Tech Info Library

Imaging: Glossary of Terms (7/95)

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TOPIC ----------

This article describes some of the common terms used when discussing imaging technology.

DISCUSSION ----------

1 bit

A bit is the smallest quantity of data. One bit of information can have two possible values: 1 or 0.

4 bits
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4 bits of information have 16 possible values.
Application Programming Interface — An architecture that allows applications and drivers to request functions from a specific program or system extension.

ASIC

Stands for Application Specific Integrated Circuit. ASICs are designed to either reduce cost by putting many functions in one piece of silicon or improve performance by putting software functionality into hardware.

Bilevel data

Data that represents objects that have one of two states: typically black or white. Text and line art are examples of bilevel data.

Binary data

Objects that are represented by combinations of 1s and 0s. The other common form of data is ASCII, where objects are described by a combination of numbers and letters.

Bitmap

A pixel-by-pixel representation of an object.

CIE Committee

Commission International de I’Eclairage (International Commission on Illumination).

CIE XYZ and LaB

Device-independent color spaces defined by the CIE committee.

CMYK

Cyan, Magenta, Yellow and blacK. The three subtractive primary colors, plus black make the process printing colors.

Color Electronic Publishing Systems, or CEPS

Computer-based systems for inputting, manipulating, assembling and outputting data, both color and black and white, in various forms of media. Examples are from Linotype, Scitex, and Crosfield.

Color Management System

A system for communicating color fidelity across devices, such as input, display, and output devices.

Color Matching Method

The routine used by a color management system to apply transformations to color data.

Color separation

The process of separating color into the primary process colors in preparation for printing.

Color space

A set of parameters that describe color values, such as RGB (red, green, blue) or CMYK (cyan, magenta, yellow, black).

Colorants

The colors used by a color device to reproduce color. A printing press uses the CMYK colorants.

Continuous tone

An image that has no apparent steps between one shade and the next.

Controller

A circuit board that controls what the print engine outputs.

Decompress

The process of restoring a compacted version of an object to its full size.

Device calibration

The process of adjusting a device to compensate for differences due to manufacturing, age, environmental conditions, and media inconsistencies.

Device characterization

The process of creating a device profile, which involves measuring colors with a highly sensitive measuring device.

DPI

Dots per inch; the number of dots that can be placed horizontally and vertically. This is also known as printer resolution.

Fat Binary

An application that supports both PowerPC and 68000 processors.

Gamma

The overall darkness of a gray ramp.

Gamut

The range of colors that a device can reproduce.

Gamut mapping

The process of altering a color so that it can be reproduced on a particular device.

Gray

The intensity of a black-and-white object.

Grayscale

A range of gray levels.

Halftone

The process of converting multilevel data into bilevel data.

Halftone cell

The pattern of white-and-black pixels that is repeated.

Halftone screen

See halftone cell

Halftone screen dot

The black portion of the halftone cell. The most common halftone cells grow from the center so a “dot-like” structure is formed as darker grays are formed.

Halftone screen elements

The pixels that make up the halftone cell.

Halftone screen pattern

The shape that all of halftone elements form when combined.

Halftone screen (line screen)

A term to describe how many lines (dots) of resolution are available with a particular halftone cell. For example on a 300-dots-per-inch printer, a 3 x 3 halftone cell at 0 degrees gives a 100-dots-per-inch halftone screen. This can be calculated by dividing the resolution of the printer by the number of elements in the halftone cell.

Hi-Fi color process

The use of more than the four basic colors in the printing process to produce more vibrant color.

ICC profile

A cross-platform standard used to represent the color capabilities of device.

Ideal edge

The line the high-definition ASIC calculates to be the best edge for a particular segment of text or line.

Images

The term used to describe multibit scanned data.

Intermediate gray levels

Gray levels obtained by turning on less than a 300-dots-per-inch pixel.

International Color Committee (ICC)

A committee formed in 1993 to establish standards for electronic color publishing. The first standard is the ICC profile, which is a cross-platform specification for color management profiles.

Line screen

See halftone screen.

Lines per inch

Same as line screen.

Linear toner response

See grayscale linearity.

Multibit data

Objects that contain more than one bit of information (color or gray) per pixel.

Page buffer

Printer memory set aside to store the image prior to sending it to the laser printer.

Photosensitive drum

A cylinder coated with a material that holds a charge when exposed to light. A photosensitive drum is what the laser strikes in the toner cartridge of a laser printer.

Pixel

The smallest area that can be addressed in both the horizontal and vertical direction.

PostScript

A language that is used to described graphic objects. A PostScript interpreter is software that executes a PostScript language program and turns the description of an object into bits in a frame buffer.

Process colors

The four primary colors used in the printing process. These are CMYK (Cyan, Magenta, Yellow, and Black).

Profile

A file containing the color reproduction capabilities of a given input, display, or output device. Color management systems use profiles to interpret color data between devices.

Pulse

The term used to describe turning on the laser beam for a period of time. The laser can be pulsed for each pixel. With high definition, the laser is pulsed for a shorter period of time (or multiple times) to turn on less than one whole pixel.

Rendering styles

The method in which color is reproduced, taking into consideration the intent of the color. For example, photographic colors require less saturated rendering than business graphics do.

RET (Resolution Enhancement Technology)

Hewlett-Packard’s technique to rapidly pulse the laser to smooth the edges of fonts and lines. RET is included in the Hewlett-Packard LaserJet III printer.

RGB

The additive colors Red, Green, and Blue. Combined, these colors make white and are usually used in color displays.

Screen angle

The angle at which the halftone cell repeats. Typically 45-degree halftone cells are used because they mask banding that the eye picks up with zero-degree cells.

Screen frequency

See line screen.

Simulation

Using one device to predict the results another device, usually a printing device.

Spectrophotometers

A device that measures the wavelength of a color.

Spot colors

Colors used in printing that are not part of the process ink set. These are usually used in addition to the process colors. Examples are Pantone, Toyo, and Focoltone.

Toner

The substance that is used in laser printers to form the black dots.

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