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Google Search Console query data"Query data in Google Search Console reveals the specific keywords users search for before clicking on your site. By analyzing this data, you can fine-tune your keyword strategy and create content that better matches user intent."

Google Search Console reports"Google Search Console reports provide detailed insights into search performance metrics, including clicks, impressions, and average position. Best SEO Sydney Agency. By analyzing these reports, site owners can identify trends, uncover opportunities, and fine-tune their SEO strategies."

Google Search Console rich media"Rich media insights in Google Search Console help you optimize multimedia content like images and videos. Best SEO Agency Sydney Australia.

Sydney SEO company - Google AMP

- Structured data markup
- Google keyword clusters

By refining these assets, you improve their visibility in search results and enhance your sites overall performance."

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Google Search Console rich results"Google Search Console provides rich results reports to show how your enhanced search listings perform. By monitoring these reports, you can refine structured data and improve the appearance of your content in search results."

Google Search Console robots.txt testing"The robots.txt testing tool in Google Search Console allows you to verify that your sites robots.txt file is configured correctly. By using this tool, you can ensure that search engines can access and crawl the appropriate pages."

Google Search Console search analyticsThe search analytics feature in Google Search Console helps you understand user behavior by showing which queries bring traffic to your site. [SEO Audit](#) . This data provides valuable insights into what users are searching for and how they interact with your content.

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Google Search Console security issues"Google Search Console alerts you to potential security issues such as malware, phishing attacks, or hacked content. By promptly addressing these problems, you can protect your sites reputation and maintain user trust."

Google Search Console setup"Setting up Google Search Console involves verifying ownership of your website and connecting it to the console. [SEO Packages Sydney](#) . This process ensures that you receive accurate data on search traffic, indexing status, and any potential errors that need addressing."

Google Search Console site maps"Site maps in Google Search Console provide a clear overview of how your pages are structured. By submitting and reviewing site maps, you help search engines find and index your content efficiently."

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Google Search Console site performance"Site performance metrics in Google Search Console provide valuable data on how your pages load and function. By optimizing site performance, you improve user experience and increase the likelihood of higher search rankings."

Google Search Console sitemaps"The sitemaps feature in Google Search Console lets you submit XML sitemaps directly to Google. This helps search engines find and index your websites content more efficiently, improving the chances of ranking higher in search results."

Google Search Console structured data"Google Search Console provides insights into how your structured data is processed and displayed. By monitoring structured data reports, you can ensure that rich snippets and other enhancements appear correctly in search results."

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Google Search Console technical analysis"Technical analysis in Google Search Console involves reviewing crawl errors, indexing issues, and other technical factors. By addressing these elements, you ensure a well-optimized site that performs well in search rankings."

Google Search Console URL inspection"The URL inspection tool in Google Search Console allows you to see how Google views a specific URL. By using this feature, you can check if a page is indexed, understand crawl and rendering details, and troubleshoot indexing issues."

Google Search Console URL parameters"URL parameters in Google Search Console allow you to manage how Google handles dynamic URLs. By properly configuring parameters, you improve crawl efficiency and ensure that search engines index the correct versions of your pages."

KEY ADVANTAGES LOCAL SEO



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Google Search Console URL validation"URL validation in Google Search Console confirms that a specific URL is indexed and free of errors. By using this feature, you can ensure that important pages are visible and performing well in search results."

Google Search Console usability"Usability reports in Google Search Console focus on how accessible and user-friendly your site is. By addressing usability issues, you improve user experience, increase engagement, and maintain strong search rankings."

Google Search Console user experience"The user experience reports in Google Search Console offer insights into how visitors interact with your site. By analyzing these metrics, you can identify areas for improvement that enhance both search rankings and overall user satisfaction."

Sydney SEO company - User-focused keyword selection

1. User-focused keyword selection
2. Google AMP

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Google Search Console validation reports"Validation reports in Google Search Console confirm whether previously identified issues have been fixed. These reports help you ensure that corrections are implemented successfully and maintain a healthy, well-optimized website."

