**WORLD WIDE WEB**

The **World Wide Web**, abbreviated as **WWW** and **W3** and commonly known as **The Web**, is a system of interlinked [hypertext](http://en.wikipedia.org/wiki/Hypertext) documents contained on the [Internet](http://en.wikipedia.org/wiki/Internet). With a [web browser](http://en.wikipedia.org/wiki/Web_browser), one can view [web pages](http://en.wikipedia.org/wiki/Web_page) that may contain [text](http://en.wikipedia.org/wiki/Writing), [images](http://en.wikipedia.org/wiki/Image), [videos](http://en.wikipedia.org/wiki/Video), and other [multimedia](http://en.wikipedia.org/wiki/Multimedia) and navigate between them using [hyperlinks](http://en.wikipedia.org/wiki/Hyperlink). Using concepts from earlier hypertext systems, [English](http://en.wikipedia.org/wiki/England) physicist [Sir Tim Berners-Lee](http://en.wikipedia.org/wiki/Sir_Tim_Berners-Lee), now the Director of the [World Wide Web Consortium](http://en.wikipedia.org/wiki/World_Wide_Web_Consortium), wrote a proposal in March 1989 for what would eventually become the World Wide Web. He was later joined by Belgian computer scientist [Robert Cailliau](http://en.wikipedia.org/wiki/Robert_Cailliau) while both were working at [CERN](http://en.wikipedia.org/wiki/CERN) in [Geneva](http://en.wikipedia.org/wiki/Geneva), [Switzerland](http://en.wikipedia.org/wiki/Switzerland). In 1990, they proposed using "HyperText to link and access information of various kinds as a web of nodes in which the user can browse at will", and released that web in December.

"The World-Wide Web (W3) was developed to be a pool of human knowledge, which would allow collaborators in remote sites to share their ideas and all aspects of a common project." If two projects are independently created, rather than have a central figure make the changes, the two bodies of information could form into one cohesive piece of work.

History

[](http://en.wikipedia.org/wiki/File:Premier_serveur_Web.jpeg)

[http://en.wikipedia.org/skins-1.5/common/images/magnify-clip.png](http://en.wikipedia.org/wiki/File:Premier_serveur_Web.jpeg)

This [NeXT Computer](http://en.wikipedia.org/wiki/NeXT_Computer) used by [Sir Tim Berners-Lee](http://en.wikipedia.org/wiki/Sir_Tim_Berners-Lee) at CERN became the first web server.

The [French](http://en.wikipedia.org/wiki/France) [Minitel](http://en.wikipedia.org/wiki/Minitel" \o "Minitel), accessible through the telephone lines, is considered to be the world's first and most successful pre-World Wide Web online service. It was launched in France in 1982 by what became later known as [France Télécom](http://en.wikipedia.org/wiki/France_T%C3%A9l%C3%A9com) and [La Poste](http://en.wikipedia.org/wiki/La_Poste_(France)).

In March 1989, [Tim Berners-Lee](http://en.wikipedia.org/wiki/Tim_Berners-Lee) wrote a proposal that referenced [ENQUIRE](http://en.wikipedia.org/wiki/ENQUIRE), a database and software project he had built in 1980, and described a more elaborate information management system. With help from [Robert Cailliau](http://en.wikipedia.org/wiki/Robert_Cailliau), he published a more formal proposal (on November 12, 1990) to build a "[Hypertext](http://en.wikipedia.org/wiki/Hypertext) project" called "WorldWideWeb" (one word, also "W3") as a "web" of "hypertext documents" to be viewed by "[browsers](http://en.wikipedia.org/wiki/Web_browser)", using a [client-server](http://en.wikipedia.org/wiki/Client-server) architecture.[[2]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-W90-1) This proposal estimated that a read-only web would be developed within three months and that it would take six months to achieve, "the creation of new links and new material by readers, [so that] authorship becomes universal" as well as "the automatic notification of a reader when new material of interest to him/her has become available". See [Web 2.0](http://en.wikipedia.org/wiki/Web_2.0) and [RSS](http://en.wikipedia.org/wiki/RSS)/[Atom](http://en.wikipedia.org/wiki/Atom_(standard)), which have taken a little longer to mature.

The proposal had been modeled after the [Dynatext](http://en.wikipedia.org/wiki/Dynatext" \o "Dynatext) [SGML](http://en.wikipedia.org/wiki/SGML) reader, by Electronic Book Technology, a spin-off from the Institute for Research in Information and Scholarship at Brown University. The Dynatext system, licensed by CERN, was technically advanced and was a key player in the extension of SGML ISO 8879:1986 to Hypermedia within [HyTime](http://en.wikipedia.org/wiki/HyTime" \o "HyTime), but it was considered too expensive and had an inappropriate licensing policy for use in the general high energy physics community, namely a fee for each document and each document alteration.

