Advanced Color Management workflow for InkJet applications

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High-End **Color Management Solutions**

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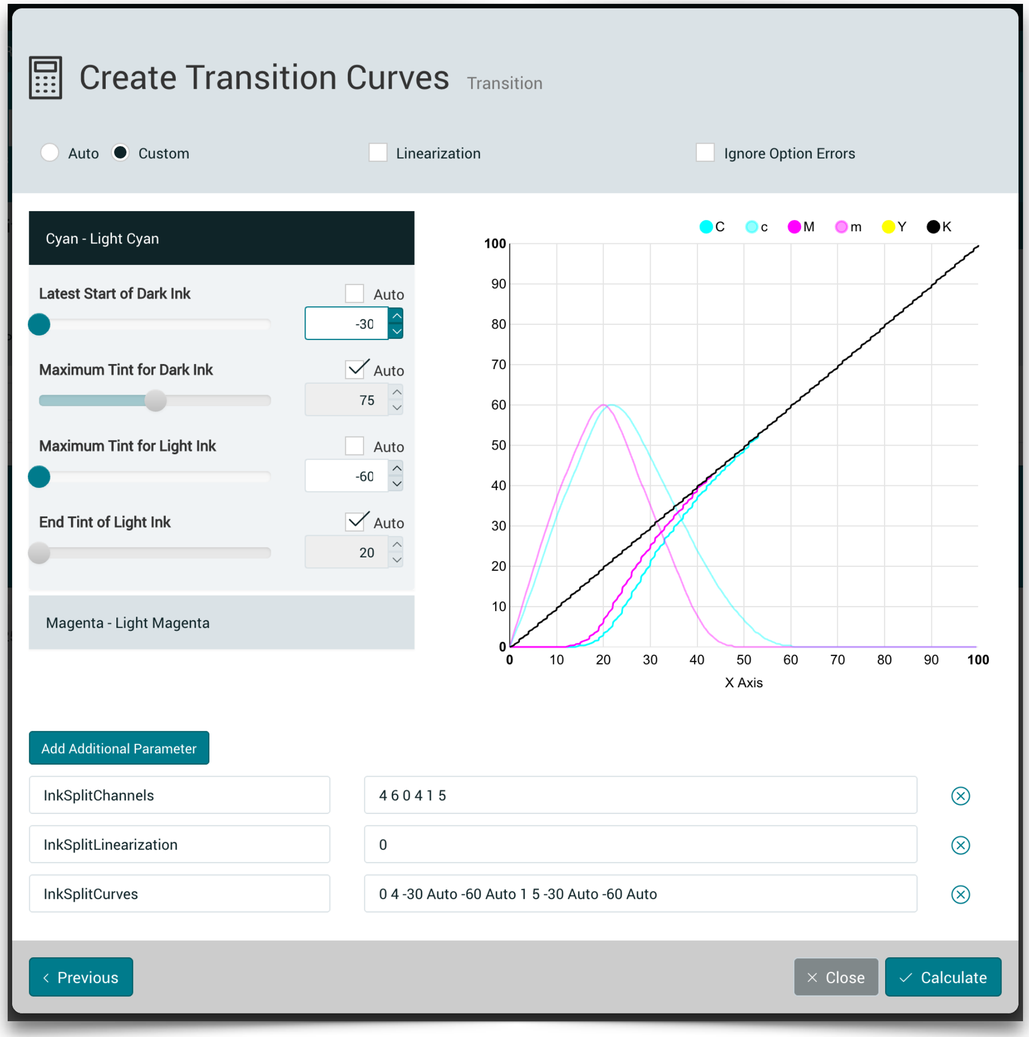
GENERAL CHALLENGES

Challenges of Color Management and Color Conversion in Ink Jet printing

- What factors make color management complex?
- Where in the process will it be problematic?
- What could a high quality color management workflow for inkjet look like?
- How can spot colors be printed in high accuracy with process colors?
- Considerations and solutions using the example of the Durst color management workflow

INK**SPLITTING**

- Splitting the *logical* channels (e.g. CMYK) to the *real ink* channels used from the printer (e.g. CcMmYK)
- Lighter areas in images/graphics shall use the light inks and darker areas the dark inks
- Good transition between light and dark inks is crucial for nice and smooth gradations
- Requests: Ink savings, take color acceptance into account, avoid peppering effect,…
- Often RIPs are missing controls for this or they are difficult to handle



