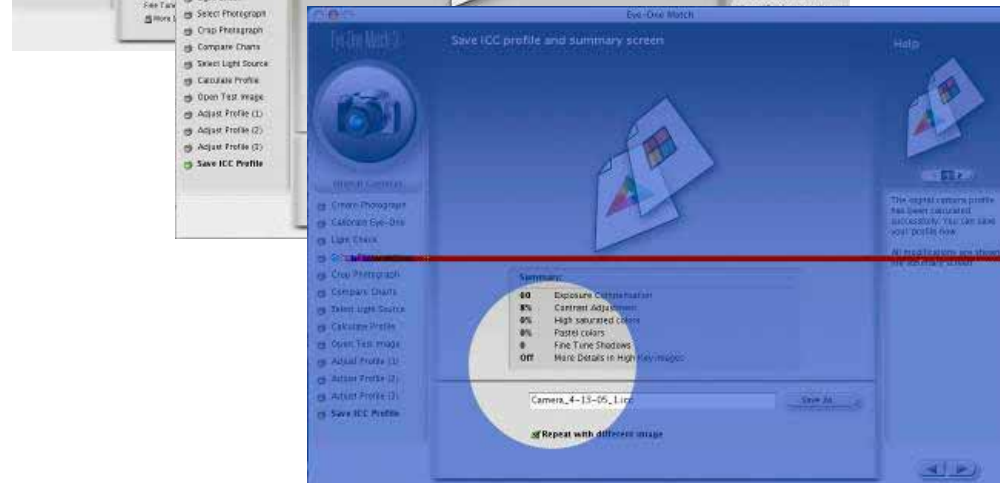
# •Eye-One Match Digital Camera



縮放觀景 (使用箭頭鍵來調整)



最終描述檔

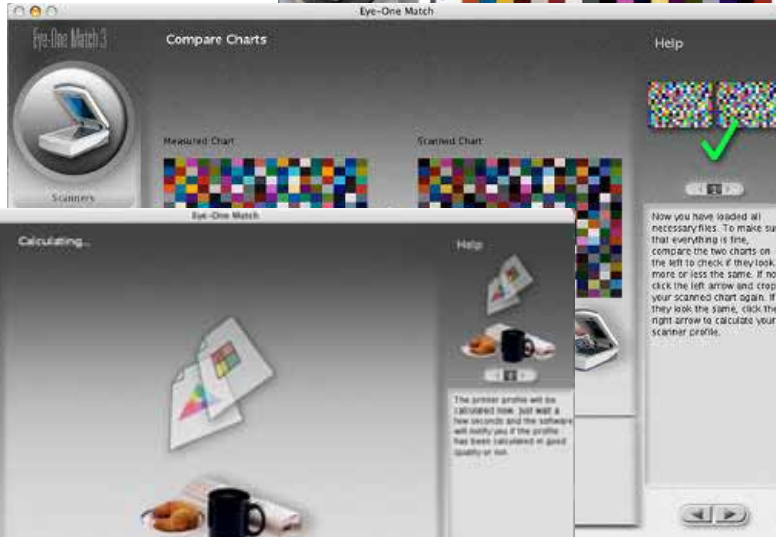


- 概括的調整  
重新打開第二張影像  
設定新的照相對話



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PHOTO  
PREPRESS

# •Eye-One Match v3 Scanner



量測

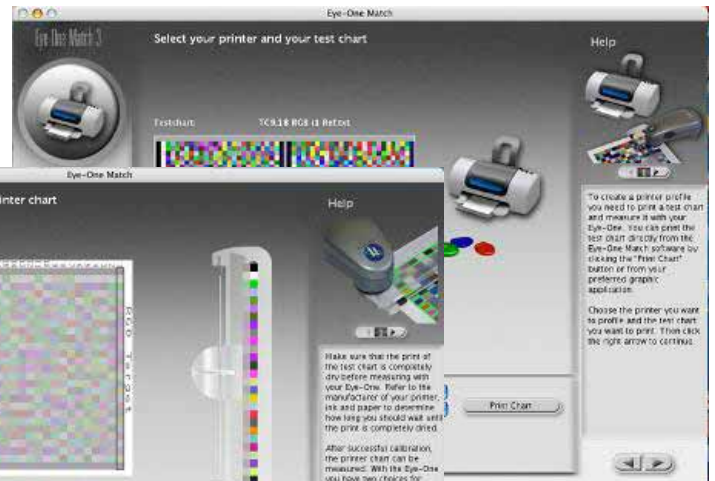
掃描及裁切

比對



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PHOTO  
PREPRESS

# •Eye-One Match v3 Output



選擇印表機

量測



DESIGN  
PHOTO  
PREPRESS

# •Eye-One Match v3 Editor



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PHOTO  
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# •Eye-One Match v3 Editor