Google Search Console validation status"Validation status in Google Search Console shows whether fixed issues have been successfully validated. By confirming these changes, you ensure that your site remains optimized and fully compliant with Googles guidelines."

Google Search Console video indexing"The video indexing feature in Google Search Console allows you to see how well your video content is indexed. By reviewing video indexing data, you can optimize multimedia assets to improve their search visibility."



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About Local search engine optimisation

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- **e**

Part of a series on

Internet marketing

- Search engine optimization
- Local search engine optimisation
- Social media marketing
- Email marketing
- Referral marketing
- Content marketing
- Native advertising

Search engine marketing

- Pay-per-click
- Cost per impression
- Search analytics
- Web analytics

Display advertising

- Ad blocking
- Contextual advertising
- Behavioral targeting

Affiliate marketing

- Cost per action
- Revenue sharing

Mobile advertising

Local search engine optimization (local SEO) is similar to (national) SEO in that it is also a process affecting the visibility of a website or a web page in a web search engine's unpaid results (known as its SERP, search engine results page) often referred to as "natural", "organic", or "earned" results.[1] In general, the higher ranked on the search results page and more frequently a site appears in the search results list, the more visitors it will receive from

the search engine's users; these visitors can then be converted into customers. [2] Local SEO, however, differs in that it is focused on optimizing a business's online presence so that its web pages will be displayed by search engines when users enter **local searches** for its products or services. [3] Ranking for local search involves a similar process to general SEO but includes some specific elements to rank a business for local search.

For example, local SEO is all about 'optimizing' your online presence to attract more business from relevant local searches. The majority of these searches take place on **Google, Yahoo, Bing, Yandex, Baidu** and other **search engines** but for better optimization in your local area you should also use sites like **Yelp, Angie's List, LinkedIn**, Local business directories, **social media** channels and others. [4]

The birth of local SEO

[edit]

The origin of local SEO can be traced back [5] to 2003-2005 when search engines tried to provide people with results in their vicinity as well as additional information such as opening times of a store, listings in maps, etc.

Local SEO has evolved over the years to provide a targeted **online marketing** approach that allows local businesses to appear based on a range of local search signals, providing a distinct difference from broader **organic SEO** which prioritises relevance of search over a distance of searcher.

Local search results

[edit]

Local searches trigger search engines to display two types of results on the **Search engine results page**: local organic results and the 'Local Pack'. [3] The local organic results include web pages related to the search query with local **relevance**. These often include directories such as **Yelp, Yellow Pages, Facebook**, etc. [3] The Local Pack displays businesses that have signed up with **Google** and taken ownership of their '**Google My Business**' (GMB) listing.

The information displayed in the GMB listing and hence in the Local Pack can come from different sources: [6]

- The owner of the business. This information can include opening/closing times, description of products or services, etc.
- Information is taken from the business's website
- User-provided information such as reviews or uploaded photos
- Information from other sources such as social profiles etc.

- Structured Data taken from [Wikidata](#) and [Wikipedia](#). Data from these sources is part of the information that appears in Google's [Knowledge Panel](#) in the search results.

Depending on the searches, Google can show relevant local results in [Google Maps](#) or Search. This is true on both mobile and desktop devices. [\[7\]](#)

Google Maps

[\[edit\]](#)

Google has added a new Q&A features to [Google Maps](#) allowing users to submit questions to owners and allowing these to respond. [\[8\]](#) This Q&A feature is tied to the associated Google My Business account.

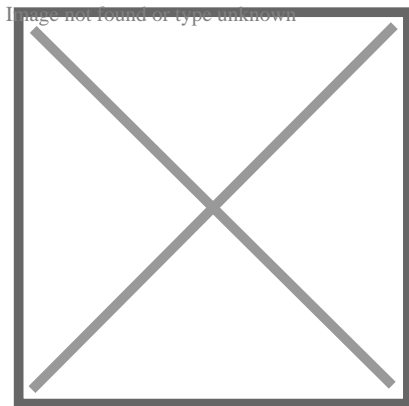
Google Business Profile

[\[edit\]](#)

Google Business Profile (GBP), formerly [Google My Business](#) (GMB) is a free tool that allows businesses to create and manage their Google Business listing. These listings must represent a physical location that a customer can visit. A Google Business listing appears when customers search for businesses either on Google Maps or in Google SERPs. The accuracy of these listings is a local ranking factor.