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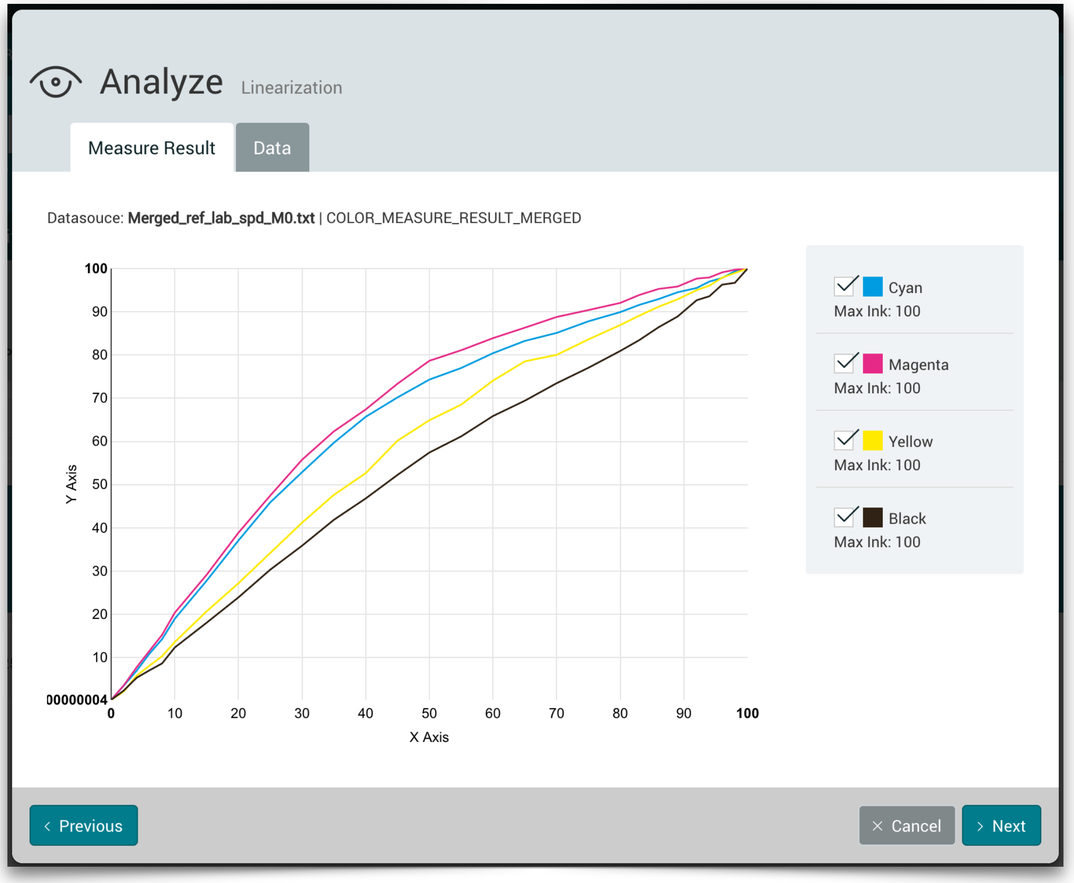
LINEARIZING

- Not linearized raw curves are often bumpy and have way to high dot gain
- Adjustments of the curves are always needed to avoid the ICC profile having to do too much work
- Often a channel wise ink limit is necessary
- Calculated linearization curves should be smoothed to avoid over compensation
- The entire color management should be in 16 bit



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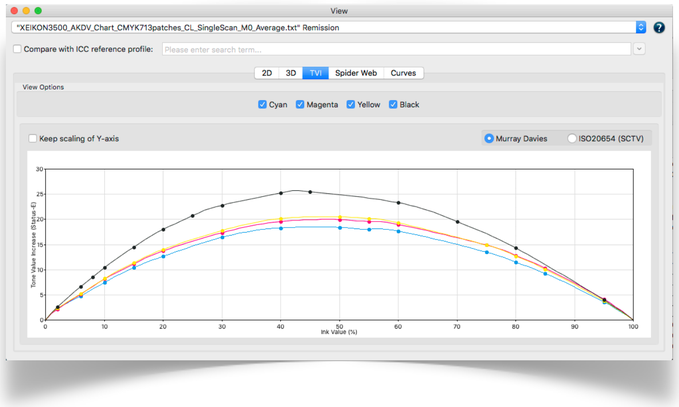
LINEARIZING

- Colorimetric linearizing (ISO 20654 - SCTV) is much better suited for ink jets than density based methods



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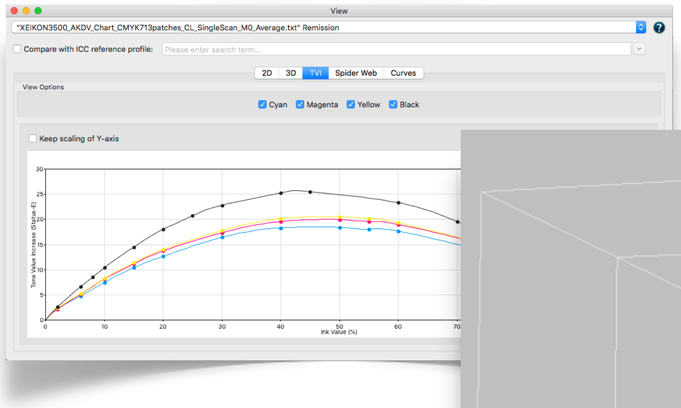
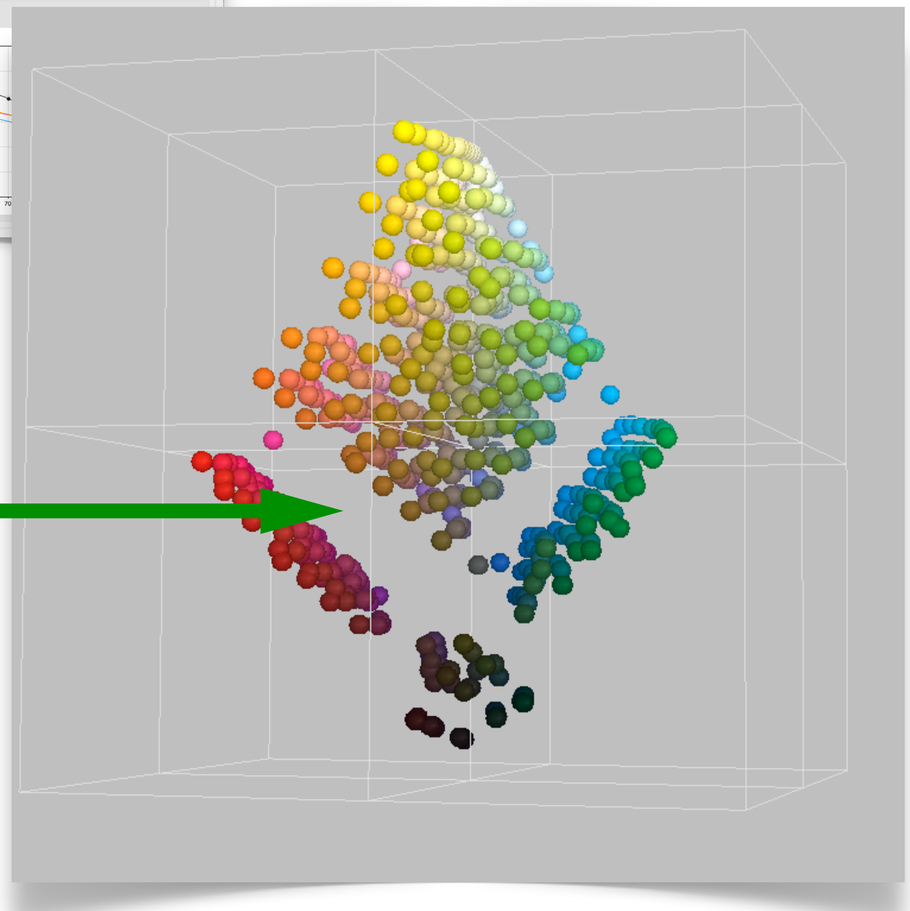