A [NeXT Computer](http://en.wikipedia.org/wiki/NeXT_Computer) was used by Berners-Lee as the world's first [web server](http://en.wikipedia.org/wiki/Web_server) and also to write the first [web browser](http://en.wikipedia.org/wiki/Web_browser), [WorldWideWeb](http://en.wikipedia.org/wiki/WorldWideWeb" \o "WorldWideWeb), in 1990. By Christmas 1990, Berners-Lee had built all the tools necessary for a working Web:[[6]](http://en.wikipedia.org/wiki/World_Wide_Web" \l "cite_note-5) the [first web browser](http://en.wikipedia.org/wiki/WorldWideWeb) (which was a web editor as well), the first web server, and the first web pages[[7]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-6) which described the project itself. On August 6, 1991, he posted a short summary of the World Wide Web project on the alt.hypertext [newsgroup](http://en.wikipedia.org/wiki/Newsgroup).[[8]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-7) This date also marked the debut of the Web as a publicly available service on the Internet. The first server outside Europe was set up at [SLAC](http://en.wikipedia.org/wiki/SLAC) in December 1991.[[9]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-8) The crucial underlying concept of [hypertext](http://en.wikipedia.org/wiki/Hypertext) originated with older projects from the 1960s, such as the Hypertext Editing System (HES) at Brown University--- among others [Ted Nelson](http://en.wikipedia.org/wiki/Ted_Nelson) and [Andries van Dam](http://en.wikipedia.org/wiki/Andries_van_Dam" \o "Andries van Dam)--- [Ted Nelson](http://en.wikipedia.org/wiki/Ted_Nelson)'s [Project Xanadu](http://en.wikipedia.org/wiki/Project_Xanadu) and [Douglas Engelbart](http://en.wikipedia.org/wiki/Douglas_Engelbart)'s [oN-Line System](http://en.wikipedia.org/wiki/NLS_(computer_system)" \o "NLS (computer system)) (NLS). Both Nelson and Engelbart were in turn inspired by [Vannevar Bush](http://en.wikipedia.org/wiki/Vannevar_Bush" \o "Vannevar Bush)'s [microfilm](http://en.wikipedia.org/wiki/Microfilm)-based "[memex](http://en.wikipedia.org/wiki/Memex" \o "Memex)," which was described in the 1945 essay "[As We May Think](http://en.wikipedia.org/wiki/As_We_May_Think)".[[*citation needed*](http://en.wikipedia.org/wiki/Wikipedia:Citation_needed)]

Berners-Lee's breakthrough was to marry hypertext to the Internet. In his book *Weaving The Web*, he explains that he had repeatedly suggested that a marriage between the two technologies was possible to members of *both* technical communities, but when no one took up his invitation, he finally tackled the project himself. In the process, he developed a system of globally unique identifiers for resources on the Web and elsewhere: the Universal Document Identifier (UDI) later known as [Uniform Resource Locator](http://en.wikipedia.org/wiki/Uniform_Resource_Locator) (URL) and [Uniform Resource Identifier](http://en.wikipedia.org/wiki/Uniform_Resource_Identifier) (URI); and the publishing language [HyperText Markup Language](http://en.wikipedia.org/wiki/Hypertext_Markup_Language" \o "Hypertext Markup Language) (HTML); and the [Hypertext Transfer Protocol](http://en.wikipedia.org/wiki/Hypertext_Transfer_Protocol) (HTTP).[[10]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-9)

The World Wide Web had a number of differences from other hypertext systems that were then available. The Web required only unidirectional links rather than bidirectional ones. This made it possible for someone to link to another resource without action by the owner of that resource. It also significantly reduced the difficulty of implementing web servers and browsers (in comparison to earlier systems), but in turn presented the chronic problem of [link rot](http://en.wikipedia.org/wiki/Link_rot). Unlike predecessors such as [HyperCard](http://en.wikipedia.org/wiki/HyperCard), the World Wide Web was non-proprietary, making it possible to develop servers and clients independently and to add extensions without licensing restrictions. On April 30, 1993, [CERN](http://en.wikipedia.org/wiki/CERN) announced[[11]](http://en.wikipedia.org/wiki/World_Wide_Web" \l "cite_note-10) that the World Wide Web would be free to anyone, with no fees due. Coming two months after the announcement that the [Gopher](http://en.wikipedia.org/wiki/Gopher_(protocol)) protocol was no longer free to use, this produced a rapid shift away from Gopher and towards the Web. An early popular web browser was [ViolaWWW](http://en.wikipedia.org/wiki/ViolaWWW" \o "ViolaWWW), which was based upon [HyperCard](http://en.wikipedia.org/wiki/HyperCard).

