

UBE Umbraco: Images

All computer information is held in files. A filename has two parts; the name and the extension in the form name.extension. For example:

- Agenda.doc
- Report.pdf
- Finance.xlsx

The name part (Agenda, Report, Finance) can be anything, although some special characters are not allowed. The extension part (.doc, .pdf, .xlsx) identifies the type of file. In the examples above:

- Agenda.doc denotes a file that can be read by Microsoft Word.
- Report.pdf denotes a file that can be read by Adobe Acrobat Reader.
- Finance.xls denotes a file that it can be read by Microsoft Excel.

Like all computer information, images are held in files. One file contains one image. There are many different image file formats but the ones that are commonly used on websites are:

- Image1.jpg. Often used for pictures but cannot have a transparent background.
- Image2.gif. Often used for drawings or clip art and can have a transparent background.
- Image3.png. Often used for pictures and can have a transparent background.

nb: Concerning transparent backgrounds, a portrait, for example, could have a head and shoulders on a plain background. If the file is a .jpg, then the background has a colour; white or a pale colour. If the file is a .png, then the background can be transparent, allowing the background colour of the page displaying the image to show through.

Images are displayed with dots of colour called pixels (often abbreviated to px). A small picture, like an icon, could be 20 pixels wide and 20 pixels high or large picture could be 4,000 pixels wide by 3,000 pixels high. The icon would contain $20 \times 20 = 400$ pixels and the large picture would contain $4,000 \times 3,000 = 12,000,000$ pixels. The pixel width and the pixel height are the **dimensions** of an image. The width is normally written first so an image that has dimensions 450 x 600 would be 450 pixels wide and 600 pixels high and would contain $450 \times 600 = 270,000$ pixels.

Each pixel has a colour. Colours are created by combining the three prime colours, red, green and blue. Each of three prime colours can have 256 different values. Therefore, the possible total number of different colours is $256 \times 256 \times 256 = 16,777,216$. The value for each colour is written in the rgb (red value; green value, blue value). Therefore, red is rgb (255, 0, 0), green is rgb (0, 255, 0) and blue is rgb (0, 0, 255). Black (no colour) is rgb (0, 0, 0); and white is rgb (255, 255, 255). (It's 255 because the 256 different values are 0 to 255 inclusive). These numbers are sometimes written in a different format called hexadecimal (hex for short). In hexadecimal, red is FF0000, green is 00FF00, blue is 0000FF, black is 000000 and white is FFFFFFFF. For the codes of all colours see https://www.w3schools.com/colors/colors_picker.asp.

All the information about the colour of each of the pixels has to be held in the image file. The greater the number of pixels and the greater the number of colours used, the greater the amount of information that has to be stored in the image file. This determines the size of the image file in bytes. This can be a few hundred bytes for the 20 x 20 icon to millions of bytes for a large high quality image. The file size is denoted with the following suffixes:

- 100KB: 100 kilobytes or 100,000 bytes.
- 3MB: 3 megabytes or 3,000,000 bytes.

UBE Umbraco: Images

The different file formats use different algorithms to hold all an image's information in a file endeavouring to maximise the image's quality whilst minimising its file size in bytes.

Images on a website must be of good quality (websites are only good websites if they have good quality pictures) and of the smallest file size to ensure a speedy download from the server when a page containing images is rendered in a browser. Achieving this is an art not a science!

Like images, the whole of a computer's or a smartphone's screen is made up of coloured pixels to display all the information on the screen. Currently the web pages of website pages on a desktop built by UBE on the Umbraco platform are about 1,200 pixels wide. Umbraco will reduce an image's dimensions to fit into the Cell provided **but it won't increase the dimensions of an image.**

Accordingly, if a Cell is wider than the image inside it, the image will not fill the full width of the Cell.

Before uploading images to the Image Section, therefore, it is important to ensure that their dimensions are wide enough and the file size is as small as possible whilst achieving the desired quality. To help achieve this, there are two useful applications (for Windows' users):

- [Windows Image Resizer](#). What it says on the tin! Simply way to reduce or increase an image's (or a group of images') dimensions and file size.
- [Faststone Image Viewer](#). Comprehensive features to manipulate images, especially an excellent cropping feature if you need to crop pictures to the same proportions for a carousel or slide show, for example.