Big holes in the gamut due to density based linearization



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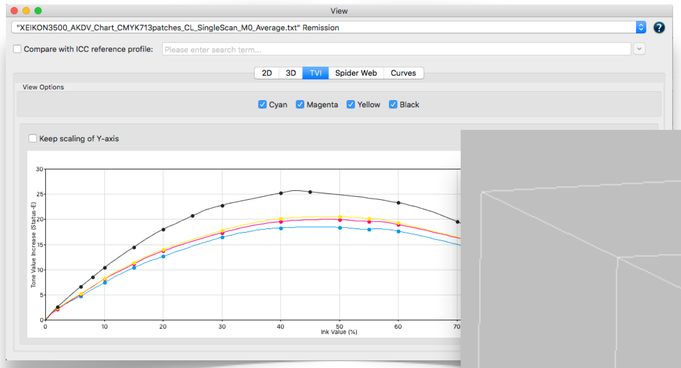

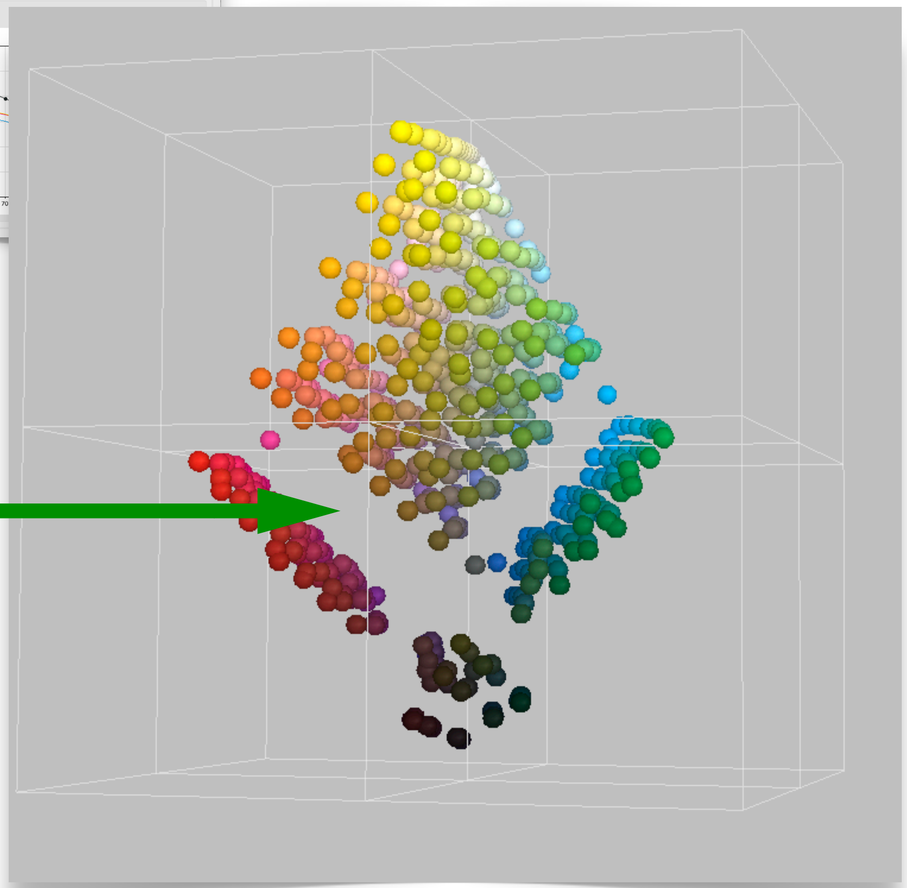

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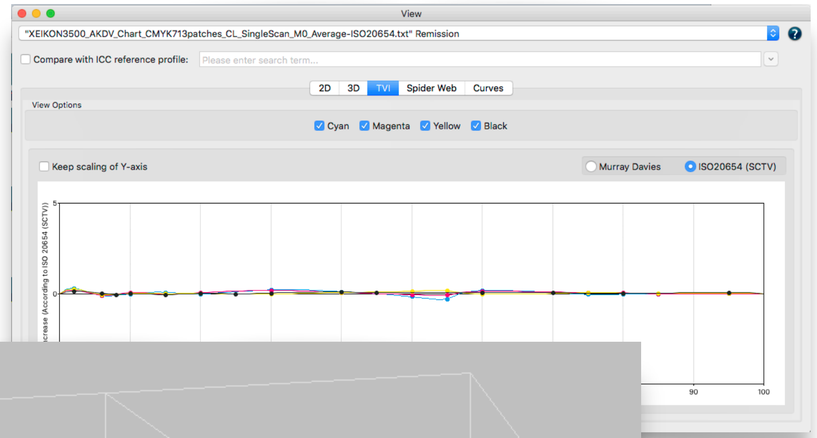

