

Web Design

Web design is a process of conceptualization, planning, modeling, and execution of electronic media content delivery via Internet in the form of technologies (such as markup languages) suitable for interpretation and display by a web browser or other web-based graphical user interfaces (GUIs).

The intent of web design is to create a [web site](#) (a collection of electronic files residing on one or more [web servers](#)) that presents [content](#) (including interactive features or interfaces) to the [end user](#) in the form of [web pages](#) once requested. Such elements as text, [forms](#), and bit-mapped [images](#) ([GIFs](#), [JPEGs](#), [PNGs](#)) can be placed on the page using [HTML](#), [XHTML](#), or [XML](#) tags. Displaying more complex media ([vector graphics](#), animations, videos, sounds) requires [plug-ins](#) such as [Flash](#), [QuickTime](#), [Java run-time environment](#), etc. Plug-ins are also embedded into web pages by using HTML or XHTML tags.

Improvements in the various browsers' compliance with [W3C](#) standards prompted a widespread acceptance of XHTML and XML in conjunction with [Cascading Style Sheets](#) (CSS) to position and manipulate web page elements. The latest standards and proposals aim at leading to the various browsers' ability to deliver a wide variety of media and accessibility options to the client possibly without employing plug-ins.

Typically web pages are classified as *static* or *dynamic*.

- [Static pages](#) don't change content and layout with every [request](#) unless a human ([web master](#) or [programmer](#)) manually updates the page.
- [Dynamic pages](#) adapt their content and/or appearance depending on the [end-user's](#) input or interaction or changes in the computing environment (user, time, [database](#) modifications, etc.) Content can be changed on the client side (end-user's computer) by using client-side scripting languages ([JavaScript](#), [JScript](#), [Actionscript](#), [media players](#) and [PDF](#) reader plug-ins, etc.) to alter [DOM](#) elements ([DHTML](#)). Dynamic content is often compiled on the server utilizing server-side scripting languages ([PHP](#), [ASP](#), [Perl](#), [Coldfusion](#), [JSP](#), [Python](#), etc.). Both approaches are usually used in complex applications.

With growing specialization within [communication design](#) and [information technology](#) fields, there is a strong tendency to draw a clear line between *web design* specifically for web pages and [web development](#) for the overall logistics of all web-based services.

Web site design

A [Web site](#) is a collection of information about a particular topic or subject. Designing a web site is defined as the arrangement and creation of web pages that in turn make up a web site. A web page consists of information for which the web site is developed. A web site might be compared to a book, where each page of the book is a web page.

There are many aspects ([design](#) concerns) in this process, and due to the rapid development of the Internet, new aspects may emerge. For non-commercial web sites, the goals may vary depending on the desired exposure and response. For typical commercial web sites, the basic aspects of design are:

- The *content*: the substance, and information on the site should be relevant to the site and should target the area of the public that the website is concerned with.
- The *usability*: the site should be user-friendly, with the interface and navigation simple and reliable.
- The *appearance*: the graphics and text should include a single style that flows throughout, to show consistency. The style should be professional, appealing and relevant.
- The *visibility*: the site must also be easy to find via most, if not all, major search engines and advertisement media.

A web site typically consists of text and [images](#). The first page of a web site is known as the [Home page](#) or Index. Some web sites use what is commonly called a Splash Page. Splash pages might include a welcome message, language or region selection, or disclaimer. Each web page within a web site is an [HTML](#) file which has its own [URL](#). After each web page is created, they are typically linked together using a navigation menu composed of [hyperlinks](#). Faster browsing speeds have led to shorter attention spans and more demanding online visitors and this has resulted in less use of Splash Pages, particularly where commercial web sites are concerned.

Once a web site is completed, it must be published or uploaded in order to be viewable to the public over the [internet](#). This may be done using an [FTP client](#). Once published, the [web master](#) may use a variety of techniques to increase the traffic, or hits, that the web site receives. This may include submitting the web site to a [search engine](#) such as [Google](#) or [Yahoo](#), exchanging links with other web sites, creating affiliations with similar web sites, etc.

Multidisciplinary requirements

Web site design crosses [multiple disciplines](#) of [information systems](#), [information technology](#) and [communication design](#). The web site is an [information system](#) whose components are sometimes classified as [front-end and back-end](#). The observable [content](#) (e.g. [page layout](#), [user interface](#), [graphics](#), [text](#), [audio](#)) is known as the front-end. The back-end comprises the organization and efficiency of the source code, invisible scripted functions, and the server-side components that process the output from the front-end. Depending on the size of a Web development project, it may be carried out by a multi-skilled individual (sometimes called a [web master](#)), or a [project manager](#) may oversee [collaborative design](#) between group members with specialized skills.

Issues

As in collaborative designs, there are conflicts between differing goals and methods of web site designs. These are a few of the ongoing ones.

