Esko Software Platform – June 2018

What is new in Color Pilot 18.0

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May 2018

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Color Pilot 18.0 - Agenda

- New Check Strategy tool
- Support for CxF/X-4
- New Metamerism function
- Support for SCTV
  - Equinox tint conversion according to the SCTV standard
- Miscellaneous new features
  - Check & Recalibrate migration (reset)
  - etc
Check strategy
Color Pilot 18.0 – Check Strategy

- Replacing the old **Check Strategy** tool from Color Engine Pilot

- Check Strategy= verification with a **chart**
  - Verification with a strip: job verification for contract approval
  - Verification with a chart: verification of the source profile simulation
Color Pilot 18.0 – Check Strategy

Check strategy flow

Profile creation  Check Strategy  Verification

Verification  Check & Recalibrate
Color Pilot 18.0 – Check Strategy

WRONG Check strategy flow

Don’t do a C&R immediately after the profile creation!
Color Pilot 18.0 – Check Strategy

Check Strategy principle

Target value
L: 60.6
A: -31
b: -44

Measured value
L: 59.2
A: -27
b: -42

Compare (= verification)
- ISO 12647-7:2016 Contract Proof
- ISO 12647-7:2007 Contract Proof

ISO 12647-7:2016 Contract Proof

Strategy Statistics

Average: 1.03 AE
Maximum: 3.13 AE
Maximum Best 95: 1.96 AE

Statistics per Ink

Other Statistics
Color Pilot 18.0 – Check Strategy

Performing a Check Strategy

Create a **Proofing** Color Strategy

Select the Color Strategy

- Right click > Check Strategy
- Bottom tool bar > Check Strategy icon

Select a proofing device

- Right click > Check Strategy
Color Pilot 18.0 – Check Strategy

- Performing a Check Strategy
  - Proof Overprint Chart (randomized)
    - CMYK profile: ISO 12642-2 chart (ECI2002 = 1485 patches)
    - Multi color profile: ISO 12642-2 chart extended with extra patches

CMYK source profile

CMYKOGV source profile
Color Pilot 18.0 – Check Strategy

Performing a Check Strategy

Measure Page 1
Color Pilot 18.0 – Check Strategy

- Performing a Check Strategy
- Check Measurements

View:
- Samples
- Measurements
Color Pilot 18.0 – Check Strategy

Performing a Check Strategy

- Check Measurements

**Contents / highlight:**
- Patches with above average dE
- Substrate
- Primaries
- Process Solids
- Control Strip
- CMY Neutrals
- Maximum dE
- Worst 5 Percent
- Outer Gamut:
  A Limited set of patches (226) to check if the proof gamut is sufficient large enough.
- CMYK patches:
  Only available in case of a CMYK+ source profile
Color Pilot 18.0 – Check Strategy

Performing a Check Strategy
- Check Measurements

Patch details (statistics)
Color Pilot 18.0 – Check Strategy

- Performing a Check Strategy
- Check Measurements

Strategy statistics + Tolerance values

- Set Tolerances:
Color Pilot 18.0 – Check Strategy

Performing a Check Strategy

Check Measurements : Set Tolerances

- ISO 12647-7:2016 > Default >> dE 2000 formula
- ISO 12647-7:2007 > Old standard >> CIELAB Delta E (Classic) formula
- Custom: Custom values for a Check Strategy session (can be saved in the preference!)