Color Correction

*Included in every Eye-One package.*

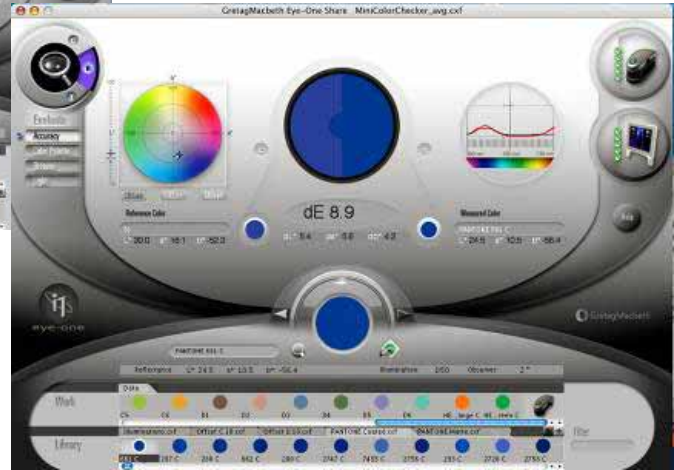
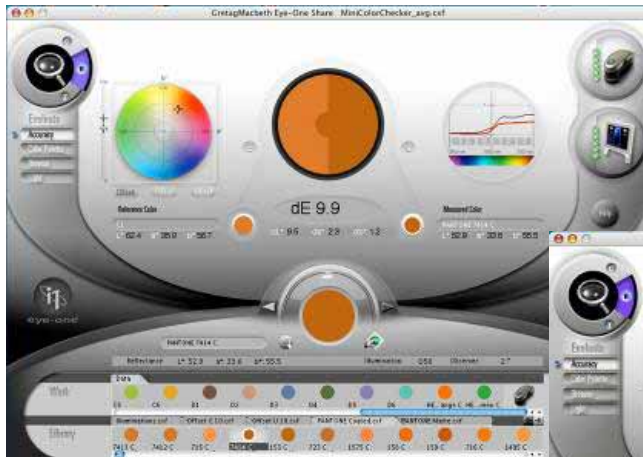
- 專業級色彩工作流程
- 完全數位化在任何桌面
- 高水準數學函數
- GUI互動介面
- 建立色彩導引和共享
- 存取 Pantone® 專色指引
- 可用基本功能如共享軟體





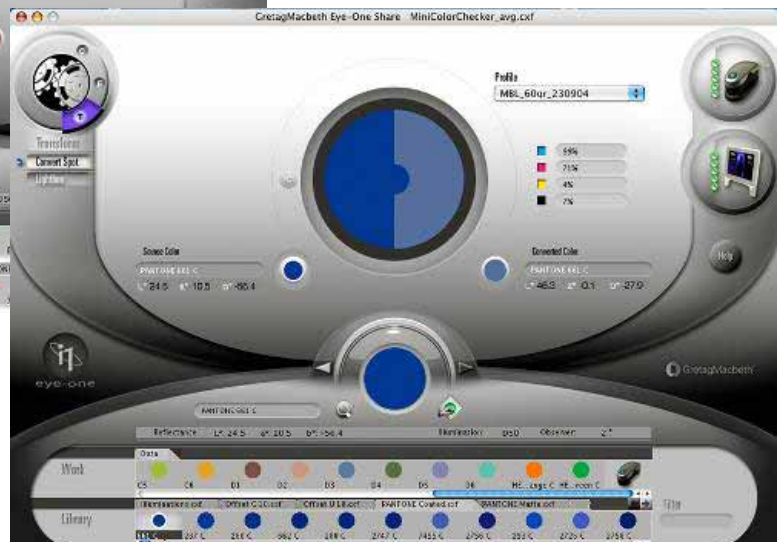
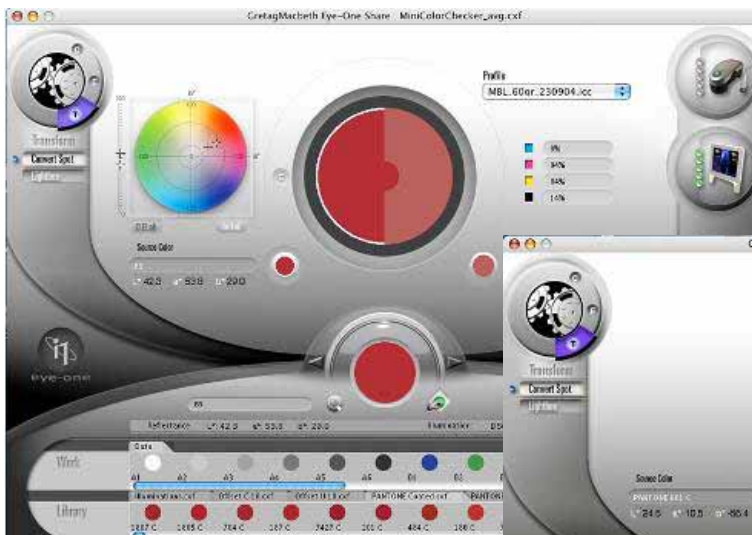
DESIGN  
PHOTO  
PREPRESS

