

## Using CSS Grid Layout

### An Example of an 'Efficient' (and easily built) "LowCarbon" Page

Justin Secor wrote that **"The Web is Inefficient but We Can Fix It"** . That was in 2013 yes really! All that has happened since is that the inefficiency has got far far worse and the energy consumption of the internet rises ever higher. Signatories of the 'Sustainable Web Manifesto' are well aware of this, but they are relatively few. Most Designers and Webmasters (professional or amateur) seem blissfully ignorant or place the issue low down on a list of priorities. Their inefficiency is concealed by "digital abundance".

At the "Green Digital Accessibility" Conference in Barcelona, Tom Greenwood said that **"... creating resilient, high performance, low data web services that can run on slow devices is an essential foundation of accessibility. They also happen to be central aspects of sustainable web design."**

Testing the home pages of various websites with Tom Greenwood's Website Carbon Calculator gives an astonishing range of results, from a few milligrams to 25 grams perhaps even higher. These figures are strongly linked to the page weight the size of the download.

It is actually quite hard to find 'efficient' static web pages ones for which the downloaded files describe the rendered page reasonably concisely. What is 'reasonably concisely'? One pointer is that the file size for a fullscreen .jpg image of website quality is some 500kB (or less than 200kB in the .webp format). Another indication comes from the rare examples of 'efficient' pages. The site 'lowerwinkill.co.uk' , for example, is functional and attractive and has a page weight of 230kB and carbon figure of 0.05 gm. There is no need for pageweights that far exceed 1MB and yet we find page weights as high as 120MB and more.

Part of the solution is easy or should be! One only needs to glance at the page resources of sites with high CO2 figures to spot the reasons for their gross inefficiency. Image files which are too large, often by a huge margin, are common. Google "Pagespeed Insights" and other diagnostic tools detect the worst examples and resizing is straightforward.

Even if there are few images and they are correctly sized, then surprisingly high page weights can still be encountered. Quite simple static pages can require a download of hundreds of KB because of large .html and .css files with a lot of redundant code. These have been created by SiteBuilders and CMS systems. We read that "With these programs, any Joe Bloggs, no matter what his computer literacy level, can easily construct a fullyfunctional, attractive website."

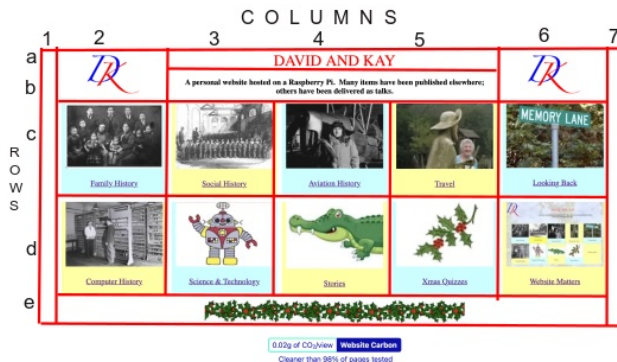
Though .html files can themselves contain a certain amount of page content, they (and the .css files) are largely 'overheads' guiding the rendering of the page. Such files should be minimised, even at the expense of complex browser processing. CSS helps us to do this and the relatively recent 'CSS Grid Layout' is powerful.

So here is an example of the use of CSS Grid Layout. It creates the davidandkay.me.uk home page. The page davidandkay.me.uk/france.html is built in the same way. Both have website carbon values of 0.02 gm and page weight under 80kB.

Basic Design method.

1. Sketch out the design of the page or a part of it in a grid.

Here is the grid for davidandkay.me.uk consisting of 5 rows of 7 columns. We can see that (for example) the text entry "DAVID AND KAY" spans 3 columns in row 'a'. commencing with cell a3.



2, Prepare the .html 'template' file. These lines in the head section are the significant ones. Grouped cells all contain the identifier of the topleft corner.

Add further lines of html to put a placeholder (a text character, say) in each cellgroup.

3. Prepare all images correctly sized and in an efficient format (.webp)

4. Submit the template file to SeaMonkey Composer. (wysiwyg editor). This will correctly render the template and it is easy to replace the placeholders by the prepared images etc. It is a quick and easy process and the html is produced efficiently.

5. Proceed with further stages. In this case the carbon badge is added but other pages might use further grids.

```
.gridcontainer {
display: grid;
gridtemplateareas:
'a1 a2 a3 a3 a3 a6 a7'
'a1 a2 b3 b3 b3 a6 a7'
'a1 c2 c3 c4 c5 c6 a7'
'a1 d2 d3 d4 d5 d6 a7'
'a1 e2 e2 e2 e2 e2 a7'
}
```

