DIGITAL PHOTOGRAPHY BASICS

RASTER IMAGES

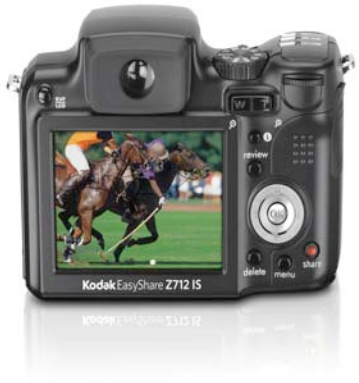
A raster (also known as bit-map) image is an **organized grid of pixels** (comprised of bit information) that make an image. Each and every individual pixel contains specific information, and when arranged in their particular order, it creates a highly detailed, photographic, image. Photoshop works with raster images.

PHOTOGRAPHY FROM ANALOG TO DIGITAL

Analog

› Uses Film

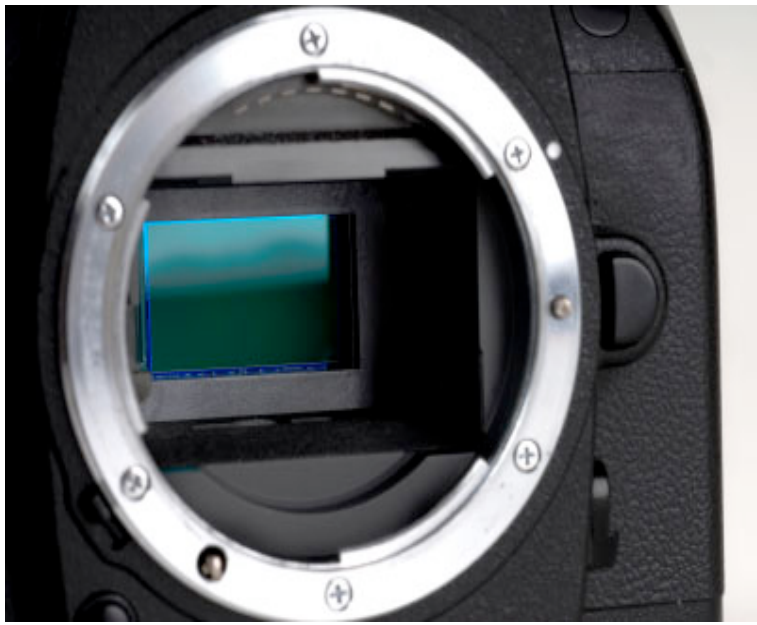
Emulsion on a plastic surface. The emulsion is comprised of thousands of light sensitive silver halide salts that rise to the surface when activated by light coming through the lens.



Digital

› Uses a CCD – Charge-Couple Device

A CCD is a chip inside the camera. It converts light coming through the lens into electrons, then records these into **pixels**.



WHAT IS A PIXEL?

Pixels are the "building blocks" of an image. They are (mostly) square and stack horizontally and vertically to form a grid. When stacked (or "built") in their particular order, it creates an image.

Each pixel contains important information to the creation of an image. The CCD of a digital camera captures this information. Different cameras capture different numbers of pixels, and thus different amounts of information.

PIXEL DEPTH

- Resolution captured depends on the camera CCD size and camera settings.

- Therefore, if you have a camera that is 12MP it is capable of capturing 3968 pixels across by 2976 pixels tall. This can be figured out by multiplying your pixels.

- 3968 x 2976 = 11808768 pixels,
  which is equivalent to 11.8 Megapixels
  or rounded up to 12MP.
  (This is a pretty good camera!)

- The amount of pixels a CCD can capture can determine how large you can print or display that image. The more pixels you have the more **information** you have. This leads to more detail and ability to enlarge.

- If we were to compare different CCD abilities of different cameras, we would have different pixel dimensions to work with. The next slide shows different digital camera dimensions. The images have been scaled proportionately to help to visualize the differences.

Common cell phone – 3MP
2048 x 1536 pixels

Olympus E-30 SLR – 12.3MP
4032 x 3024 pixels

Olympus Stylus Point and Shoot 840 – 8MP
3248 x 2436 pixels

Canon Mark III SLR – 21MP
5616 x 3744 pixels

Olympus E450 SLR– 10MP
3648 x 2736 pixels

Determining factors of an image:

- Resolution
- Bits
- Channels