Scholars generally agree that a turning point for the World Wide Web began with the introduction[[12]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-11) of the [Mosaic](http://en.wikipedia.org/wiki/Mosaic_(web_browser)) web browser[[13]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-12) in 1993, a graphical browser developed by a team at the[National Center for Supercomputing Applications](http://en.wikipedia.org/wiki/National_Center_for_Supercomputing_Applications) at the [University of Illinois at Urbana-Champaign](http://en.wikipedia.org/wiki/University_of_Illinois_at_Urbana-Champaign) (NCSA-UIUC), led by [Marc Andreessen](http://en.wikipedia.org/wiki/Marc_Andreessen). Funding for Mosaic came from the U.S. *High-Performance Computing and Communications Initiative*, a funding program initiated by the [*High Performance Computing and Communication Act of 1991*](http://en.wikipedia.org/wiki/High_Performance_Computing_and_Communication_Act_of_1991), one of [several computing developments](http://en.wikipedia.org/wiki/Al_Gore_and_information_technology) initiated by U.S. Senator [Al Gore](http://en.wikipedia.org/wiki/Al_Gore).[[14]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-13) Prior to the release of Mosaic, graphics were not commonly mixed with text in web pages, and its popularity was less than older protocols in use over the Internet, such as [Gopher](http://en.wikipedia.org/wiki/Gopher_(protocol)) and [Wide Area Information Servers](http://en.wikipedia.org/wiki/Wide_Area_Information_Servers) (WAIS). Mosaic's graphical user interface allowed the Web to become, by far, the most popular Internet protocol.

The World Wide Web Consortium (W3C) was founded by Tim Berners-Lee after he left the European Organization for Nuclear Research ([CERN](http://en.wikipedia.org/wiki/CERN)) in October, 1994. It was founded at the[Massachusetts Institute of Technology](http://en.wikipedia.org/wiki/Massachusetts_Institute_of_Technology) Laboratory for Computer Science (MIT/LCS) with support from the [Defense Advanced Research Projects Agency](http://en.wikipedia.org/wiki/Defense_Advanced_Research_Projects_Agency) (DARPA)—which had pioneered the[Internet](http://en.wikipedia.org/wiki/Internet)—and the [European Commission](http://en.wikipedia.org/wiki/European_Commission). By the end of 1994, while the total number of websites was still minute compared to present standards, quite a number of [notable websites](http://en.wikipedia.org/wiki/List_of_websites_founded_before_1995) were already active, many of whom are the precursors or inspiration for today's most popular services.

Connected by the existing Internet, other [websites](http://en.wikipedia.org/wiki/Website) were created around the world, adding international standards for [domain names](http://en.wikipedia.org/wiki/Domain_name) and the [HTML](http://en.wikipedia.org/wiki/HTML). Since then, Berners-Lee has played an active role in guiding the development of web standards (such as the [markup languages](http://en.wikipedia.org/wiki/Markup_language) in which web pages are composed), and in recent years has advocated his vision of a [Semantic Web](http://en.wikipedia.org/wiki/Semantic_Web). The World Wide Web enabled the spread of information over the [Internet](http://en.wikipedia.org/wiki/Internet) through an easy-to-use and flexible format. It thus played an important role in popularizing use of the Internet.[[15]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-14) Although the two terms are sometimes [conflated](http://en.wikipedia.org/wiki/Conflation) in popular use, *World Wide Web* is not [synonymous](http://en.wikipedia.org/wiki/Synonym) with *Internet*.[[16]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-15) The Web is an application built on top of the Internet.

Function

The terms Internet and World Wide Web are often used in every-day speech without much distinction. However, the Internet and the World Wide Web are not one and the same. The Internet is a global system of interconnected [computer networks](http://en.wikipedia.org/wiki/Computer_networks). In contrast, the Web is one of the services that runs on the Internet. It is a collection of interconnected documents and other resources, linked by hyperlinks and URLs. In short, the Web is an [application](http://en.wikipedia.org/wiki/Application_software) running on the Internet.[[17]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-16) Viewing a [web page](http://en.wikipedia.org/wiki/Web_page) on the World Wide Web normally begins either by typing the [URL](http://en.wikipedia.org/wiki/Uniform_Resource_Locator) of the page into a [web browser](http://en.wikipedia.org/wiki/Web_browser), or by following a [hyperlink](http://en.wikipedia.org/wiki/Hyperlink) to that page or resource. The web browser then initiates a series of communication messages, behind the scenes, in order to fetch and display it.

First, the server-name portion of the URL is resolved into an [IP address](http://en.wikipedia.org/wiki/IP_address) using the global, distributed [Internet](http://en.wikipedia.org/wiki/Internet) database known as the [domain name system](http://en.wikipedia.org/wiki/Domain_name_system), or DNS. This IP address is necessary to contact the [Web server](http://en.wikipedia.org/wiki/Web_server). The browser then requests the resource by sending an [HTTP](http://en.wikipedia.org/wiki/Hypertext_Transfer_Protocol) request to the Web server at that particular address. In the case of a typical web page, the [HTML](http://en.wikipedia.org/wiki/HTML) text of the page is requested first and [parsed](http://en.wikipedia.org/wiki/Parsing) immediately by the web browser, which then makes additional requests for images and any other files that form parts of the page. Statistics measuring a website's popularity are usually based either on the number of '[page views](http://en.wikipedia.org/wiki/Page_view)' or associated server '[hits](http://en.wikipedia.org/wiki/Hit_(internet))' (file requests) that take place.