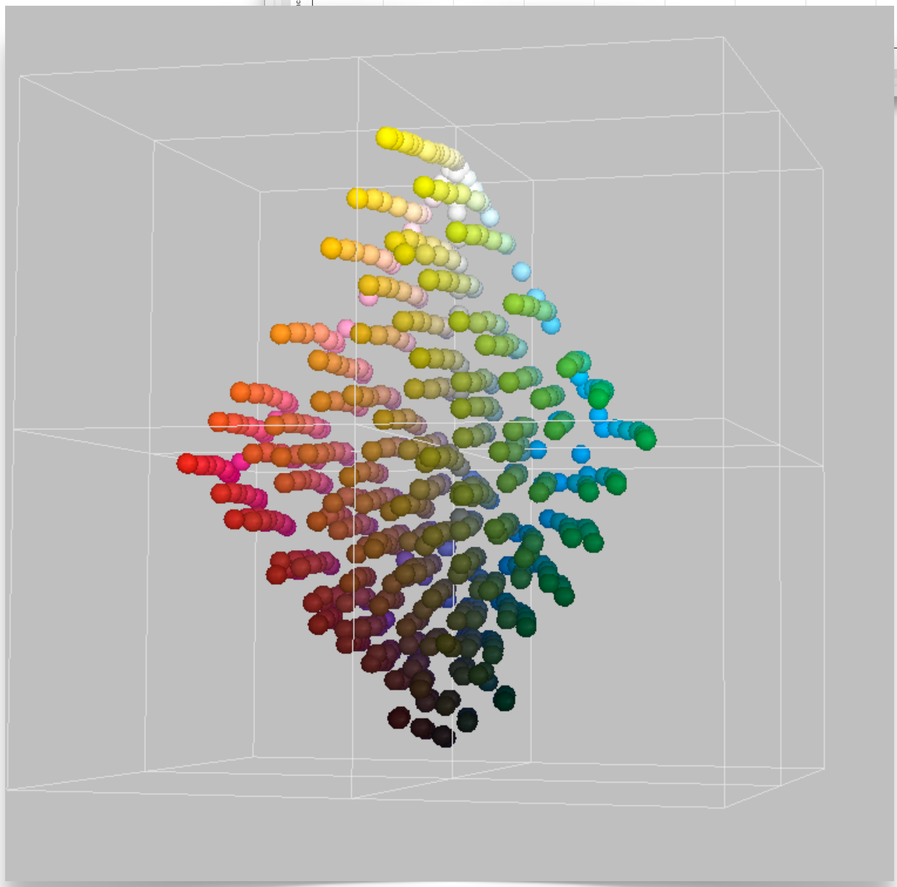

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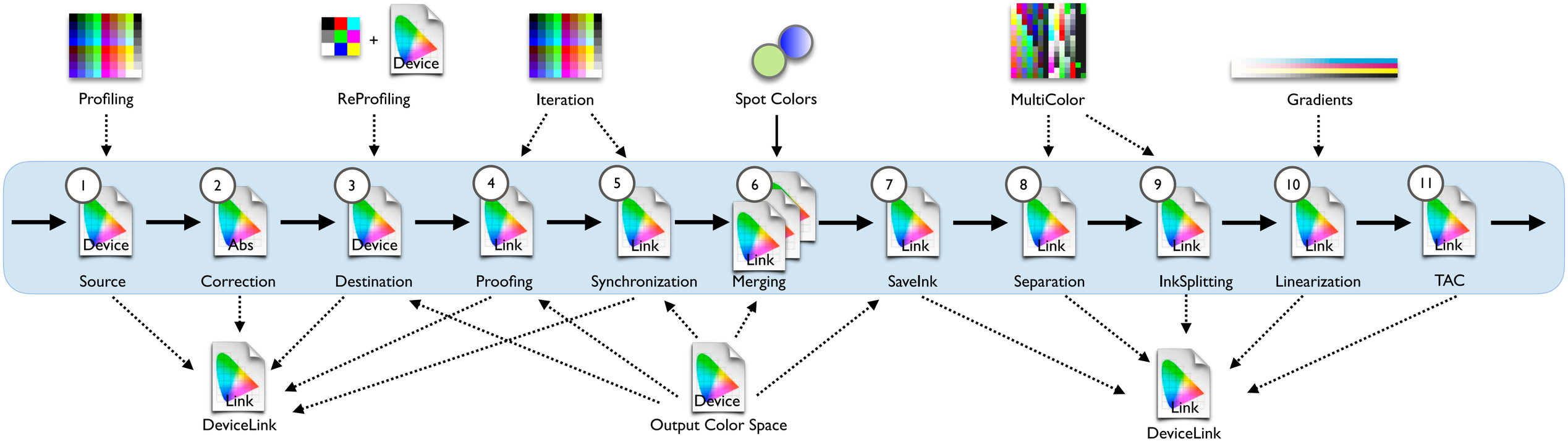
COMPLETE COLOR MANAGEMENT WORKFLOW



- This view shows the possible color management steps for one input color space
- Multiple input color spaces will typically be merged after step 3
- Many components are optional and may only be necessary for very high requirements
- Some steps (e.g. 9,10,11) may be conducted in a different order