New tolerances for 2016:

- CMY Neutral Average:
- CMY Neutral Maximum:
- Primary Solids dE:
- Primary Solids dH:
Color Pilot 18.0 – Check Strategy

Performing a Check Strategy

Check Measurements : Set Tolerances

<table>
<thead>
<tr>
<th>Tolerance</th>
<th>Includes CMYK patches</th>
<th>Includes O(G)(V) patches</th>
</tr>
</thead>
<tbody>
<tr>
<td>Substrate dE</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Control Strip Average dE</td>
<td>V</td>
<td>X</td>
</tr>
<tr>
<td>Control Strip Maximum dE</td>
<td>V</td>
<td>X</td>
</tr>
<tr>
<td>CMY Neutral Average dCh</td>
<td>V</td>
<td>X</td>
</tr>
<tr>
<td>CMY Neutral Maximum dCh</td>
<td>V</td>
<td>X</td>
</tr>
<tr>
<td>CMY Neutral Average dH</td>
<td>V</td>
<td>X</td>
</tr>
<tr>
<td>Average CMYK dE</td>
<td>V</td>
<td>X</td>
</tr>
<tr>
<td>Average CMYK and Extended Gamut dE</td>
<td>V</td>
<td>V</td>
</tr>
<tr>
<td>Average Outer Gamut dE</td>
<td>V</td>
<td>X</td>
</tr>
</tbody>
</table>
## Color Pilot 18.0 – Check Strategy

### Performing a Check Strategy

#### Check Measurements : Set Tolerances

<table>
<thead>
<tr>
<th></th>
<th>V</th>
<th>V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum dE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum Best 95% of CMYK dE</td>
<td>V</td>
<td>X</td>
</tr>
<tr>
<td>Primary Solids dE</td>
<td>V</td>
<td>X</td>
</tr>
<tr>
<td>Primary Solids dH</td>
<td>V</td>
<td>X</td>
</tr>
<tr>
<td>Primaries Maximum Tone Value Difference %dT</td>
<td>V</td>
<td>X</td>
</tr>
</tbody>
</table>
Color Pilot 18.0 – Check Strategy

Performing a Check Strategy

Check Measurements

Measurement info:
- Predicted dE: A theoretical value, either an exact value or “Less than x.xx”. Controlled via “Set Tolerances”.
- Status: Green check or Red Cross. Hover over the symbol for more info.

The check for this patch failed on the Maximum Best 95% of CMYK statistic (6.0 ΔE).
Color Pilot 18.0 – Check Strategy

Performing a Check Strategy

- Check Measurements

Check strategy status + Report
- Green or Red status
- Save report: PDF report containing statistics
  Results NOT added to the device history / color strategy
Performing a Check Strategy

Check Measurements
Support for CxF/X-4
Color Pilot 18.0 – CxF/X-4

- **CxF** = **Color Exchange Format**
  - A file format for digital color communication
  - Developed by X-rite: [https://www.xrite.com/page/cxf-color-exchange-format](https://www.xrite.com/page/cxf-color-exchange-format)

- XML structure
Color Pilot 18.0 – CxF/X-4

- CxF versions:
  - CxF1, CxF2 and CxF3

- 2015: ISO TC 130 committee adopts CxF format as an industry standard > ISO 17972
  - ISO 17972-1:2015 > Relationship to CxF3 (CxF/X)
    For colour and process control data
  - ISO 17972-2:2016 > Scanner target data (CxF/X-2)
    For target input values, colour and process control data relating to scanner targets
  - ISO 17972-3:2017 > Output target data (CxF/X-3)
    For target input values, colour and process control data relating output targets for printers
  - ISO 17972-4:2018 > Spot colour characterisation data (CxF/X-4)
    For spectral measurement data of inks to provide a means to characterise spot colour inks
Color Pilot 18.0 – CxF/X-4

- CxF/X-4 Spot color characterization

- CxF/X-4 conformance levels (allowed methods of spot color communication)

<table>
<thead>
<tr>
<th>Type of measurement</th>
<th>CxF/X-4</th>
<th>CxF/X-4a</th>
<th>CxF/X-4b</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Image" /></td>
<td>Required</td>
<td>Required</td>
<td>Required</td>
</tr>
<tr>
<td><img src="image" alt="Image" /></td>
<td>3 minimum, 11 recommended</td>
<td>, 3 minimum, 11 recommended</td>
<td>No requirement</td>
</tr>
<tr>
<td><img src="image" alt="Image" /></td>
<td>3 minimum</td>
<td>No requirement</td>
<td>No requirement</td>
</tr>
</tbody>
</table>
Color Pilot 18.0 – CxF/X-4