While receiving these files from the web server, browsers may progressively [render](http://en.wikipedia.org/wiki/Layout_engine) the page onto the screen as specified by its HTML, [CSS](http://en.wikipedia.org/wiki/Cascading_Style_Sheets), and other web languages. Any images and other resources are incorporated to produce the on-screen web page that the user sees. Most web pages will themselves contain [hyperlinks](http://en.wikipedia.org/wiki/Hyperlink) to other related pages and perhaps to downloads, source documents, definitions and other web resources. Such a collection of useful, related resources, interconnected via hypertext links, is what was dubbed a "web" of information. Making it available on the Internet created what [Tim Berners-Lee](http://en.wikipedia.org/wiki/Tim_Berners-Lee) first called the **WorldWideWeb** (in its original [CamelCase](http://en.wikipedia.org/wiki/CamelCase" \o "CamelCase), which was subsequently discarded) in November 1990.[[2]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-W90-1)

**What Does W3 Define?**

W3, or www, stands for many different things. The main topics being:

* The idea of a boundless information world in which all items have a reference by which they can be retrieved;
* the address system (URI) which the project implemented to make this world possible, despite many different protocols;
* a network protocol (HTTP) used by native W3 servers giving performance and features not otherwise available;
* a markup language (HTML) which every W3 client is required to understand, and is used for the transmission of basic things such as text, menus and simple on-line help information across the net;
* the body of data available on the Internet using all or some of the preceding listed items.

**Linking**

[](http://en.wikipedia.org/wiki/File:WorldWideWebAroundWikipedia.png)

[http://en.wikipedia.org/skins-1.5/common/images/magnify-clip.png](http://en.wikipedia.org/wiki/File:WorldWideWebAroundWikipedia.png)

Graphic representation of a minute fraction of the [WWW](http://en.wikipedia.org/wiki/WWW), demonstrating [hyperlinks](http://en.wikipedia.org/wiki/Hyperlink)

Over time, many web resources pointed to by hyperlinks disappear, relocate, or are replaced with different content. This phenomenon is referred to in some circles as "[link rot](http://en.wikipedia.org/wiki/Link_rot)" and the hyperlinks affected by it are often called "[dead links](http://en.wikipedia.org/wiki/Dead_link)". The ephemeral nature of the Web has prompted many efforts to archive web sites. The [Internet Archive](http://en.wikipedia.org/wiki/Internet_Archive) is one of the best-known efforts; it has been active since 1996.

**Ajax updates**

[JavaScript](http://en.wikipedia.org/wiki/JavaScript) is a [scripting language](http://en.wikipedia.org/wiki/Scripting_programming_language) that was initially developed in 1995 by [Brendan Eich](http://en.wikipedia.org/wiki/Brendan_Eich), then of [Netscape](http://en.wikipedia.org/wiki/Netscape), for use within web pages.[[19]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-Hamilton-18) The standardized version is [ECMAScript](http://en.wikipedia.org/wiki/ECMAScript" \o "ECMAScript).[[19]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-Hamilton-18) To overcome some of the limitations of the page-by-page model described above, some web applications also use [Ajax](http://en.wikipedia.org/wiki/Ajax_(programming)) ([asynchronous](http://en.wikipedia.org/wiki/Asynchronous_I/O) JavaScript and [XML](http://en.wikipedia.org/wiki/XML)). JavaScript is delivered with the page that can make additional HTTP requests to the server, either in response to user actions such as mouse-clicks, or based on lapsed time. The server's responses are used to modify the current page rather than creating a new page with each response. Thus the server only needs to provide limited, incremental information. Since multiple Ajax requests can be handled at the same time, users can interact with a page even while data is being retrieved. Some web applications regularly [poll](http://en.wikipedia.org/wiki/Polling_(computer_science)) the server to ask if new information is available.[[20]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-19)

**WWW prefix**

Many [web addresses](http://en.wikipedia.org/wiki/Web_address) begin with *www*, because of the long-standing practice of naming Internet hosts (servers) according to the services they provide. So, the host name for a [web server](http://en.wikipedia.org/wiki/Web_server) is often *www* as it is *ftp* for an [FTP server](http://en.wikipedia.org/wiki/FTP_server), and *news* or *nntp* for a [USENET](http://en.wikipedia.org/wiki/USENET) [news server](http://en.wikipedia.org/wiki/News_server) etc. These host names then appear as [DNS](http://en.wikipedia.org/wiki/Domain_name_system) [subdomain](http://en.wikipedia.org/wiki/Subdomain) names, as in "www.example.com". The use of such subdomain names is not required by any technical or policy standard; indeed, the first ever web server was called "nxoc01.cern.ch",[[21]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-20) and many web sites exist without a *www*subdomain prefix, or with some other prefix such as "www2", "secure" etc. These subdomain prefixes have no consequence; they are simply chosen names. Many web servers are set up such that both the domain by itself (e.g., example.com) and the *www* subdomain (e.g., www.example.com) refer to the same site, others require one form or the other, or they may map two different web sites.

