Rendering Engines

A Rendering engine is a software component of a Browser which enables Web pages to appear in the browser. They turn the HTML tags from the web author's web page into the appropriate commands for the operating system to present them on screen. Rendering engines are also called layout engines.

The browser's rendering engine interprets the mark-up (HTML) and styles (CSS) from the web page created by the Web Author. It interprets where to place each , heading and image and allows the browser display it on the visitors screen as the Web Author intended.

Rendering engines enable the formation of the text characters, images, colours, and sections for viewing on screens of different sizes including desktop, tablet and smartphone as well as preparing the web page to be printed.

Trident is the rendering engine for Microsoft's Internet Explorer, Gecko for Firefox, and Blink for Google Chrome. Until mid-2013 Chrome used the WebKit engine along with Safari. Safari still use Webkit as it is their own engine.

While the W3C attempt to standardise the way web pages are laid out, each rendering engine has its own way of handling tags and styling properties e.g. margins, padding, shadows etc. This often means that web developers have to provide additional lines of code when creating styling to ensure their page appears correctly in the different browsers.

Rendering engines are converging and some of the major issues of the earlier versions of browsers are gone.

Vendors use the following prefixes on their CSS properties:

- WebKit: -webkit-
- Firefox: -moz-
- Opera: -o-
- Internet Explorer: -ms-

In versions of IE prior to IE9, Microsoft used a filter to produce some effects. An example of this is the filter used for drop shadow:

```
filter:
  progid:DXImageTransform.Microsoft.dropshadow(OffX=10, OffY=10, Color='#33000000');
```

This filter could have undesirable effects on other browsers, so web developers always used it with caution. As of Windows Internet Explorer 9 this feature was deprecated

Border-radius example to cover various browsers:

```
-webkit-border-radius: 12px;    /* Safari 3-4, iOS 1-3.2, Android 1.6- */
-moz-border-radius: 12px;   /* Firefox 1-3.6 */
border-radius: 12px;     /* Opera 10.5, IE 9, Safari 5, Chrome, Firefox 4, iOS 4, Android 2.1+
*/
```

A list of rendering engines for the top browsers is given below:

Browser	**Current Engine**	**Previous Engine**	**Source**
Internet Explorer	Trident		Microsoft
Firefox	Gecko		Mozilla
Safari	WebKit		Apple
Chrome	Blink	WebKit	Google
Opera	Blink	Presto	Opera