**CxF/X-4 structure**

```xml
<?xml version="1.0" encoding="UTF-8"?>
<cc:CxF xmlns:cc="http://colorexchangeformat.com/CxF3-core"
       xmlns:sic="http://colorexchangeformat.com/CxF3-SpotInkCharacterisation"
       xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <cc:FileInfo>
    <cc:Creator>Esko Color Engine</cc:Creator>
    <cc:CreationDate>2018-04-11T12:03:28+01:00</cc:CreationDate>
  </cc:FileInfo>
  <cc:Resources>
    <cc:ObjectCollection>
      <cc:Object ObjectType="Standard"
             Name="1505ac"
             Id="A0000">
        <cc:CreationDate>2018-04-11T12:03:28+01:00</cc:CreationDate>
        <cc:ColorValues>
          <cc:ReflectanceSpectrum StartX=380 />
          <cc:ColorSpecification="CSD50-2">0.033 0.038 0.043 0.042 0.034 0.032 0.032 0.034 0.034 0.042 0.045 0.051 0.057 0.062 0.068</cc:ColorSpecification>
        </cc:ColorValues>
      </cc:Object>
      <cc:Object ObjectType="Standard"
             Name="1505ac_090"
             Id="A0001">
        <cc:CreationDate>2018-04-11T12:03:28+01:00</cc:CreationDate>
        <cc:ColorValues>
          <cc:ReflectanceSpectrum StartX=380 />
          <cc:ColorSpecification="CSD50-2">0.033 0.038 0.043 0.042 0.034 0.032 0.032 0.034 0.034 0.042 0.045 0.051 0.057 0.062 0.068</cc:ColorSpecification>
        </cc:ColorValues>
      </cc:Object>
    </cc:ObjectCollection>
  </cc:Resources>
</cc:CxF>
```
Color Pilot 18.0 – CxF/X-4

CxF/X-4 structure

```xml
<co1:Color xmlns="http://colorschemeformat.com/CxF3-SpotInkCharacterization"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <co1:Creator>Esko Color Engine</co1:Creator>
  <co1:CreationDate>2018-04-11T12:03:28+01:00</co1:CreationDate>
  <co1:Description>CxF/X</co1:Description>
  <co1:FileInformation>
    <co1:Version>1.0</co1:Version>
    <co1:CreationTool>ESKO</co1:CreationTool>
    <co1:FileName>CxF/X_18004131.CxF</co1:FileName>
    <co1:SizeInBytes>132000</co1:SizeInBytes>
    <co1:Pages>54</co1:Pages>
    <co1:Description>CxF/X-4 structure</co1:Description>
  </co1:FileInformation>
  <co1:Resources>
    <co1:ColorSpecificationCollection>
      <co1:ColorObjectCollection>
        <co1:ColorObjectType>SpotInkCharacterization</co1:ColorObjectType>
        <co1:SpotInkCharacterization SvgInkName = "150Sec" SubstrateName = "EnsoSubstrate" SubstrateType = "Other">
          <co1:MeasurementSet Background = "Substrate">
            <co1:Measurement ObjectRef = "A0001" TintLevel = "100.000000%" />
            <co1:Measurement ObjectRef = "A0002" TintLevel = "70.000000%" />
            <co1:Measurement ObjectRef = "A0003" TintLevel = "50.000000%" />
            <co1:Measurement ObjectRef = "A0004" TintLevel = "40.000000%" />
          </co1:MeasurementSet>
        </co1:ColorMeasurementSet>
      </co1:ColorObjectCollection>
      <co1:ColorObjectCollection>
        <co1:ColorObjectType>Process Grey</co1:ColorObjectType>
        <co1:ColorObjectType>Process Black</co1:ColorObjectType>
      </co1:ColorObjectCollection>
    </co1:ColorSpecificationCollection>
  </co1:Resources>
</co1:Color>
```
# Color Pilot 18.0 – CxF/X-4

