

# Color Science i<sup>2</sup>e image enhancement and ICC profiling software for the digital print workflow

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Q-Enhancer is a fully automatic solution for image enhancement and printer profiling built for high volume digital production environments. The Q-Enhancer system helps to achieve standardized quality for digital printing which is independent of the printer type. It helps the lab to fully control the digital production process without any doubts on the quality side.

## Today we observe two main problems in the production of digital prints:

**1<sup>st</sup> Problem:** It is difficult to control the **image quality on different digital printers** in the lab so that contrast, density and saturation are always the same. Even if the printer is well linearised using the gray scale there are quite big differences from one printer to the other because linearising a grayscale does not mean that the colors of a print look the same.

-> **the Q-Enhancer solution:** Every printer is ICC profiled. This makes sure that the print quality of all the different printers match one (industry) standard. The fact that the printers are carefully profiled opens you the doors to the professional market.

**2<sup>nd</sup> Problem:** It is not possible for the lab to print the same customer image on different digital printers with the same result because every printer uses a **different image enhancement system**.

-> **the Q-Enhancer solution:** The i<sup>2</sup>e image enhancement is put in front of the printers. This way the image enhancement is the same for every printer. The image enhancement of the digital printers is switched off.

## Q-Enhancer digital image batch processing software

For the production you will need to put the Q-Enhancer software in front of the printers. Q-Enhance lets you define printing channels using hot-folders. This way you can automatically route folders with image orders including order information to the right printer. Q-Enhancer will automatically convert the images using a generic (e.g. sRGB for digital camera images) or an attached input profile and a printer specific output profile.

For professional work i<sup>2</sup>e image enhancement will be turned off. This way the professional photographer gets exactly the result he would get on his profiled proofing printer.

For amateur work image enhancement is turned on in the amateur print channels. Using a master balance Q-Enhancer lets you adjust a general color balance and contrast and saturation setting according to the labs preferences.

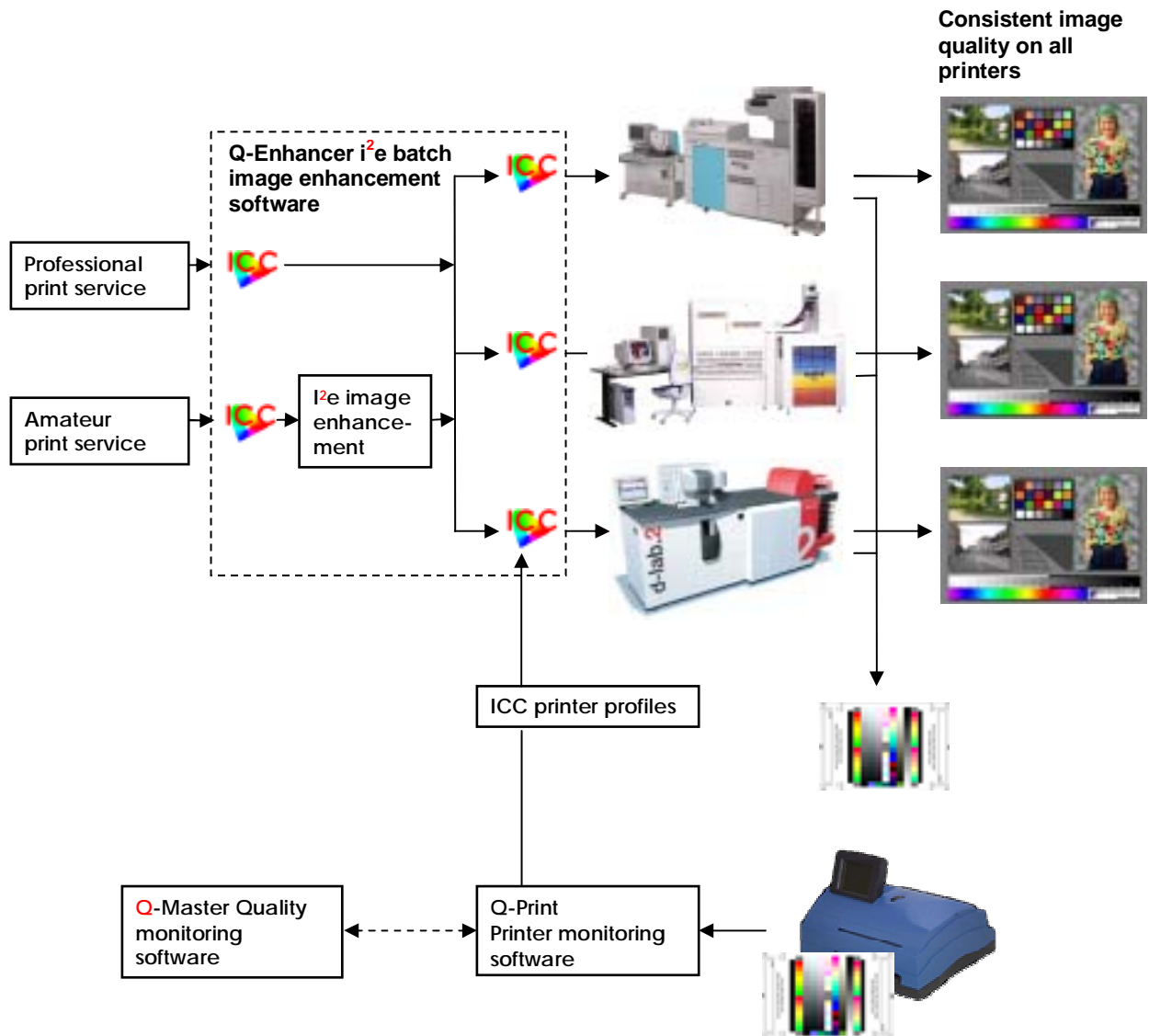
Q-Enhancer works fully automatically and needs no further attention.