When a single word is typed into the address bar and the [return](http://en.wikipedia.org/wiki/Carriage_return) key is pressed, some web browsers automatically try adding "www." to the beginning of it and possibly ".com", ".org" and ".net" at the end. For example, typing 'apple<enter>' may resolve to *http://www.apple.com/* and 'openoffice<enter>' to *http://www.openoffice.org*. This feature was beginning to be included in early versions of Mozilla [Firefox](http://en.wikipedia.org/wiki/Firefox) (when it still had the working title 'Firebird') in early 2003.[[22]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-21) It is reported that Microsoft was granted a US patent for the same idea in 2008, but only with regard to mobile devices.[[23]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-22)

The 'http://' or 'https://' part of web addresses *does* have meaning: These refer to [Hypertext Transfer Protocol](http://en.wikipedia.org/wiki/Hypertext_Transfer_Protocol) and to [HTTP Secure](http://en.wikipedia.org/wiki/HTTP_Secure) and so define the communication protocol that will be used to request and receive the page and all its images and other resources. The HTTP network protocol is fundamental to the way the World Wide Web works, and the encryption involved in HTTPS adds an essential layer if confidential information such as passwords or bank details are to be exchanged over the public internet. Web browsers often prepend this 'scheme' part to URLs too, if it is omitted. Despite this, Berners-Lee himself has admitted that the two 'forward slashes' (//) were in fact initially unnecessary[[24]](http://en.wikipedia.org/wiki/World_Wide_Web" \l "cite_note-23). In overview, [RFC 2396](http://tools.ietf.org/html/rfc2396) defined web URLs to have the following form: <scheme>://<authority><path>?<query>#<fragment>. Here <authority> is for example the web server (like www.example.com), and <path> identifies the web page. The web server processes the <query> (which can be data sent via a form, e.g. terms sent to a search engine), and the returned page depends on it. Finally, <fragment> is not sent to the web server. It identifies the portion of the page which the browser shows first.

In [English](http://en.wikipedia.org/wiki/English_language), [*www* is pronounced](http://en.wikipedia.org/wiki/Pronunciation_of_%22www%22) by individually pronouncing the name of characters (*double-u double-u double-u*). Although some technical users pronounce it *dub-dub-dub* this is not widespread. The English writer [Douglas Adams](http://en.wikipedia.org/wiki/Douglas_Adams) once quipped in [The Independent on Sunday](http://en.wikipedia.org/wiki/The_Independent) (1999): "The World Wide Web is the only thing I know of whose shortened form takes three times longer to say than what it's short for," with Stephen Fry later pronouncing it in his "Podgrammes" series of podcasts as "wuh wuh wuh." In Mandarin [Chinese](http://en.wikipedia.org/wiki/Chinese_language), *World Wide Web* is commonly translated via a [phono-semantic matching](http://en.wikipedia.org/wiki/Phono-semantic_matching" \o "Phono-semantic matching) to *wàn wéi wǎng* ([万维网](http://en.wiktionary.org/wiki/%E4%B8%87%E7%BB%B4%E7%BD%91" \o "wikt:万维网)), which satisfies *www* and literally means "myriad dimensional net",[[25]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-24) a translation that very appropriately reflects the design concept and proliferation of the World Wide Web. Tim Berners-Lee's web-space states that *World Wide Web* is officially spelled as three separate words, each capitalized, with no intervening hyphens.[[26]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-25)

Safety

**Privacy**

Computer users, who save time and money, and who gain conveniences and entertainment, may or may not have surrendered the right to [privacy](http://en.wikipedia.org/wiki/Privacy) in exchange for using a number of technologies including the Web.[[27]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-Bits-26) Worldwide, more than a half billion people have used a [social network service](http://en.wikipedia.org/wiki/Social_network_service),[[28]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-27) and of Americans who grew up with the Web, half created an online profile[[29]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-28) and are part of a generational shift that could be changing norms.[[30]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-29)[[31]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-30) [Facebook](http://en.wikipedia.org/wiki/Facebook" \o "Facebook) progressed from U.S. college students to a 70% non-U.S. audience, and in 2009 prior to launching a beta test of the "transition tools" to set privacy preferences,[[32]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-31) estimated that only 20% of its members use privacy settings.[[33]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-32)