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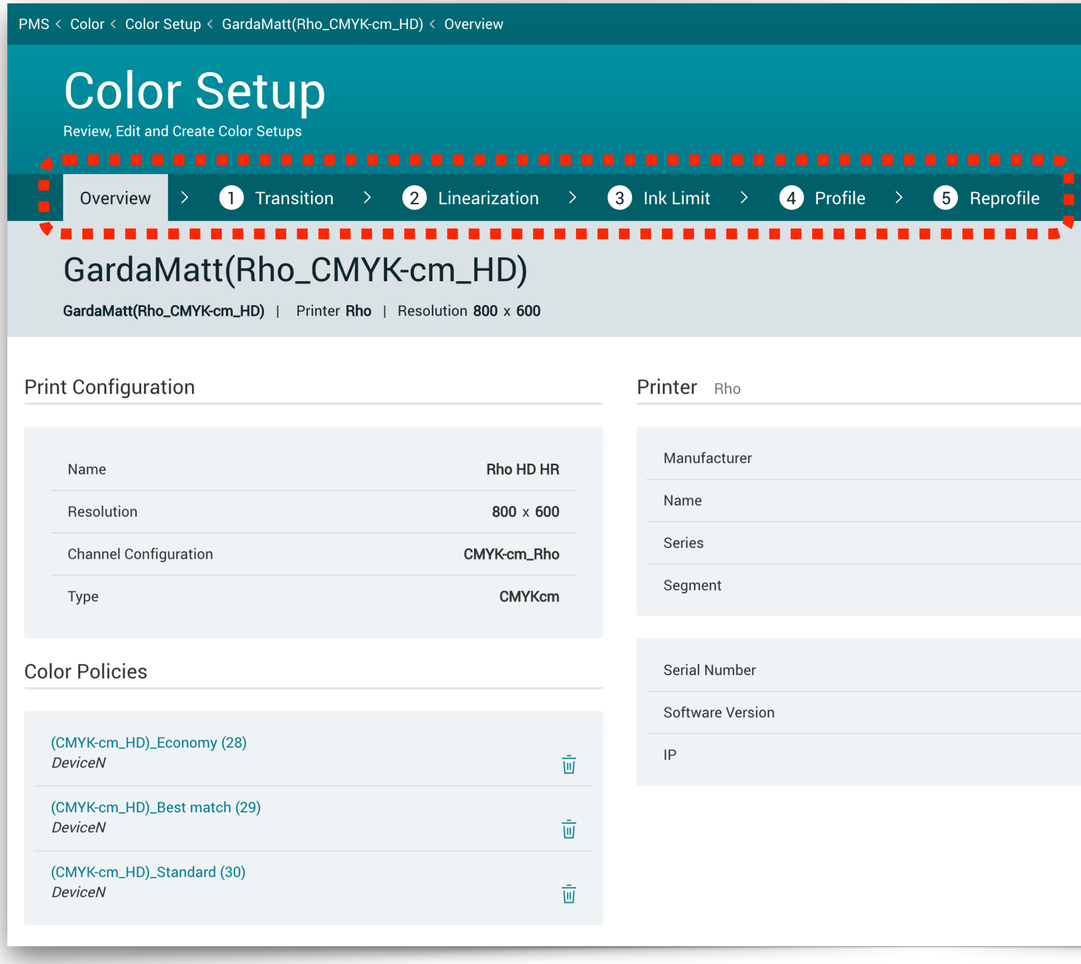
OVERVIEW: DURST WORKFLOW*

- Calibration and profiling is done in a Wizard like user interface
- Transition/Linearizing – Ink Limiting – Profiling – Reprofiling
- Complexity is minimized with a straight forward user interface and logical steps
- Transition and linearization can be done in one or two steps
- The ColorLogic CMM combines all steps in one link table which improves speed and accuracy



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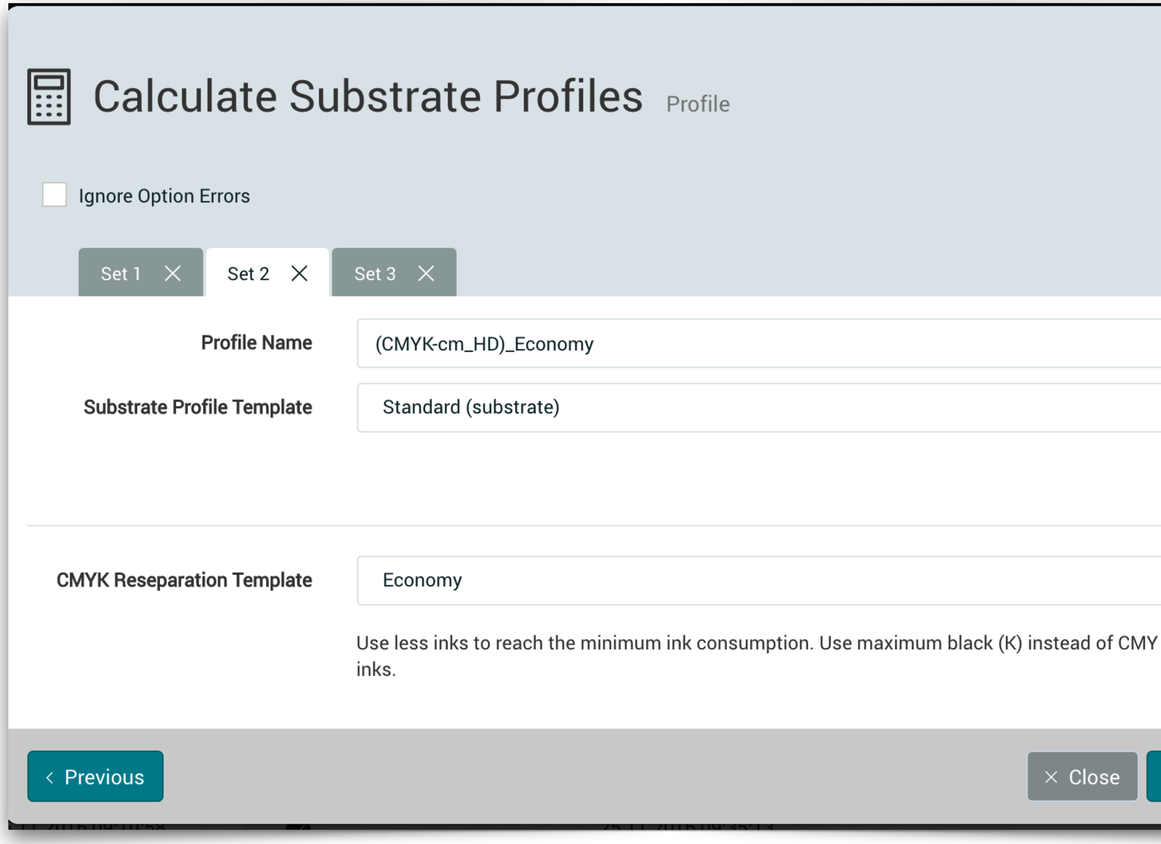
* The Durst Workflow is available for label, textile and corrugated applications