## Q-Print automated printer ICC profiling and monitoring

When setting up an image enhancement system with Q-Enhancer you should consider using Q-Print for the fully automatic printer profiling. With other software (e.g. Gretag Macbeth Profile Maker) you cannot generate and validate profiles fully automatically and any manual operations can introduce errors. With Q-Print the operator has to print a color test pattern on 10x15 (4x6") prints on all the printers. These prints are fed into the Gretag Macbeth IC-Color spectrometer. Q-Print will then automatically update the profiles used by Q-Enhancer for every printer. The new profiles are also checked for errors against historical data. This allows you to be 100% sure that the profile you have produced is good for production. Q-Print will also monitor the printer and warn you if the detected color deviations exceed a certain limit.

## Digital print workflow with image enhancement and printer profiling

The following diagram shows you the general setup of the system with two different printing channels. One channel is for amateur work with image enhancement. The other channel is for professional work.



### This are the important points of a controlled digital print solution:

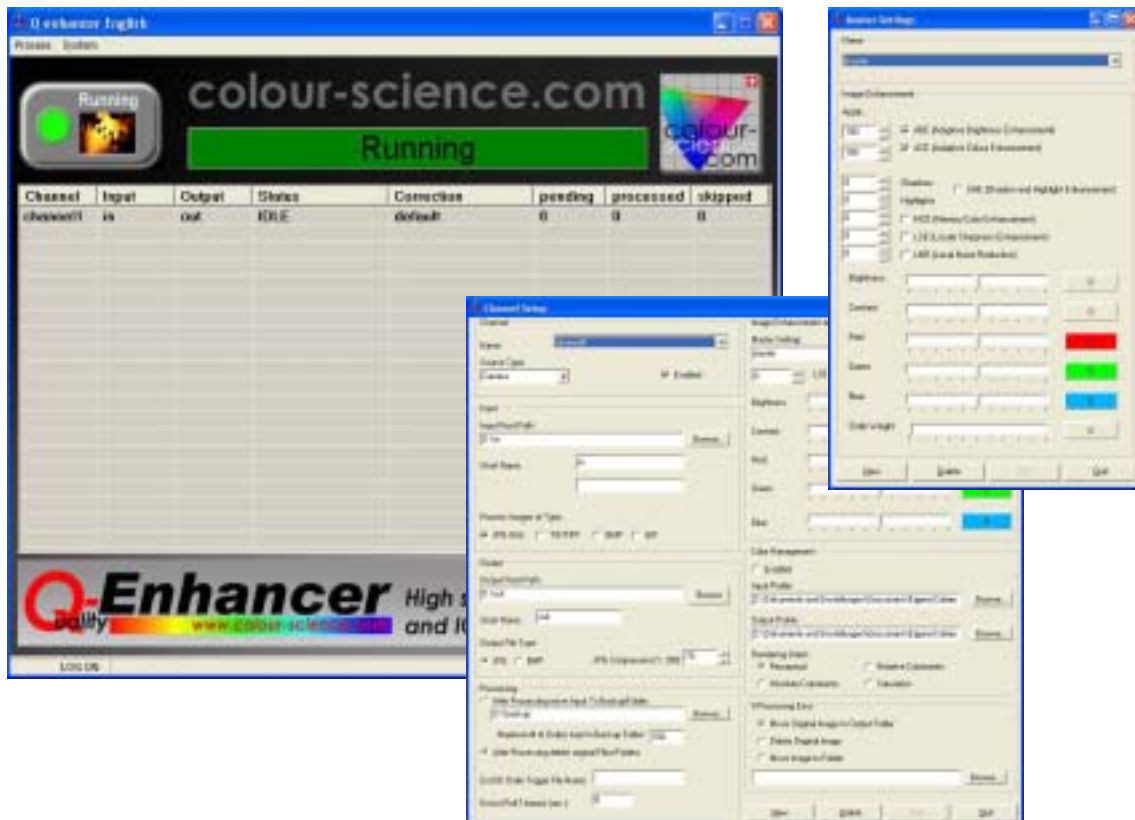
1. The system needs two inputs. One for professional users who want to print on profiled printers and one for amateurs who also want to have their images enhanced.
2. The lab must use the same image enhancement system for all the printers. The different proprietary image enhancement systems of the printers have to be shut off.
3. The printers have to be ICC profiled. This can be done fully automatically in less than 3 minutes using the Q-Print software. At the same time the printer quality is monitored.