Privacy representatives from 60 countries have resolved to ask for laws to complement industry self-regulation, for education for children and other minors who use the Web, and for default protections for users of social networks.[[34]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-conference-33) They also believe data protection for [personally identifiable information](http://en.wikipedia.org/wiki/Personally_identifiable_information) benefits business more than the sale of that information.[[34]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-conference-33) Users can opt-in to features in browsers to clear their personal histories locally and block some [cookies](http://en.wikipedia.org/wiki/HTTP_cookie) and [advertising networks](http://en.wikipedia.org/wiki/Advertising_network)[[35]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-34) but they are still tracked in websites' [server logs](http://en.wikipedia.org/wiki/Server_log), and particularly[web beacons](http://en.wikipedia.org/wiki/Web_beacons).[[36]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-35) Berners-Lee and colleagues see hope in accountability and appropriate use achieved by extending the Web's architecture to policy awareness, perhaps with audit logging, reasoners and appliances.[[37]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-Weitzner-36) Among services paid for by [advertising](http://en.wikipedia.org/wiki/Advertising), [Yahoo!](http://en.wikipedia.org/wiki/Yahoo!) could collect the most data about users of commercial websites, about 2,500 bits of information per month about each typical user of its site and its affiliated advertising network sites. Yahoo! was followed by [MySpace](http://en.wikipedia.org/wiki/MySpace) with about half that potential and then by [AOL](http://en.wikipedia.org/wiki/AOL)–[TimeWarner](http://en.wikipedia.org/wiki/TimeWarner" \o "TimeWarner), [Google](http://en.wikipedia.org/wiki/Google" \o "Google),[Facebook](http://en.wikipedia.org/wiki/Facebook), [Microsoft](http://en.wikipedia.org/wiki/Microsoft), and [eBay](http://en.wikipedia.org/wiki/EBay).[[38]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-37)

**Security**

The Web has become criminals' preferred pathway for spreading [malware](http://en.wikipedia.org/wiki/Malware). Cybercrime carried out on the Web can include [identity theft](http://en.wikipedia.org/wiki/Identity_theft), fraud, espionage and intelligence gathering.[[39]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-Ben-Itzhak-38)Web-based vulnerabilities now outnumber traditional computer security concerns,[[40]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-39)[[41]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-40) and as measured by [Google](http://en.wikipedia.org/wiki/Google), about one in ten web pages may contain malicious code.[[42]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-41) Most Web-based attacks take place on legitimate websites, and most, as measured by [Sophos](http://en.wikipedia.org/wiki/Sophos" \o "Sophos), are hosted in the United States, China and Russia.[[43]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-Sophos-Q1-2008-42) The most common of all malware threats is [SQL injection](http://en.wikipedia.org/wiki/SQL_injection) attacks against websites.[[44]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-43) Through HTML and URIs the Web was vulnerable to attacks like [cross-site scripting](http://en.wikipedia.org/wiki/Cross-site_scripting) (XSS) that came with the introduction of JavaScript[[45]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-FGHR-44)and were exacerbated to some degree by Web 2.0 and Ajax [web design](http://en.wikipedia.org/wiki/Web_design) that favors the use of scripts.[[46]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-45) Today by one estimate, 70% of all websites are open to XSS attacks on their users.[[47]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-46)

Proposed solutions vary to extremes. Large security vendors like [McAfee](http://en.wikipedia.org/wiki/McAfee) already design governance and compliance suites to meet post-9/11 regulations,[[48]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-47) and some, like [Finjan](http://en.wikipedia.org/wiki/Finjan" \o "Finjan) have recommended active real-time inspection of code and all content regardless of its source.[[39]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-Ben-Itzhak-38) Some have argued that for enterprise to see security as a business opportunity rather than a cost center,[[49]](http://en.wikipedia.org/wiki/World_Wide_Web" \l "cite_note-48) "ubiquitous, always-on digital rights management" enforced in the infrastructure by a handful of organizations must replace the hundreds of companies that today secure data and networks.[[50]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-49) [Jonathan Zittrain](http://en.wikipedia.org/wiki/Jonathan_Zittrain) has said users sharing responsibility for computing safety is far preferable to locking down the Internet.[[51]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-50)

[[edit](http://en.wikipedia.org/w/index.php?title=World_Wide_Web&action=edit&section=10)]Availability

[[edit](http://en.wikipedia.org/w/index.php?title=World_Wide_Web&action=edit&section=11)]**Standards**

*Main article:*[*Web standards*](http://en.wikipedia.org/wiki/Web_standards)

Many formal standards and other technical specifications define the operation of different aspects of the World Wide Web, the Internet, and computer information exchange. Many of the documents are the work of the [World Wide Web Consortium](http://en.wikipedia.org/wiki/World_Wide_Web_Consortium) (W3C), headed by Berners-Lee, but some are produced by the [Internet Engineering Task Force](http://en.wikipedia.org/wiki/Internet_Engineering_Task_Force) (IETF) and other organizations.

