



# Picture perfect

Ken McMahon has a whole box of tips on how to **make the most of your images on the web.**

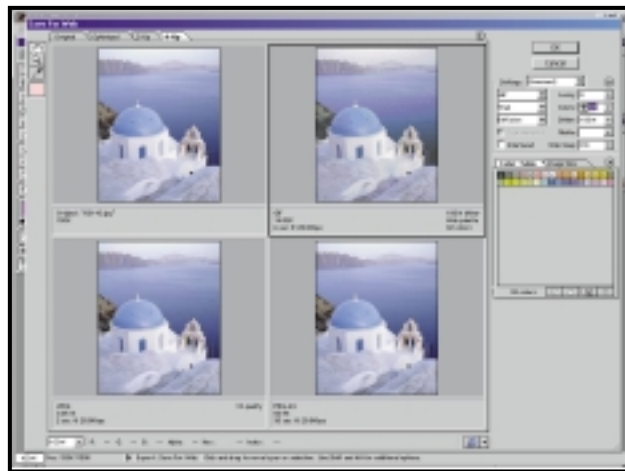
**B**y far the most common subject of questions in the *Hands On* mailbox is how to obtain the best-quality digital pictures. Regardless of their origin – flatbed scanner, digital camera, video digitiser – and their destination – inkjet printer, website, commercial printshop – the same questions arise. What's the best file format? Should they be compressed? What resolution? Does colour depth matter? Why do they look so awful?

Improving the quality of your pictures for print is something we've looked at before in this column, so for now I'm going to concentrate on what you can do to ensure that your images are best suited for web use.

## Optimising web images

On the web, size matters, and small is beautiful. No-one wants to sit and wait, while large image files take interminable seconds or even minutes to download. Many sites place a maximum limit on the size of graphics and this can be as low as 5KB. This may not sound like much, but when your page includes a navigation bar, several buttons, half a dozen pictures and an animated banner it soon adds up.

Most of the work in preparing images for the web involves reducing the file size to the absolute minimum, while attempting to maintain the highest



**Screenshot 1: Photoshop's 'save for web' feature allows you to see the results of colour and compression options. The smallest and best-quality file is the JPEG in the bottom left**

Also consider tight cropping where you don't need the entire image area. For example, a head and shoulders portrait can be reduced to a tight crop on the face, A car shot need only be the front wing and windscreen; use an architectural feature instead of the whole building. Small, strong, close-up graphic images work much better than detailed, wide views.

## Colour depth

Having removed any pixels that you don't need, you can turn your attention to making sure those you do need occupy as little space as possible. Assuming you

provides a palette of 256 colours, although some images can go even lower than this without suffering a visible loss of quality.

## Compression

Obviously, the more you can compress the data in your digital image files, the better. The problem is that you can go only so far before image quality begins to suffer.

If, like me,

you're not excited by the ins and outs of compression algorithms, all you really need to worry about is whether the compression you're intending to use is lossy or lossless. The former variant actually removes information from the image – hopefully, but not always, information that you can do without. Lossless compression finds cleverer ways of reducing the size of your files without stripping them of data, but is less efficient.

## File formats

Your choice of file format is important, because it determines the bit depth and compression options available for your file. From the plethora of bitmap file formats, three have emerged as popular choices on the web – GIF, (graphics interchange format) JPEG (joint photographic experts group) and PNG (portable network graphic). GIF, probably the most ubiquitous, is an 8bit format that uses a lossless compression algorithm, JPEG is a 24bit format and uses lossy compression and PNG is a lossless newcomer that provides features such as transparency. You can create both 24bit truecolour and 8bit palette-based graphics in PNG format and it also supports greyscale images. Despite its superiority to GIF and JPEG for web use,

## Consider tight cropping. Small, close-up graphic images work much better than wide views

possible image quality. A number of things come into play here, namely the physical size of the image (in pixels), the file format and associated compression algorithm, and the colour depth.

You might think there's not much you can do about the physical size of your image. After all, you can make it only so small before it becomes a stamp-sized blob. But you can crop in as tight as possible to remove any redundant pixels.

started with a 24bit 'truecolour' image, each pixel requires 24bits to store its colour value – one byte for each of the three colour channels red, green and blue.

As it is unlikely that your image actually contains 16 million-odd colours you can usually reduce the bit depth and reduce the file size. This process depends very much on the individual image, but it's often surprising what you can get away with. The target to aim for is 8bit, which

PNG (pronounced ping) has yet to attain widespread use on the web, primarily because it is only supported by a limited number of browsers.