# Eye-One Share 比對顏色



DESIGN  
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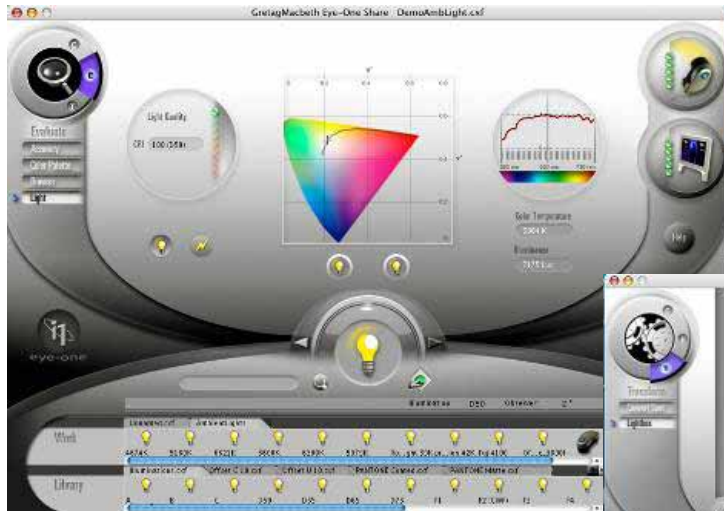
# ICC Based Color Conversion



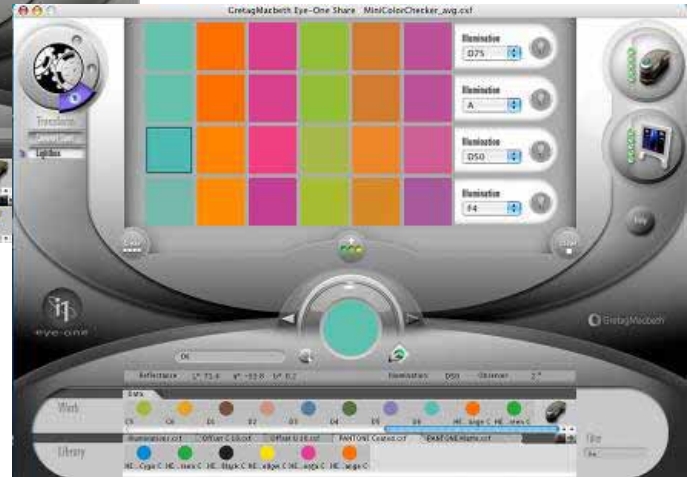


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# Light and Flash



測量閃光燈含和環境光源



專色的可變光箱(改變光源)



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# Export and use of spot colors

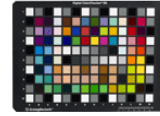


Step1: Export working library

Step2: Import Swatch



- 數位相機的導表
- 掃描器的導表
- 顯示器的導表
- 印表機的導表



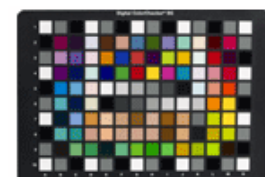
- 一般使用導表有
  - GretagMacbeth ColorChecker (24)
  - GretagMacbeth DC (237)
  - GretagMacbeth SG (140)
- 隨拍攝物體入鏡的導表
  - Kodak Q13, 寬8.5"
  - Kodak Q14, 寬14"
  - ColorChecker mini (24)



