WHAT IS HIGH DEFINITION?

Let's start by defining what High-Definition video or **HD video refers to.**
It is in fact any video system of a higher resolution than standard definition. In other words where as standard definition video is typically 1024 x 576 pixels then high definition is any setting higher than this, and can be typically 1,280 × 720 pixels (720p) or 1,440 x 1080 pixels (commonly known as HDV) or 1,920×1,080 pixels (1080i/1080p). High-definition broadcast television (HDTV) resolution is 1,080 or 720 lines, that is the number of lines that go to make up a typical television picture. So when you see a TV that says 'HD Ready' it will normally say 1080i or 720p as well. In contrast, regular digital television (DTV) is 625 lines for a PAL or European TV (actually only 576 of those lines are visible to you on your TV). However, since HD can only be broadcast using digital signal transmission, it's commonly linked with the term DTV (Digital Television).

I've mentioned 1080i and 720p, so what does the 'i' and the 'p' stand for? Well it refers to the way the TV picture is displayed on your TV screen. 'i' refers to the picture being interlaced and 'p' means that the image is progressive.

So what's the difference and which is best?

TV and video pictures are made up of a number of images (frames) that are sequentially displayed on your screen to give the illusion of movement. The rate at which the frames are displayed is fixed at 25 frames-per second (fps) in the PAL European system, and 30 fps in the American NTSC system.

In order to send these pictures over the air, or along a cable, each frame is split up into a number of horizontal strips (lines), rather like the slats of a Venetian blind. Each line is transmitted separately to your TV tube where they are 'painted' (scanned) in sequence on the viewing screen, to recreate the original frame images.

To interlace or not to interlace , that is the question?

Interlaced pictures are made up of alternatively scanned (displayed) lines of which an SD image has 576 and an HD image has 1080. Each image you see on your TV is made up of two scans called fields. The first field provides the even lines i.e. 2,4,6,8 etc and the second scan completes the picture (a frame) with the odd lines 1,3,5,7,9 etc. This happens so fast (at 50 fields per second or 25 frames per second) that the eye is fooled into thinking that the picture is moving. Much the same as movie film is projected one picture at a time but at 25 fps to give the impression of a motion picture. Interlaced scanning yields greater image resolution if the subject is not moving, but loses up to half of the resolution and suffers "combing" artifacts when the subject is moving.

Whether it is nobler to progress to progressive?

A progressive picture (alternatively referred to as *non-interlaced scanning*) is a way of displaying moving images in which all the lines of each frame (displayed at 25 fps) are drawn in sequence i.e. 1,2,3,4,5,6,7 etc. This is in contrast to interlaced video used in traditional analog television systems where interlacing the picture can cause visual disturbance such as flicker, jitter or strobing effects which can especially be seen on fine lines and small detail in the picture. So progressive images should look better than an interlaced image except that sometimes during fast movement the progressive image may sometimes suffer from lag. HD images are displayed in either 720p or 1080p which is often referred to as full HD.

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DVD versus Blu-Ray?

A DVD can hold upto 4.7 GB of information or about 120 minutes of video, whereas a double layer DVD with 8.5 GB will handle 240 minutes; but DVD quality is not high-definition. High Definition video results in a much greater file size than standard definition as there is twice the information to be stored, so much so it is impossible to store HD movies on a DVD disk, so technology was developed using blue lasers to scan a high density disk producing what is known as a Blu-ray disk (BD) which can contain 25 GB of information storing over 8 hours of video. Less common is the dual layer Blu-ray disk having a capacity of 50 GB, giving a total of 16 hours of video.

BDXL disks, although not commonly available, have the capability of storing up to 128 GB of information but are not compatible with standard Blu-ray players.

On the subject of compatibility you can not play a Blu-ray disk on a DVD player however you can play standard DVDs on most Blu-ray players, the picture will of course be in standard definition although some high end players will 'upscale' the picture to 720p for HDTV sets capable of displaying this resolution.

Should I use HD video on my website?

A number of online video streaming/on-demand and digital download services offer HD video, among them YouTube, Hulu, Amazon, i-Player, Netflix, LoveFilm, and others. But to prevent your computer having to struggle downloading huge files, and depending on your ISP download speed, this would necessitate using buffering which in turn would mean that video may not play smoothly all the way through. To circumvent this problem, heavy compression is used to make the file more manageable. This means that image detail produced by these formats is far below that of broadcast HD, and often even inferior to DVD video. Generally, the higher the compression, the smaller the file size, the poorer the resolution. So an HD video heavily compressed will look worse than an SD video with less compression. It's a trade off between quality and speed.

At present most video on the internet is displayed in small screens approximately 512 x 288 pixels or smaller within the web page. There is some argument that suggests that there is little point in using HD video on a website because of the heavy compression required. This will result in only a marginal detectable difference in resolution between SD and HD. However the SD video will tend to play smoother with less buffering; and with less compression needed the picture quality should be suitable for most uses.

It's more about the quality of the original images (filming) , the quality of the post-production process (editing) and the way in which the final video is encoded and compressed, but most of all it's the experience of the production team that will ultimately affect the video you see on the web. This is where using Take One, a professional producer, will always have the edge over cheap, homemade or amateur videos. Your web site is your shop window, enticing potential clients and customers to linger on your website and browse your products and services, so why would you wish to place something in your shop window that doesn't represent the quality of your products?

For more information on how Take One can provide you with high quality video for your website and advice on the best solution to suit your budget, please call us today.

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