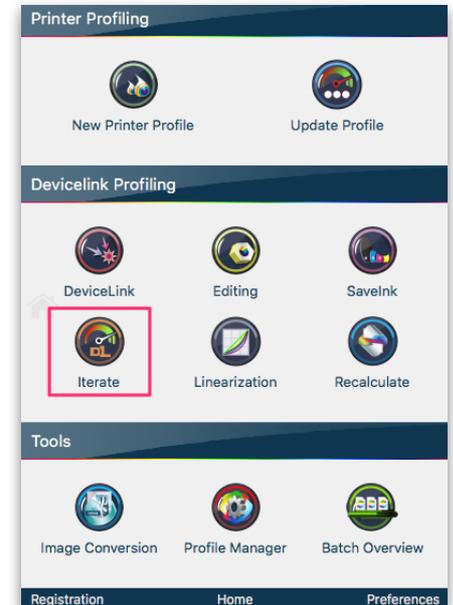


## DeviceLink Iteration

**DeviceLink Iteration** is a new CoPrA module which is unlocked by a DeviceLink license.

### Basic Principle

An existing CoPrA DeviceLink profile can be optimized based on measured color values by using a test chart of your choice (can be created with **ColorAnt/Custom Chart**). The test chart needs to be converted using the original DeviceLink profile and printed on the target printer (must correspond to the target profile). The measured color values are then used to improve the conversion in order to achieve lower color differences and a more accurate reproduction of the source color space. Iteration is therefore particularly useful in proofing situations with absolute or relative colorimetric rendering intents. Perceptive rendering intents can also be used as a special feature of DeviceLink iteration in CoPrA. The iteration calculates a new DeviceLink profile based on the original DeviceLink profile and the measured values, containing the same settings as the original DeviceLink. The new profile can be reinserted for iteration until the desired result is achieved.



### Notes:

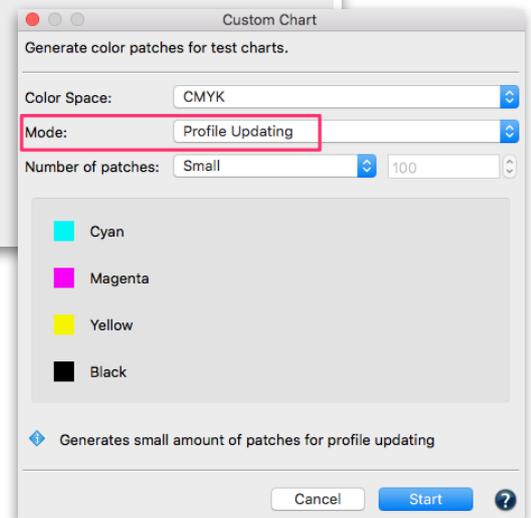
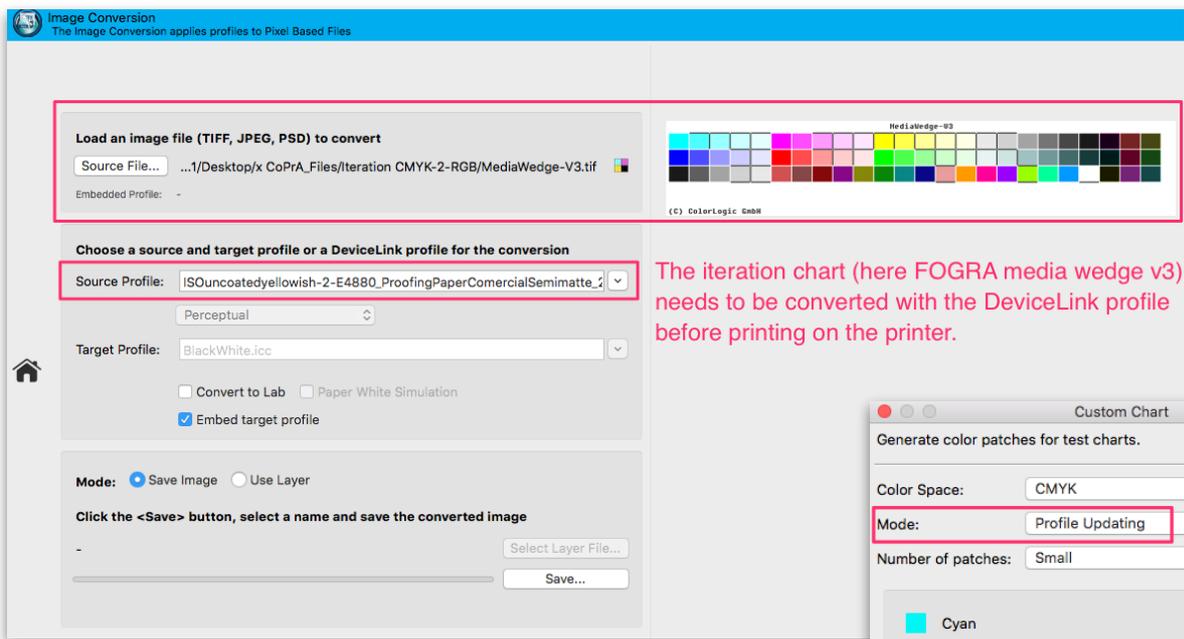
- The test chart must match the color space of the source profile from the DeviceLink.
- Out-of-gamut colors of the original color space cannot be improved.
- In proofing situations, the gamut of the target color space ought to be larger than that of the source color space, which makes iteration particularly interesting for DeviceLink profiles in proofing applications.
- Iterations cannot be repeated arbitrarily due to fluctuations in print output, print material and the reproducibility of measuring instruments. More than 2-3 iterations are usually not necessary and not recommended.
- When optimizing a DeviceLink which uses a perceptive rendering intent, problems can arise in shadow areas due to potential print fluctuations.
- Only DeviceLink profiles whose source and target profiles are available and which are referenced in the profile can be iterated. Since references to these profiles are present in CoPrA profiles, as opposed to third-party DeviceLinks, only CoPrA DeviceLinks can be iterated.
- With a DeviceLink and a Multicolor license Multicolor DeviceLinks can be iterated, too.