OVERVIEW: DURST WORKFLOW

- From one test chart measurement multiple profiles can be generated
- All calculations are based on spectral color data
- Ink Consumption: use the most beneficial ink amount and separations settings without scarifying spot color mapping
- CMYK or CMYK-OVG: use low priced ink sets for a job as the base inks are usually less expensive than additional inks
- Adjust the gray balance according to clients taste
- Manage the many possible profiles for a given workflow



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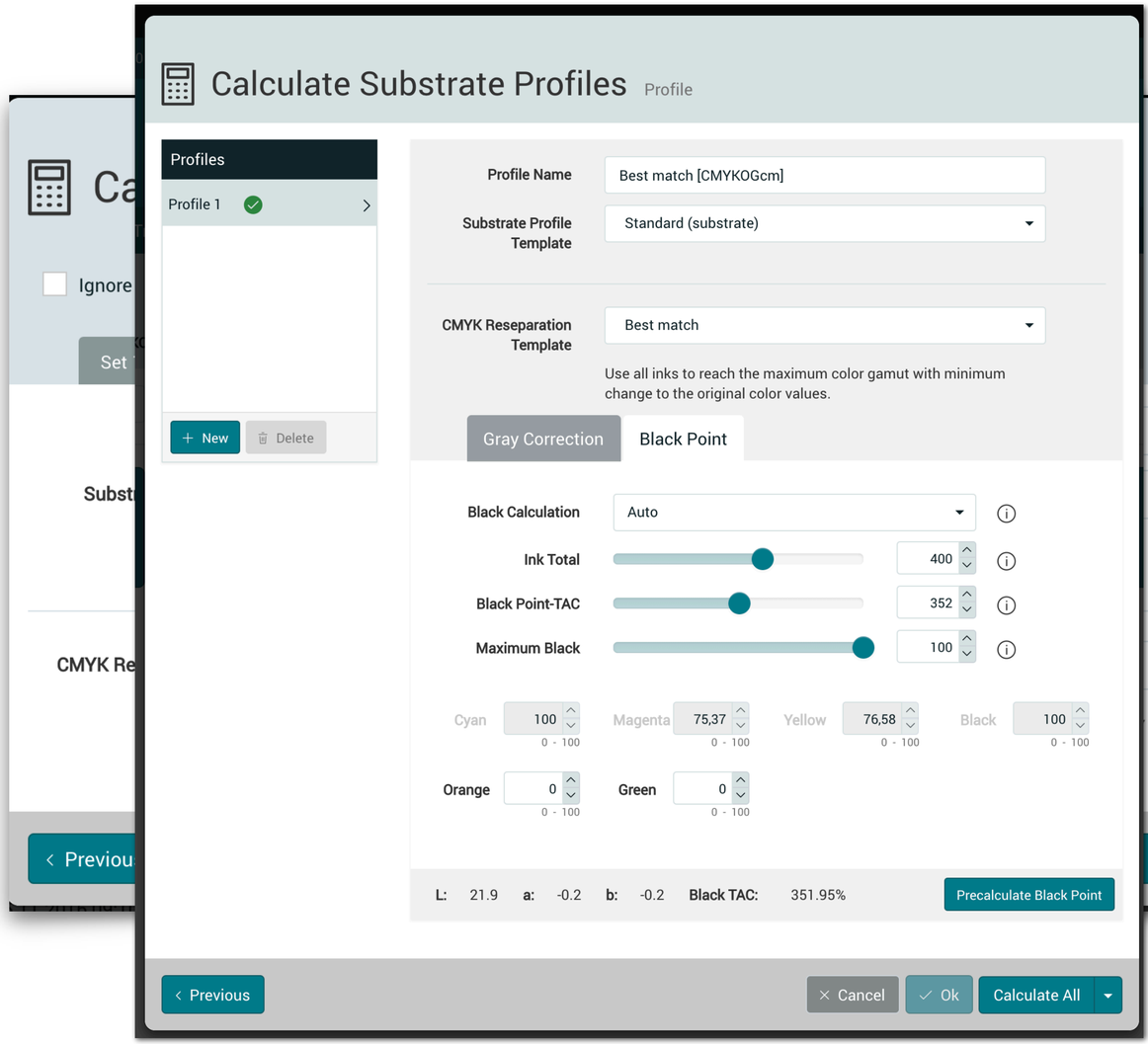