Lack of collaboration in design

In the early stages of the web, there wasn't as much collaboration between web designs and larger [advertising campaigns](#), [customer transactions](#), [social networking](#), [intranets](#) and [extranets](#) as there is now. Web pages were mainly static [online brochures](#) disconnected from the larger projects.

Many web pages are still disconnected from larger projects. Special design considerations are necessary for use within these larger projects. These design considerations are often overlooked, especially in cases where there is a lack of [leadership](#), lack of understanding of *why* and technical knowledge of *how* to integrate, or lack of concern for the larger project in order to facilitate [collaboration](#). This often results in unhealthy [competition](#) or [compromise](#) between departments, and less than optimal use of web pages.

Liquid versus fixed layouts

On the web the designer has no control over several factors, including the size of the browser window, the [web browser](#) used, the input devices used ([mouse](#), [touch screen](#), [voice command](#), [text](#), [cell phone](#) number pad, etc.) and the size and characteristics of available fonts.

Some designers choose to control the appearance of the elements on the screen by using specific width designations. This control may be achieved through the use of a [HTML](#) table-based design or a more semantic div-based design through the use of CSS. Whenever the text, images, and layout of a design do not change as the browser changes, this is referred to as a *fixed width design*. Proponents of fixed width design prefer precise control over the layout of a site and the precision placement of objects on the page. Other designers choose a liquid design. A liquid design is one, like [Wikipedia](#), where the design moves to flow content into the whole screen, or a portion of the screen, no matter what the size of the browser window. Proponents of *liquid design* prefer greater compatibility and using the screen space available. Liquid design can be achieved through the use of [CSS](#), by avoiding styling the page altogether, or by using HTML tables (or more semantic divs) set to a percentage of the page. Both liquid and fixed design developers must make decisions about how the design should [degrade](#) on higher and lower screen resolutions. Sometimes the [pragmatic](#) choice is made to flow the design between a minimum and a maximum width. This allows the designer to avoid coding for the browser choices making up [The Long Tail](#), while still using all available screen space. Depending on the purpose of the content, a web designer may decide to use either fixed or liquid layouts on a case-by-case basis.

Similar to liquid layout is the optional *fit to window* feature with Adobe Flash content. This is a fixed layout that optimally scales the content of the page without changing the arrangement or text wrapping when the browser is resized.

Flash

Adobe Flash (formerly Macromedia Flash) is a proprietary, robust graphics animation or application development program used to create and deliver dynamic content, media (such as sound and video), and interactive applications over the web via the browser.

Flash is not a standard produced by a vendor-neutral standards organization like most of the core protocols and formats on the Internet. Flash is much more restrictive than the [open](#) HTML format, though, requiring a [proprietary](#) plugin to be seen, and it does not integrate with most [web browser](#) UI features like the "Back" button.

According to a study,^[2] 98% of US Web users have the Flash Player installed.^[3] Numbers vary depending on the detection scheme and research demographics.^[4]

Many graphic artists use Flash because it gives them exact control over every part of the design, and anything can be animated and generally "jazzed up". Some application designers enjoy Flash because it lets them create applications that do not have to be refreshed or go to a new web page every time an action occurs. Flash can use embedded fonts instead of the standard fonts installed on most computers. There are many sites which forgo HTML entirely for Flash. Other sites may use Flash content combined with HTML as conservatively as gifs or jpegs would be used, but with smaller vector file sizes and the option of faster loading animations. Flash may also be used to protect content from unauthorized duplication or searching. Alternatively, small, dynamic Flash objects may be used to replace standard HTML elements (such as headers or menu links) with advanced typography not possible via regular HTML or CSS (see [Scalable Inman Flash Replacement](#)).

Flash detractors claim that Flash websites tend to be poorly designed, and often use confusing and non-standard user-interfaces. Up until recently, search engines have been unable to index Flash objects, which has prevented sites from having their contents easily found. This is because many search engine crawlers rely on text to index websites. It is possible to specify alternate content to be displayed for browsers that do not support Flash. Using alternate content also helps [search engines](#) to understand the page, and can result in much better visibility for the page. However, the vast majority of Flash websites are not disability accessible (for screen readers, for example) or [Section 508](#) compliant. An additional issue is that sites which commonly use alternate content for search engines to their human visitors are usually judged to be spamming search engines and are automatically banned.

The most recent incarnation of Flash's scripting language (called "[ActionScript](#)", which is an [ECMA](#) language similar to [JavaScript](#)) incorporates long-awaited usability features, such as respecting the browser's font size and allowing blind users to use [screen readers](#). Actionscript 2.0 is an [Object-Oriented](#) language, allowing the use of CSS, [XML](#), and the design of class-based web applications. ActionScript 3.0 has a similar syntax to ActionScript 2.0 but different set of APIs for creating objects.