# Colour-Science image enhancement software:

## Q-Enhancer

### hot folder i2e image enhancement and ICC profiling software

The Q-Enhancer software is made for unattended i2e image enhancement and ICC profiling. You can set up multiple processing channels for every printer.



### Features:

- **Fully automatic unattended image processing**
- **Automatic i2e image enhancement including**
  - ABE** Adaptive Brightness and Contrast Enhancement
  - ACE** Adaptive Color Enhancement
  - SHE** Shadow and Highlight Enhancement
  - MCE** Memory Color Enhancement
  - LSE** Local Sharpness Enhancement
  - LNR** Local Noise Reduction
- **ICC profiling**
- **Hyper fast image processing using multi-threading technology**
- **Multiple processing channels**
- **Master settings for different products, or channel settings for each output device can be defined**
- **Special image processing mode for negative film scanners. In this mode Q-Enhancer is able to process 12-16bit raw images and convert them to standard 8bit images. In this mode also a statistical order analysis is possible.**

# Express Image Manager

## i2e image enhancement and ICC profiling software

The Express Image Manager software can preview whole orders or single images. The images will be i2e image enhanced, but the software lets you also manually correct single or multiple images. The software also supports ICC profiling.



### Features:

- Full order or single image view
- Full order or single image correction
- Select / deselect images
- Flip and rotate images
- Automatic i2e image enhancement
- Manual contrast density and color enhancement
- ICC profiling
- Definition of multiple output products (file, index, CD ..)
- Hyper fast image processing
- Very high productivity