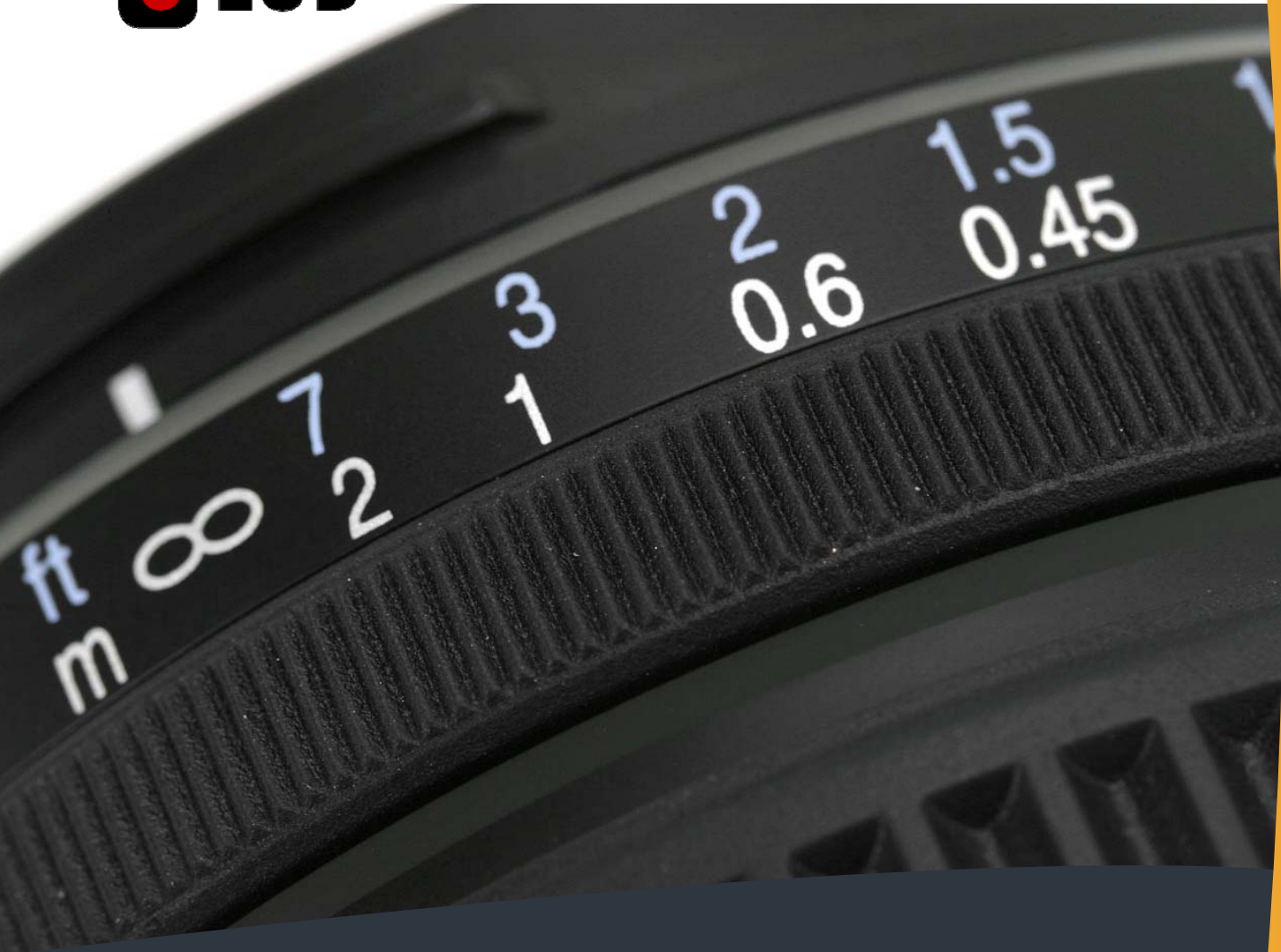


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Engineering the Perfect  
Picture

# Engineering the Perfect Picture

## PHOTOGRAPHY

Photography is undoubtedly one of the most important inventions in history -- it has truly transformed how people conceive of the world. Now we can "see" things that are actually many miles and years away from us. Photography lets us capture moments in time and preserve them for years to come.