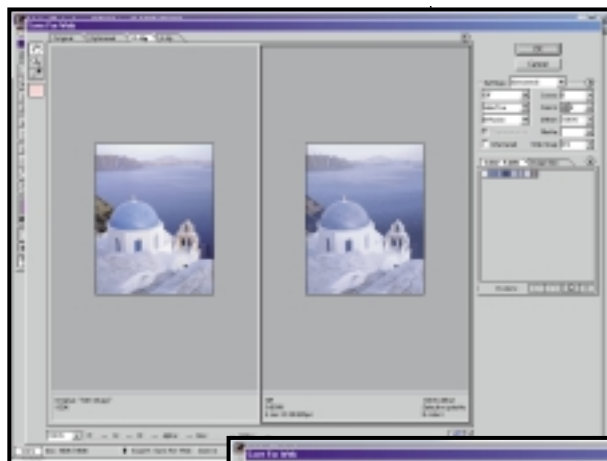
The drawback with GIFs is that reducing the colour depth to 8bits, while at a stroke reducing file size by a third, often results in an unacceptable reduction in image quality. Either the colour palette is too limited and a posterisation effect occurs, or it is necessary to introduce dithering.

JPEGs have no such problem with colours and you can control the degree of compression so that you get an acceptable trade-off between file size and image quality.

### The best results

There are a variety of software tools that allow you to optimise images for the web. Adobe Photoshop, Equilibrium DeBabelizer and Paint Shop Pro 6 are three that spring to mind, but in fact most image-editing applications provide at the very least, a GIF export filter.

Screenshot 1 shows Photoshop's 'save for web' dialog. This feature allows you to preview the effects of different file formats, compression settings and colour tables to see the resulting image quality and download times. The smallest and best quality file is the JPEG in the bottom left. Even though it's a 24bit colour image, it's streets ahead of the GIF (top right) in terms of quality and is less than one-quarter of the size. This is about the lowest quality/highest compression



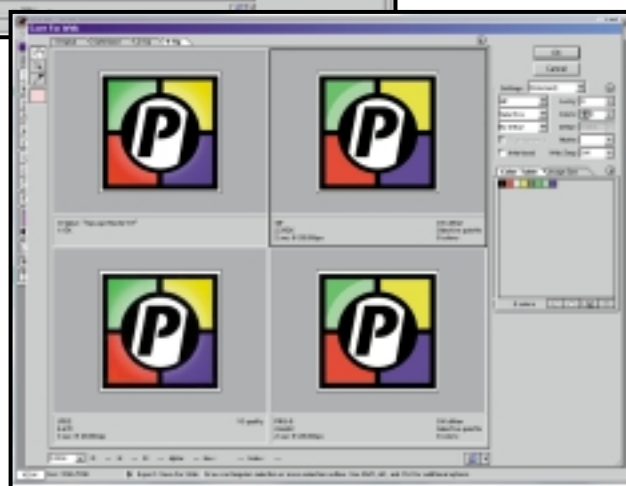
**Screenshot 2 (above):** Careful colour palette selection is the key to creating successful GIFs **Screenshot 3 (right):** GIFs work best on images with large areas of flat colour. The compression is more efficient and the colour palette can be pared right down.

made life difficult for the GIF by specifying a 32-colour web palette (see screenshot 2 above) the diamonds in the swatches indicate that all the colours are 'web-safe' (ie they won't dither on a Mac or PC that can only display 8bit colour). By choosing

job of reproducing the subtle gradient in the colours, though.

### Transparency

Another reason you might want to use GIFs, or PNGs rather than JPEGs is transparency. GIFs allow you to select a transparent background colour, so you can place



them over patterned backgrounds. The problem with GIF transparency is that pixels are either on or off, so it really only works well with 'hard-edged' graphics. Anti-aliasing, or any kind of vignette, results in an ugly halo around your graphic. The PNG-24 format takes transparency further, allowing up to 254 levels of transparency. This variable transparency is useful for creating special effects such as drop shadows that work on any background.

Another problem for the PNG format is that few editing tools currently on the market – Photoshop included – allow you to take advantage of its transparency features. You can find out more about PNG, including a basic introduction and the history of the format, at the excellent home page maintained by Greg Roelofs at [www.cdrom.com/pub/png](http://www.cdrom.com/pub/png).

## One good point with the GIF format is that you have plenty of opportunities to tweak

setting on offer and although there is some loss of detail in the building and the ripples on the sea, it's nonetheless pretty good. The PNG-24 format has retained the detail and looks every bit as good as the original, but at more than 80KB it's unlikely anyone will ever see it – even on a 56K modem it would take 15 seconds to download.

Going back to the GIF format, one good point is that you have plenty of opportunities to tweak the picture in order to get the best results. The best way of doing this is to edit the colour table. Photoshop will automatically reduce the palette, but you can go further. We've

the selective or adaptive palette, you can match the palette more closely to the colours in the image, and this often makes it possible to reduce the palette even further.

But GIFs perform better when you're dealing with non-photographic images, such as illustrations, logos and anything with large areas of flat colour. Screenshot 3 shows what happens when you save for web, this time with a logo. JPEG compression still does pretty well bringing the 15KB original down to 4.67KB. But by reducing the number of colours to eight we can get the GIF down to just under 3KB. The JPEG still makes a much better

## CONTACTS

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