CxF support in Color (Engine) Pilot

https://wiki.esko.com/display/KBA/KB90866172%3A+Color+Engine+%28Pilot%29+-+Which+versions+of+CxF+files+are+supported

<table>
<thead>
<tr>
<th>CxF version</th>
<th>CxF3</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Function</td>
<td>Import</td>
<td>Export</td>
<td>Import</td>
<td>Export</td>
</tr>
<tr>
<td>Color Engine Pilot 14.1.4</td>
<td>v</td>
<td>v</td>
<td>v(*)</td>
<td>x</td>
</tr>
<tr>
<td>Color Pilot 16.1.1</td>
<td>v</td>
<td>v</td>
<td>v(*)</td>
<td>x</td>
</tr>
<tr>
<td>Color Pilot 18.0</td>
<td>v</td>
<td>v</td>
<td>v</td>
<td>v</td>
</tr>
</tbody>
</table>

(*) Tint & overprint data imported as single measurement inks!
Color Pilot 18.0 – CxF/X-4

- CxF export behavior of Color (Engine) Pilot
  - Color Engine Pilot 14.1.x > CxF3 format (*.cxf)
  - Color Pilot 16.1.1 > CxF3 Files (*.cxf)
Color Pilot 18.0 – CxF/X-4

- CxF export behavior of Color (Engine) Pilot
  - Color Pilot 18.0 > CxF/X-4 Files (*.cxf)
  - CxF/X-4 + tints on 50% black!
Metamerism function
What is metamerism?

Metamerism is a phenomenon that occurs when two colors appear to match under one lighting condition, but not when the light changes = metameric pair.

Whenever two physical samples have curves that cross at least three times, they are a **metameric pair**.
Color Pilot 18.0 – Compare inks: metamerism function

- Compare Inkt tool: Cogwheel icon > Show dE averaged across illuminants
- Requirements: 2 spectral patches
Support for SCTV
Color Pilot 18.0 – Support for SCTV

- SCTV= Spot Color Tone Value
  - A new metric (formula) to “linearize” spot colors (ISO 20654)
  - End result: approximately uniform visual spacing of the tones between the solid and the paper

- Requirements: **spectral** or **Lab** data of the substrate, solid and the tint

SCTV curve for a spot color printed in offset

Top: “a default” output on offset / Bottom: SCTV compensation curve applied
Color Pilot 18.0 – Support for SCTV

- SCTV= default metric for Expanded Gamut and Spot Inks:
  Preferences > General > Default Formulas

- Places were SCTV metric is used

![Color Pilot 18.0 – Support for SCTV](image)
Color Pilot 18.0 – Support for SCTV

- Places were SCTV metric is used: SCTV is used by default for the ECG inks when synchronizing an **Equinox profile** towards **G7**
- Equinox strategy: Conversion Settings > Linearize Tints Using SCTV
Miscellaneous
Color Pilot 18.0 – Check & Recalibrate

Check & Recalibrate: Reset Recalibration
Color Pilot 18.0 – Refine Spot Colors button

- Refine Spot Colors button removed from the bottom tool bar
Color Pilot 18.0 – Simplified profile explorer

The profile types shown in the profiles explorer have been simplified.
Color Pilot 18.0 – Only use CMYK

- For customers who want to create color accurate **CMYK** proofs
  - OGV inks not used because they are considered unstable
  - Requirements: HT driver

1. Color Pilot > Edit > Preferences > General > Extra: “enable using multichannel proofers as a CMYK device”
2. Right click proofer device: “**Only use CMYK**”
Color Pilot 18.0 – Mark as CMYK

- 5 overprint pages: 5392 patches!