ColorChecker

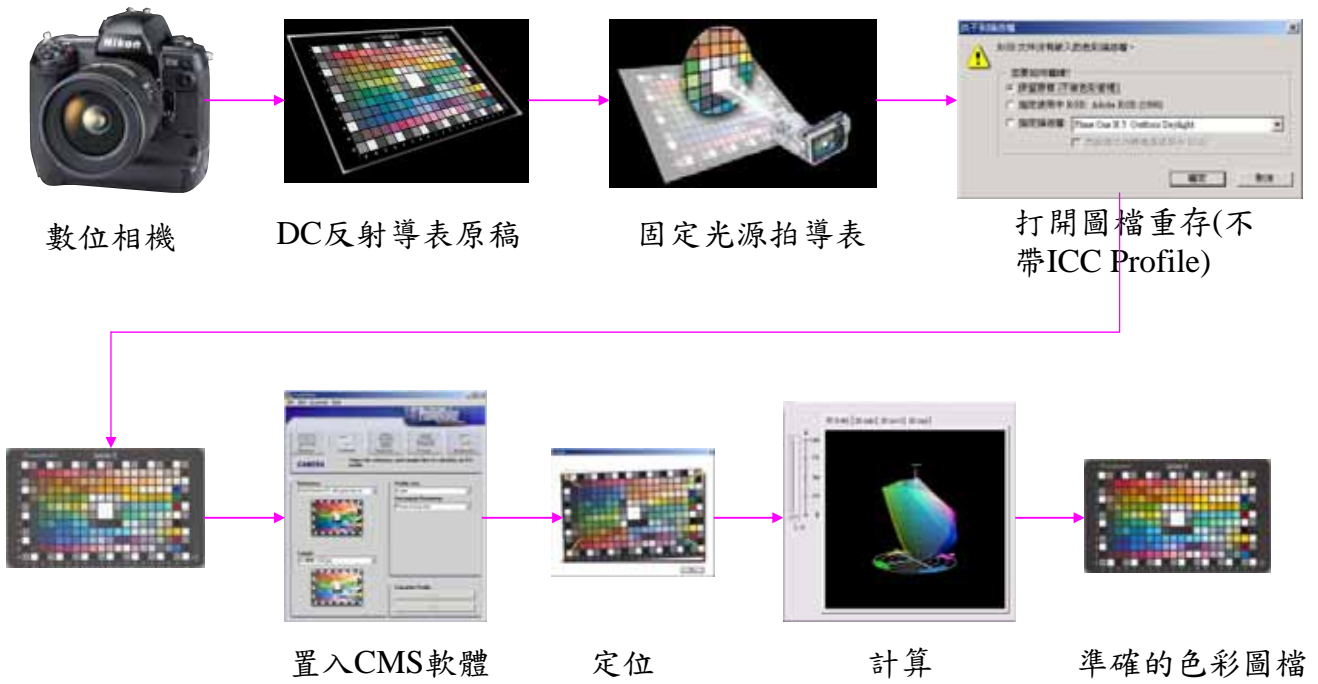


ColorChecker DC

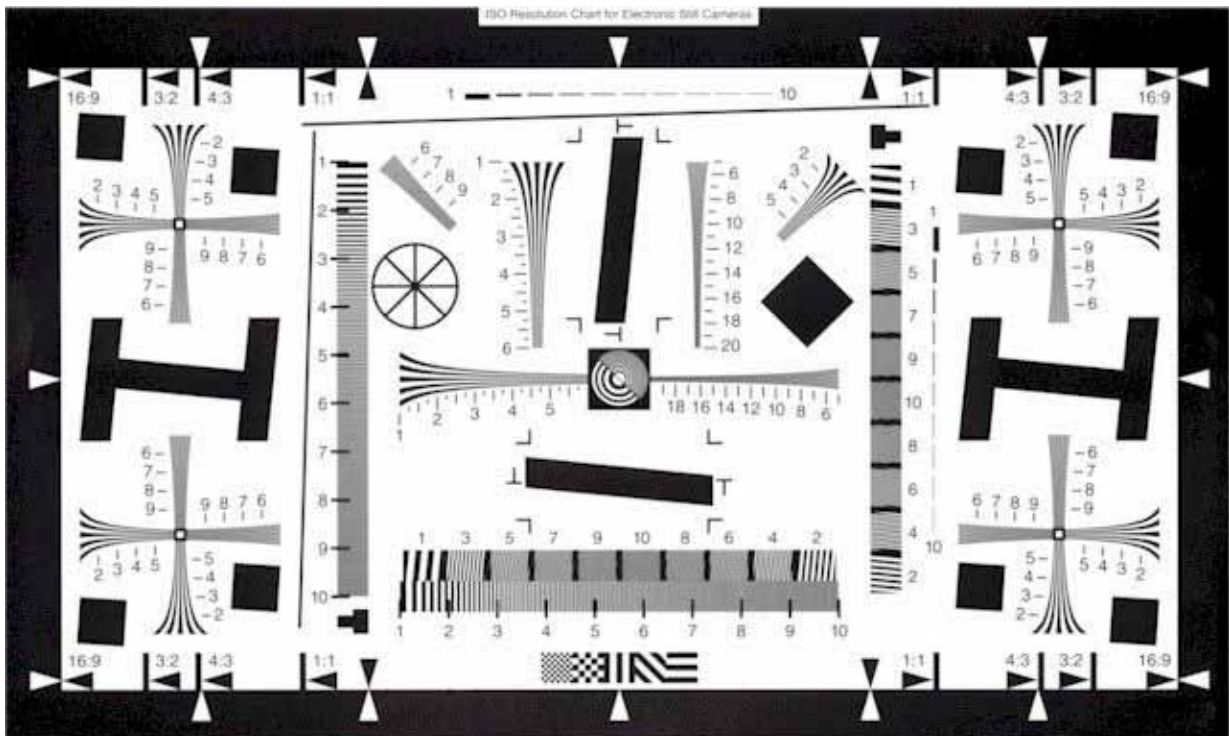


ColorChecker SG

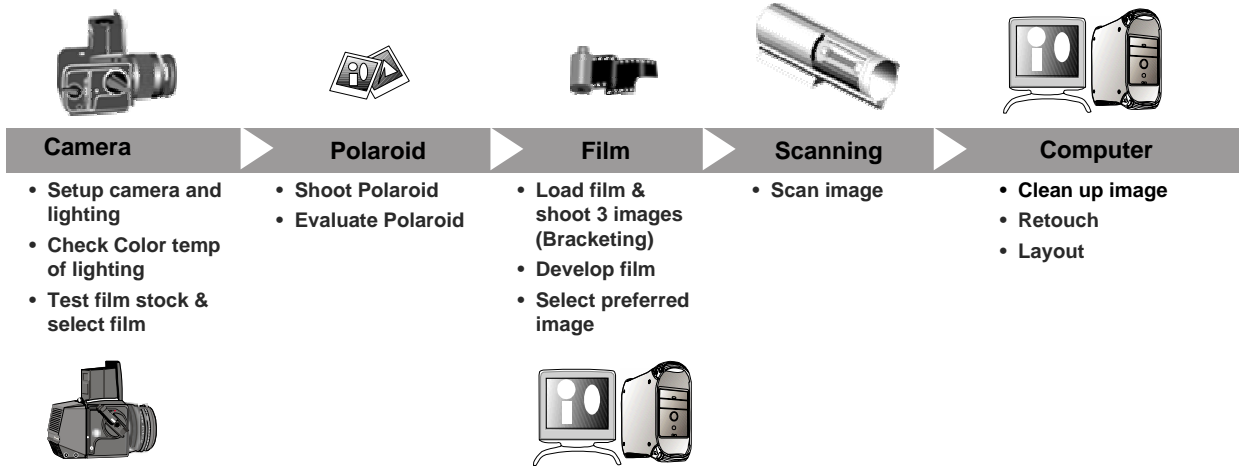
# 數位相機的色彩管理流程



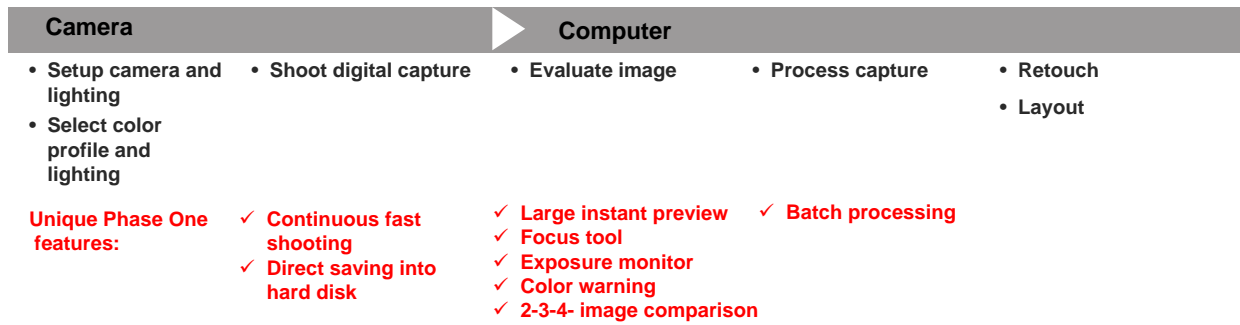
# 測定數位相機解像力(ISO12233WG18)



Conventional Photography



Phase One  
Direct Digital Imaging



- 設定RAW為所有相關合適的位置, 16bit, 需要RAW轉換器
- Jpg and Tiff, 所有設定完成, 8bit, 僅改變降低色彩



- 白平衡
  - 客製化白平衡
  - 色溫
  - 白平衡修正
- 色彩矩陣設定
  - Color Matrix 4 = AdobeRGB
  - 其他全都是 sRGB
  - 客製化色彩矩陣
- 處理參數
  - 階調曲線
  - 銳利度和對比度



- White Point (4221°, 5000°, 5500°...)
- White Balance (linearisation) with white balance card or gray card

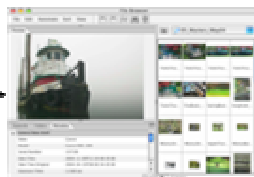


- 設定影像紀錄品質
  - RAW
  - RAW + JPEG
- RAW 影像處理
  - Digital Photo Professional
  - Adobe Camera RAW
- 校準相機 RAW
  - Images are color-converted on import
  - No ICC Color Profile necessary

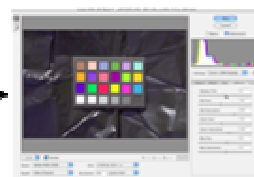
- Set Camera to RAW Capture
- Transfer Images to Computer
- Open in Photoshop File Browser
- Assign Working Space in ACR