CSS versus tables

When [Netscape Navigator](#) 4 dominated the browser market, the popular solution available for designers to lay out a Web page was by using tables. Often even simple designs for a page would require dozens of tables nested in each other. Many [web templates](#) in [Dreamweaver](#) and other [WYSIWYG](#) editors still use this technique today. Navigator 4 didn't support [CSS](#) to a useful degree, so it simply wasn't used.

After the [browser wars](#) subsided, and the dominant browsers such as [Internet Explorer](#) became more W3C compliant, designers started turning toward CSS as an alternate means of laying out their pages. CSS proponents say that tables should be used only for tabular data, not for layout. Using CSS instead of tables also returns HTML to a [semantic markup](#), which helps [bots](#) and search engines understand what's going on in a web page. All modern [Web browsers](#) support CSS with different degrees of [limitations](#).

However, one of the main points against CSS is that by relying on it exclusively, control is essentially relinquished as each browser has its own quirks which result in a slightly different page display. This is especially a problem as not every browser supports the same subset of CSS rules. For designers who are used to table-based layouts, developing Web sites in CSS often becomes a matter of trying to replicate what can be done with tables, leading some to find CSS design rather cumbersome due to lack of familiarity. For example, at one time it was rather difficult to produce certain design elements, such as vertical positioning, and full-length footers in a design using absolute positions. With the abundance of

CSS resources available online today, though, designing with reasonable adherence to standards involves little more than applying CSS 2.1 or CSS 3 to properly structured markup.

These days most modern browsers have solved most of these quirks in CSS rendering and this has made many different CSS layouts possible. However, some people continue to use old browsers, and designers need to keep this in mind, and allow for graceful degrading of pages in older browsers. Most notable among these old browsers are Internet Explorer 5 and 5.5, which, according to some web designers, are becoming the new Netscape Navigator 4 — a block that holds the World Wide Web back from converting to CSS design. However, the W3 Consortium has made CSS in combination with XHTML the standard for web design.

Form vs. Function

Some [web developers](#) have a [graphic arts](#) background and may pay more attention to how a page looks than considering other issues such as how visitors are going to find the page via a search engine. Some might rely more on [advertising](#) than search engines to attract visitors to the site. On the other side of the issue, [search engine optimization consultants](#) (SEOs) are concerned with how well a web site works technically and textually: how much traffic it generates via search engines, and how many sales it makes, assuming looks don't contribute to the sales. As a result, the designers and SEOs often end up in disputes where the designer wants more 'pretty' graphics, and the SEO wants lots of 'ugly' [keyword](#)-rich text, [bullet lists](#), and [text links](#). One could argue that this is a [false dichotomy](#) due to the possibility that a web design may integrate the two disciplines for a collaborative and [synergistic](#) solution. Because some graphics serve [communication](#) purposes in addition to [aesthetics](#), how well a site works may depend on the [graphic designer's visual communication](#) ideas as well as the SEO considerations.

An additional concern website owners face is that of [Usability](#). This factor involves the ability of the user (web site visitor) to interact with the web site and perform the tasks most important to the web site owner. For instance a web site that sells cars would want to make the process of buying a car as easy and thought free as possible. Ideas like this populate the web design community, and experts like Steve Krug [\[3\]](#) have emerged.

Another problem when using lots of graphics on a page is that download times can be greatly lengthened, often irritating the user. This has become less of a problem as the internet has evolved with [high-speed internet](#) and the use of [vector graphics](#). This is an engineering challenge to increase [bandwidth](#) in addition to an artistic challenge to minimize graphics and graphic file sizes. This is an on-going challenge as increased bandwidth invites increased amounts of content.

Compatibility and restrictions

Because of the [market share of modern browsers](#) (depending on your target market), the compatibility of your website with the viewers is restricted. For instance, a website that is designed for the majority of websurfers will be limited to the use of [valid XHTML](#) 1.0 Strict or older, [Cascading Style Sheets](#) Level 1, and 1024x768 [display resolution](#). This is because [Internet Explorer](#) is not fully [W3C standards compliant](#) with the [modularity](#) of XHTML 1.1 and the majority of CSS beyond 1. A target market of more alternative browser (e.g. [Firefox](#) and [Opera](#)) users allow for more W3C compliance and thus a greater range of options for a web designer.

Another restriction on webpage design is the use of different [image file formats](#). The majority of users can support [GIF](#), [JPEG](#), and [PNG](#) (with restrictions). Again [Internet Explorer](#) is the major restriction here, not fully supporting PNG's advanced transparency features, resulting in the GIF format still being the most widely used graphic file format for transparent images.

Many website incompatibilities go unnoticed by the designer and unreported by the users. The only way to be certain a website will work on a particular platform is to test it on that platform.

Recently the development teams who create new browser versions (Internet Explorer, Firefox etc..) have begun working toward more standards compliance. It was only in the beginning of 2008 that the developers of Internet Explorer 8 announced the new version of Internet Explorer (8.0) [\[4\]](#) will be standards compliant. As of today all widely used browsers in development are standards compliant.

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