Usually, when web standards are discussed, the following publications are seen as foundational:

* Recommendations for [markup languages](http://en.wikipedia.org/wiki/Markup_languages), especially [HTML](http://en.wikipedia.org/wiki/HTML) and [XHTML](http://en.wikipedia.org/wiki/XHTML), from the W3C. These define the structure and interpretation of [hypertext](http://en.wikipedia.org/wiki/Hypertext) documents.
* Recommendations for [stylesheets](http://en.wikipedia.org/wiki/Style_sheet_(web_development)" \o "Style sheet (web development)), especially [CSS](http://en.wikipedia.org/wiki/Cascading_Style_Sheets), from the W3C.
* Standards for [ECMAScript](http://en.wikipedia.org/wiki/ECMAScript" \o "ECMAScript) (usually in the form of [JavaScript](http://en.wikipedia.org/wiki/JavaScript)), from [Ecma International](http://en.wikipedia.org/wiki/Ecma_International" \o "Ecma International).
* Recommendations for the [Document Object Model](http://en.wikipedia.org/wiki/Document_Object_Model), from W3C.

Additional publications provide definitions of other essential technologies for the World Wide Web, including, but not limited to, the following:

* *Uniform Resource Identifier* ([URI](http://en.wikipedia.org/wiki/Uniform_Resource_Identifier)), which is a universal system for referencing resources on the Internet, such as hypertext documents and images. URIs, often called URLs, are defined by the IETF's [RFC 3986](http://tools.ietf.org/html/rfc3986) / STD 66: *Uniform Resource Identifier (URI): Generic Syntax*, as well as its predecessors and numerous [URI scheme](http://en.wikipedia.org/wiki/URI_scheme)-defining [RFCs](http://en.wikipedia.org/wiki/Request_For_Comments);
* *HyperText Transfer Protocol (HTTP)*, especially as defined by [RFC 2616](http://tools.ietf.org/html/rfc2616): *HTTP/1.1* and [RFC 2617](http://tools.ietf.org/html/rfc2617): *HTTP Authentication*, which specify how the browser and server authenticate each other.

[[edit](http://en.wikipedia.org/w/index.php?title=World_Wide_Web&action=edit&section=12)]**Accessibility**

*Main article:*[*Web accessibility*](http://en.wikipedia.org/wiki/Web_accessibility)

Access to the Web is for everyone regardless of [disability](http://en.wikipedia.org/wiki/Disability) including visual, auditory, physical, speech, cognitive, and neurological. Accessibility features also help others with temporary disabilities like a broken arm and an ageing population as their abilities change.[[52]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-WAI-51) The Web is used for receiving information as well as providing information and interacting with society, making it essential that the Web be accessible in order to provide equal access and [equal opportunity](http://en.wikipedia.org/wiki/Equal_opportunity) to people with disabilities.[[53]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-52) Tim Berners-Lee once noted, "The power of the Web is in its universality. Access by everyone regardless of disability is an essential aspect."[[52]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-WAI-51) Many countries regulate [web accessibility](http://en.wikipedia.org/wiki/Web_accessibility) as a requirement for websites.[[54]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-53) International cooperation in the W3C [Web Accessibility Initiative](http://en.wikipedia.org/wiki/Web_Accessibility_Initiative) led to simple guidelines that web content authors as well as software developers can use to make the Web accessible to persons who may or may not be using [assistive technology](http://en.wikipedia.org/wiki/Assistive_technology).[[52]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-WAI-51)[[55]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-54)

[[edit](http://en.wikipedia.org/w/index.php?title=World_Wide_Web&action=edit&section=13)]**Internationalization**

The W3C [Internationalization](http://en.wikipedia.org/wiki/Internationalization_and_localization) Activity assures that web technology will work in all languages, scripts, and cultures.[[56]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-55) Beginning in 2004 or 2005, [Unicode](http://en.wikipedia.org/wiki/Unicode) gained ground and eventually in December 2007 surpassed both [ASCII](http://en.wikipedia.org/wiki/ASCII) and Western European as the Web's most frequently used [character encoding](http://en.wikipedia.org/wiki/Character_encoding).[[57]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-56) Originally [RFC 3986](http://tools.ietf.org/html/rfc3986) allowed resources to be identified by [URI](http://en.wikipedia.org/wiki/URI" \o "URI)in a subset of US-ASCII. [RFC 3987](http://tools.ietf.org/html/rfc3987) allows more characters—any character in the [Universal Character Set](http://en.wikipedia.org/wiki/Universal_Character_Set)—and now a resource can be identified by [IRI](http://en.wikipedia.org/wiki/Internationalized_Resource_Identifier) in any language.[[58]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-57)

[[edit](http://en.wikipedia.org/w/index.php?title=World_Wide_Web&action=edit&section=14)]**Statistics**