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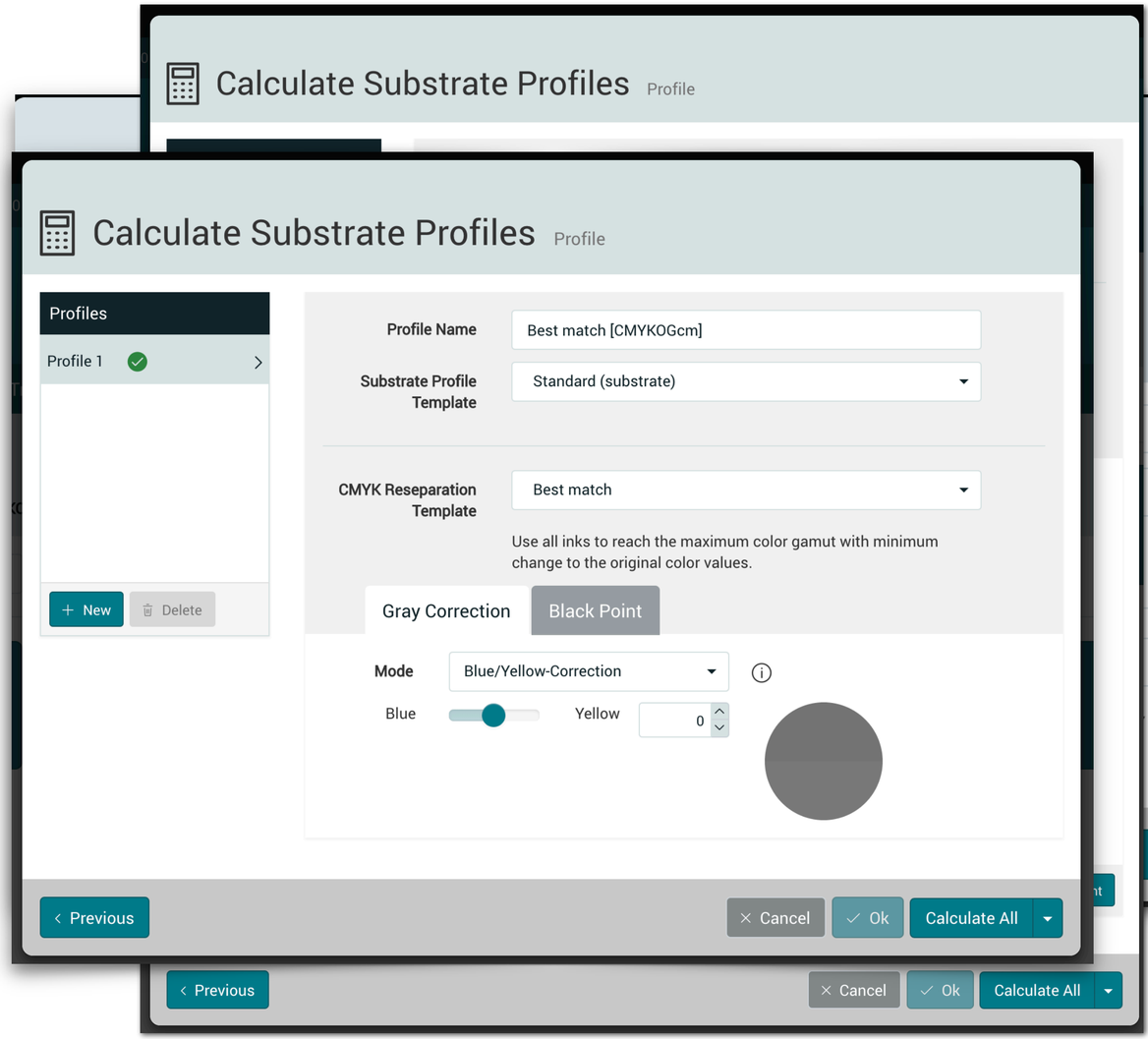