### Procedure

1. Select **Iteration** in the sidebar or **DeviceLink Iteration** in the **Navigation** menu.
2. Select the DeviceLink profile in the drop-down menu that you would like to iterate. Make sure that both the source and target profiles used in the DeviceLink are available on your computer in the ICC profile folder of your operating system, as CoPrA needs them to calculate the iterated profile.

**Note:** All settings made in the original DeviceLink profile are also applied to the iterated profile. Thus, the **Rendering Intent** as well as the **Exceptions** and the **Color Generation** will be set exactly as in the original profile. For example, if you have selected an exception to preserve 100% of the primaries, the color reproduction of the primaries will hardly improve because this is exactly what the exception prevents. So be careful when creating or selecting the DeviceLink profile to be iterated.

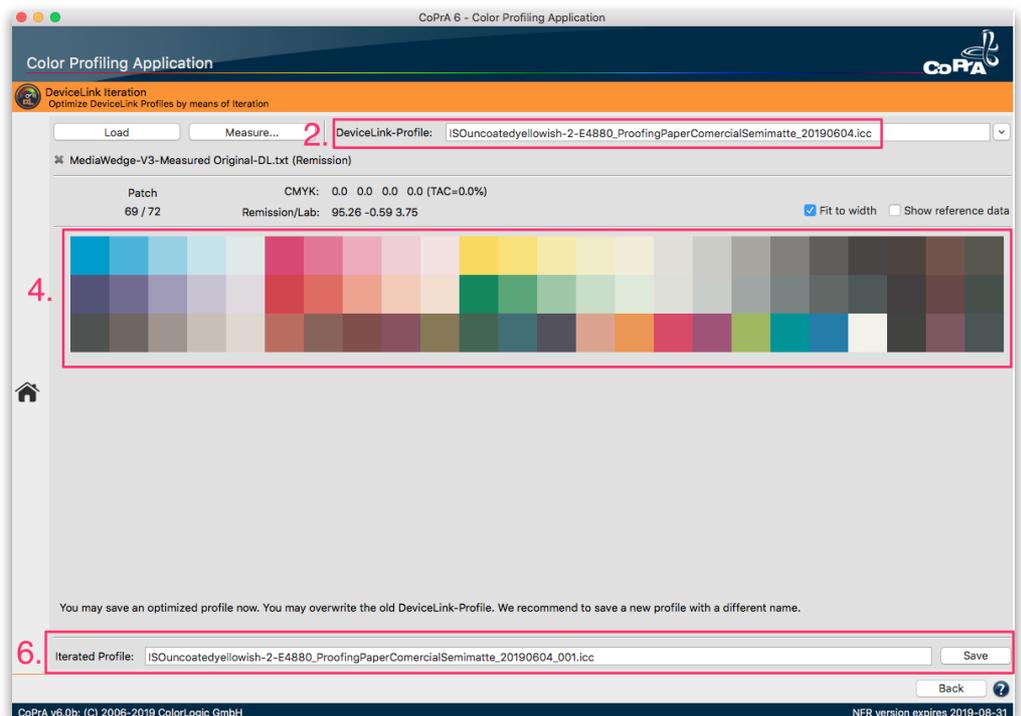
- Convert the test chart to be used for iteration with the DeviceLink profile and print it on the printer using the same settings as for the profiling test chart for this printer. Convert the test chart using CoPrA's **Image Conversion** tool.



**Note:** Use a test chart that contains the colors you would like to optimize. Typically, test charts with few color patches will suffice, but those patches must reflect the colors to be optimized. Therefore, using large profiling test charts is not required. Instead of using large test charts, use charts that can also be used to update profiles (see **ColorAnt/Custom Chart** tool). The color space of the test chart must correspond to the color space of the source profile of the DeviceLink.

- Measure the printed test chart, save the measurement data and drag-and-drop it onto the window.
- CoPrA suggests a profile name when the source and target profiles are available. The **Rendering Intent**, **Exceptions** and **Color Generation** are taken from the original DeviceLink profile, so settings cannot be selected for profile creation.
- Click **Save** to calculate the new DeviceLink profile and save it in the ICC profile folder.

**Note:** The newly created DeviceLink will have a more accurate color rendering for in-gamut colors compared to the original DeviceLink profile. You can now use it in exactly the same way as the original one or use it for further iterations.



7. If you would like to further optimize the DeviceLink, proceed as described above. However, select the previously iterated DeviceLink instead of the original one. Now convert the original test chart with the iterated DeviceLink (do not take the already converted test chart from point 3!) and use the measurement data of this printout to calculate a further optimized DeviceLink profile.

### Verifying the optimization

**ColorAnt** can be used to verify a successful optimization. First create a "Lab Reference" to compare the measured values of the printouts to the values of the DeviceLinks. Use the **ICC Transformation** tool to create the Lab reference values based on the device values (reference values) of the original test chart, and the source profile and the rendering intent of the DeviceLink. These Lab reference values now serve as comparison values after each application of the iterated DeviceLinks on your test chart. Compare the measurements of the iteration with the "Lab Reference" using the **Compare** tool in ColorAnt. You will notice that in-gamut colors of the iterated DeviceLink are closer to the Lab reference than those of the original DeviceLink.