RAW capture

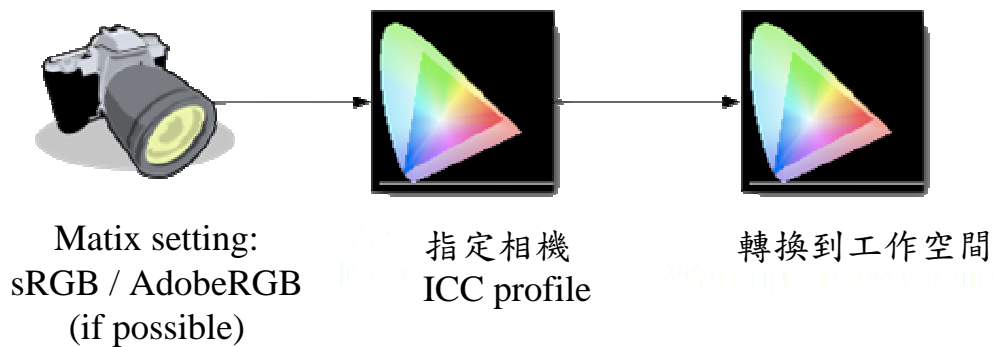


Open file  
browser

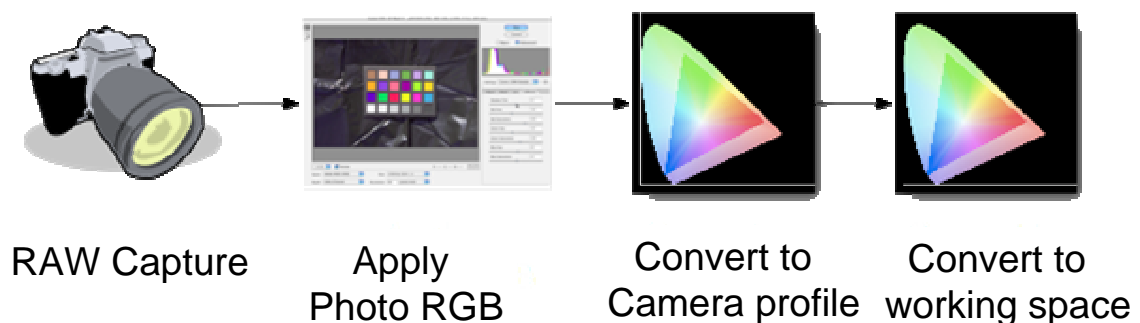


Assign working  
space in ACR

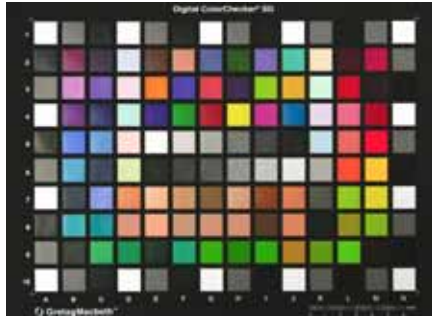
- Set Color Matrix on Camera
- Transfer Images to Computer
- Apply Camera ICC Color Profile
- Convert to Working Space Profile



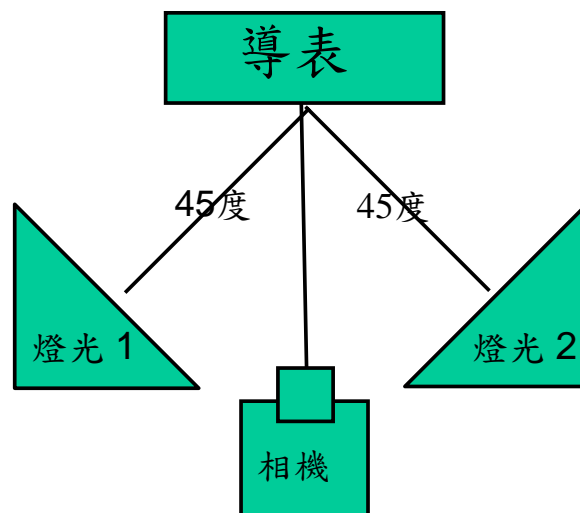
- Set Camera to RAW Capture
- Transfer Images to Computer
- Apply ProPhoto RGB in RAW Conversion Tool
- Convert to Camera Profile
- Convert to Working Space Profile



- 數位相機的測試導表
  - ColorChecker SG: 半光面, 最佳品質
  - ColorChecker DC: 舊導表, 需更新到SG
- 傳統類比相機 (也能夠用來做色彩描述檔, 但不甚理想)
  - Colorchecker 24: 好的第一步, 但不怎麼夠精確
  - Mini Colorchecker: 24格小尺寸版本

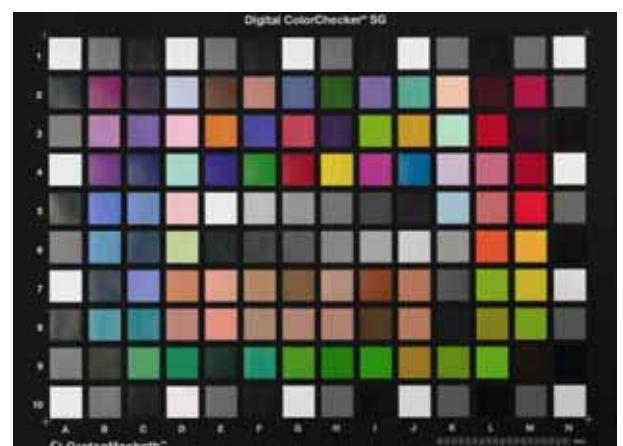


- 在標準的複製環境下拍攝測試導表
- 修正曝光





- 檢驗正確的數據
  - 白色塊: 210-245
  - 黑色塊: 低於20
  - 灰色: 少於 7 個階調不同 (從相近的16個灰色塊)



- Profilemaker 5
- i1 Match 3.6x



- 新工具給相機和CMYK印表機
- 筆記型電腦和投影機的新功能



- The profiling tool Profile Maker 5
- Professional Color Management tool for scanners, cameras, monitors as well as for RGB, CMYk, CMYk + Hexachrome +RedGreen output devices



- 拍攝和裁切



- 檢驗





## • 白點



## • 拍照作業



## • 特別色



- 拍攝測試導表
- 參照實際的多次練習
  - 在基礎內容的訓練
  - 在進階內容的訓練