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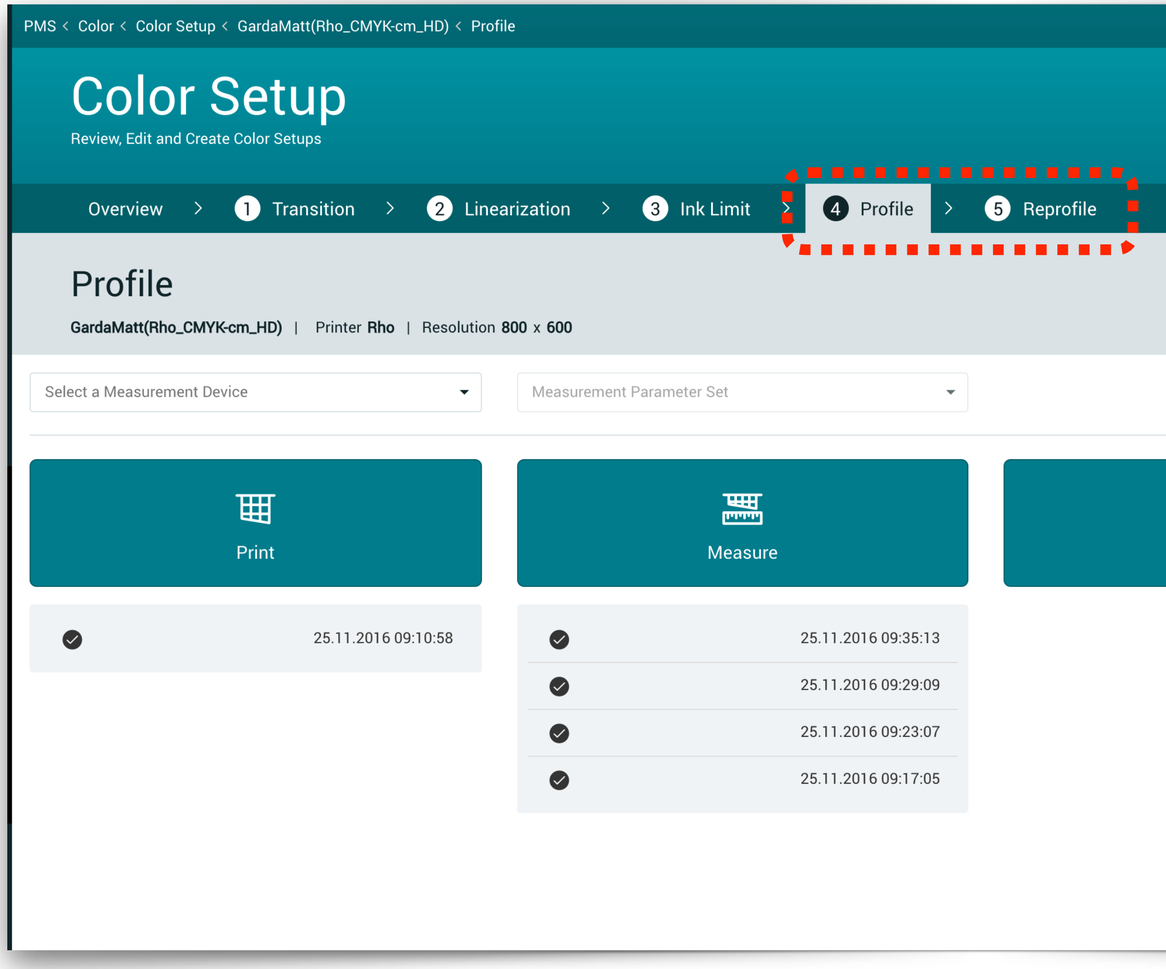
OVERVIEW: DURST WORKFLOW

- Reprofiling with Correction DeviceLink profiles
- Only a little color wedge needs to be printed to "record" the printer/paper deviations
- Allows matching reprints
- Provides more stability and simplifies process control



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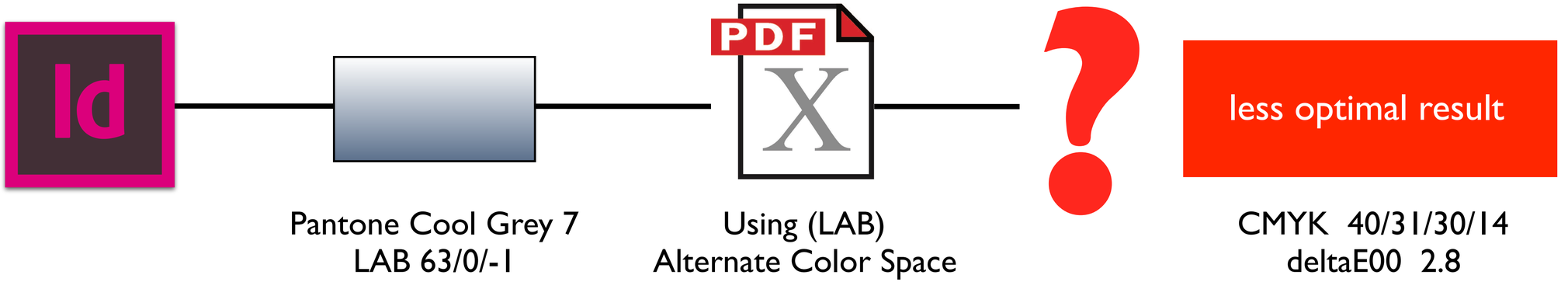
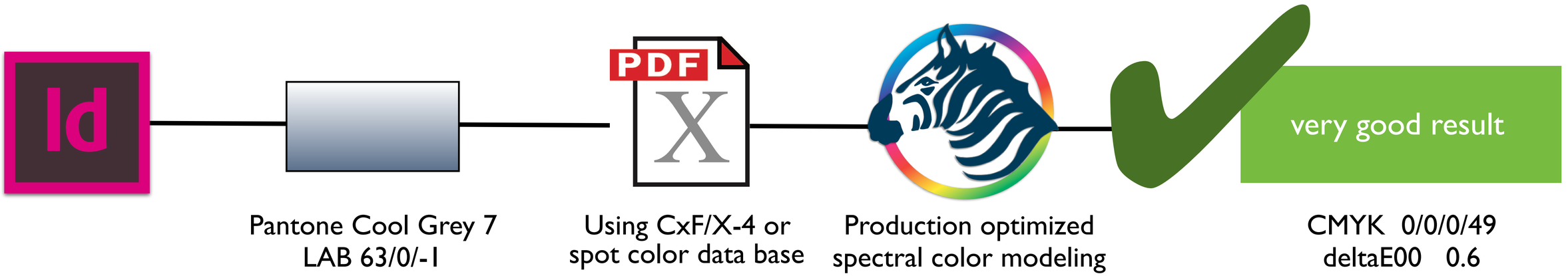
CONVERSION OF SPOT COLORS





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COLORLOGIC TECHNOLOGY

"By using ColorLogic technology, all requirements could be resolved in a very flexible manner. Speed is important for us, but by combining all profiles in one color transformation loss in speed is a non-issue."

Hans Peter Schneeberger
CEO PrePress Digital

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