Photo: Stok.xchng

Cameras have come a long way since they were first invented in 1827. During 1827, Joseph Nicéphore obtained the first fixed image which led to hundreds of years of ever-changing cameras and photos. One significant development in cameras is the invention of electronic image sensors capable of recording millions of pixels, resulting in what is known as the Digital Camera.

Make a count now – on the number of cameras that your family possessed. It's not surprising that the number of cameras exceed the number of members in your household. Ranging from compact digital and digital SLR (single-lens reflex) cameras, to mobile phones cameras and web cam, cameras are found almost everywhere. In the world, millions of photos and videos are captured every second, uploaded to facebook, blogs and youtube. All these are made possible by the digital evolution of photography.

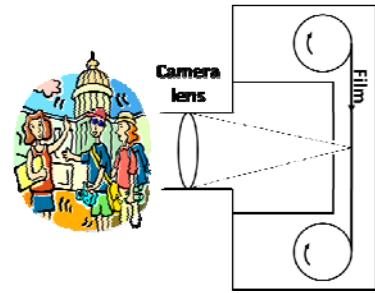
## CAPTURING THE MOMENT



PHOTO:Stok.xchng

What does it really mean when you "take" a picture with a camera? When you click the shutter, you have frozen a moment in time by recording the visible light reflected from the objects in the camera's field of view. For film type camera, light is focused on to a light sensitive chemical deposited on a thin film. The light is allowed to strike the film surface for a short time by the use of a shutter. The shutter acts as a valve for the light. When light strikes the film, the light sensitive chemical undergoes a chemical change. The amount of light makes a

proportional amount of change in the light sensitive material. After exposure, the film is chemically treated to 'develop' the image. The chemical treatment causes a permanent change in the light sensitive grains, and renders them insensitive to light. It also makes them visible.



## DIGITALISING THE MOMENT

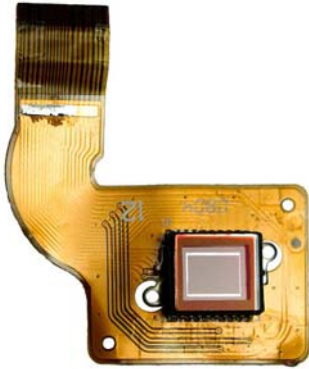


PHOTO: Christoph Müller

Just like a conventional camera, Digital Camera has a series of lenses that focus light to create an image of a scene. But instead of focusing this light onto a piece of film, it focuses it onto a semiconductor device (or sensor) that records light electronically. This sensor converts light into electrical charges. A microprocessor<sup>1</sup> in the camera then breaks this electronic information down into digital data.

Digital camera uses either a charge coupled device (CCD) sensor or complementary metal oxide semiconductor (CMOS) sensor. Both CCD and CMOS image sensors convert light into electrons. A simplified way to think about these sensors is to think of a 2-D array of thousands or millions of tiny solar cells. Once the solar cells convert the light into electrons, it reads the value of accumulated charge of each cell in the image. These values from all the cells are converted to digital values that record the amount of light that has been “captured” by the sensor at the moment the shutter is opened. A digital photo is produced when the digital values are read by a computer.

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<sup>1</sup> A microprocessor is a computer processor built on a single integrated circuit (IC) or microchip.

## START CAPTURING NOW!



Ever since the first digital camera was produced in 1981, this technology has never looked back. Digital cameras provide more features than any other camera ever produced. Photography is more affordable than ever, with home printing options, video options and provides you the opportunity to

delete photos which you do not want to keep.

There's no doubt that the evolution of cameras will continue to evolve for many years to come. Photos can last a lifetime and are a great way to remember the most important moments in our lives. Photos captured by you, made by engineers.