According to a 2001 study, there were massively more than 550 billion documents on the Web, mostly in the invisible Web, or [deep Web](http://en.wikipedia.org/wiki/Deep_Web).[[59]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-58) A 2002 survey of 2,024 million Web pages[[60]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-59)determined that by far the most Web content was in English: 56.4%; next were pages in German (7.7%), French (5.6%), and Japanese (4.9%). A more recent study, which used Web searches in 75 different languages to sample the Web, determined that there were over 11.5 billion Web pages in the [publicly indexable Web](http://en.wikipedia.org/wiki/Surface_Web) as of the end of January 2005.[[61]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-60) As of March 2009, the indexable web contains at least 25.21 billion pages.[[62]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-61) On July 25, 2008, Google software engineers Jesse Alpert and Nissan Hajaj announced that [Google Search](http://en.wikipedia.org/wiki/Google_Search) had discovered one trillion unique URLs.[[63]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-62) As of May 2009, over 109.5 million websites operated.[[64]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-NI-63) Of these 74% were commercial or other sites operating in the .com [generic top-level domain](http://en.wikipedia.org/wiki/Generic_top-level_domain).[[64]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-NI-63)

[[edit](http://en.wikipedia.org/w/index.php?title=World_Wide_Web&action=edit&section=15)]Technology

[[edit](http://en.wikipedia.org/w/index.php?title=World_Wide_Web&action=edit&section=16)]**Speed issues**

Frustration over [congestion](http://en.wikipedia.org/wiki/Congestion) issues in the [Internet](http://en.wikipedia.org/wiki/Internet) infrastructure and the high [latency](http://en.wikipedia.org/wiki/Latency_(engineering)) that results in slow browsing has led to an alternative, pejorative name for the World Wide Web: the*World Wide Wait*.[[65]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-64) Speeding up the Internet is an ongoing discussion over the use of [peering](http://en.wikipedia.org/wiki/Peering) and [QoS](http://en.wikipedia.org/wiki/Quality_of_service" \o "Quality of service) technologies. Other solutions to reduce the World Wide Wait can be found at W3C.[[66]](http://en.wikipedia.org/wiki/World_Wide_Web#cite_note-65) Standard [guidelines](http://en.wikipedia.org/wiki/Guideline) for ideal Web response times are:[[67]](http://en.wikipedia.org/wiki/World_Wide_Web" \l "cite_note-66)

* 0.1 second (one tenth of a second). Ideal response time. The user doesn't sense any interruption.
* 1 second. Highest acceptable response time. Download times above 1 second interrupt the user experience.
* 10 seconds. Unacceptable response time. The user experience is interrupted and the user is likely to leave the site or system.

[[edit](http://en.wikipedia.org/w/index.php?title=World_Wide_Web&action=edit&section=17)]**Caching**

If a user revisits a Web page after only a short interval, the page data may not need to be re-obtained from the source Web server. Almost all web browsers [cache](http://en.wikipedia.org/wiki/Cache) recently obtained data, usually on the local hard drive. HTTP requests sent by a browser will usually only ask for data that has changed since the last download. If the locally cached data are still current, it will be reused. Caching helps reduce the amount of Web traffic on the Internet. The decision about expiration is made independently for each downloaded file, whether image, [stylesheet](http://en.wikipedia.org/wiki/Cascading_Style_Sheets" \o "Cascading Style Sheets),[JavaScript](http://en.wikipedia.org/wiki/JavaScript" \o "JavaScript), HTML, or whatever other content the site may provide. Thus even on sites with highly dynamic content, many of the basic resources only need to be refreshed occasionally. Web site designers find it worthwhile to collate resources such as CSS data and JavaScript into a few site-wide files so that they can be cached efficiently. This helps reduce page download times and lowers demands on the Web server.

There are other components of the Internet that can cache Web content. Corporate and academic [firewalls](http://en.wikipedia.org/wiki/Firewall_(networking)) often cache Web resources requested by one user for the benefit of all. (See also[Caching proxy server](http://en.wikipedia.org/wiki/Web_proxy#Caching_proxy_server).) Some [search engines](http://en.wikipedia.org/wiki/Search_engines), such as [Google](http://en.wikipedia.org/wiki/Google) or [Yahoo!](http://en.wikipedia.org/wiki/Yahoo!), also store cached content from websites. Apart from the facilities built into Web servers that can determine when files have been updated and so need to be re-sent, designers of dynamically generated Web pages can control the HTTP headers sent back to requesting users, so that transient or sensitive pages are not cached. [Internet banking](http://en.wikipedia.org/wiki/Online_banking) and news sites frequently use this facility. Data requested with an [HTTP](http://en.wikipedia.org/wiki/Hypertext_Transfer_Protocol) 'GET' is likely to be cached if other conditions are met; data obtained in response to a 'POST' is assumed to depend on the data that was POSTed and so is not cached.