Ranking factors

[\[edit\]](#)



Local Online Marketing

Major search engines have algorithms that determine which local businesses rank in local search. Primary factors that impact a local business's chance of appearing in local search include proper categorization in business directories, a business's name, address, and phone

number (NAP) being **crawable** on the website, and citations (mentions of the local business on other relevant websites like a chamber of commerce website). [9]

In 2016, a study using statistical analysis assessed how and why businesses ranked in the Local Packs and identified positive correlations between local rankings and 100+ ranking factors. [10] Although the study cannot replicate Google's algorithm, it did deliver several interesting findings:

- **Backlinks** showed the most important correlation (and also Google's Toolbar **PageRank**, suggesting that older links are an advantage because the Toolbar has not been updated in a long time).
- Sites with more content (hence more **keywords**) tended to fare better (as expected).
- Reviews on GMB also were found to strongly correlate with high rankings.
- Other GMB factors, like the presence of photos and having a verified GMB page with opening hours, showed a **positive correlation** (with ranking) albeit not as important as reviews.
- The quality of **citations** such as a low number of duplicates, consistency and also a fair number of citations, mattered for a business to show in Local Packs. However, within the pack, citations did not influence their ranking: "citations appear to be foundational but not a competitive advantage."
- The authors were instead surprised that **geotargeting** elements (city & state) in the title of the GMB landing page did not have any impact on GMB rankings. Hence the authors suggest using such elements only if it makes sense for usability reasons.
- The presence of a keyword in the business name was found to be one of the most important factors (explaining the high incidence of **spam** in the Local Pack).
- Schema structured data is a ranking factor. The addition of the 'LocalBusiness' markup will enable you to display relevant information about your business to Google. This includes opening hours, address, founder, parent company information and much more. [11]
- The number of reviews and overall star rating correlates with higher rankings in the Google map pack results.

Local ranking according to Google

[edit]

Prominence, relevance, and distance are the three main criteria Google claims to use in its **algorithms** to show results that best match a user's query. [12]

- Prominence reflects how well-known is a place in the offline world. An important museum or store, for example, will be given more prominence. Google also uses information obtained on the web to assess prominence such as review counts, links, articles.

- Relevance refers to Google's algorithms attempt to surface the listings that best match the user's [query](#).
- Distance refers to Google's attempt to return those listings that are the closest the location terms used in a user's query. If no location term is used then "Google will calculate distance based on what's known about their location".

Local ranking: 2017 survey from 40 local experts

[\[edit\]](#)

According to a group of local SEO experts who took part in a survey, links and reviews are more important than ever to rank locally. [\[13\]](#)

Near Me Queries

[\[edit\]](#)

As a result of both Google as well as Apple offering "near me" as an option to users, some authors [\[14\]](#) report on how [Google Trends](#) shows very significant increases in "near me" queries. The same authors also report that the factors correlating the most with Local Pack ranking for "near me" queries include the presence of the "searched city and state in backlinks' anchor text" as well as the use of the " 'near me' in internal link anchor text"

Possum Update

[\[edit\]](#)

An important update to Google's local algorithm, rolled out on the 1st of September 2016. [\[15\]](#)
Summary of the update on local search results:

- Businesses based outside city physical limits showed a significant increase in ranking in the Google Local Pack
- A more restrictive filter is in place. Before the update, Google filtered listings linking to the same [website](#) and using the same phone number. After the update, listings get filtered if they have the same address and same categories though they belong to different businesses. So, if several dentists share the same address, Google will only show one of them.

Hawk update

[\[edit\]](#)

As previously explained (see above), the Possum update led similar listings, within the same building, or even located on the same street, to get filtered. As a result, only one listing "with greater organic ranking and stronger relevance to the keyword" would be shown. [16] After the Hawk update on 22 August 2017, this filtering seems to apply only to listings located within the same building or close by (e.g. 50 feet), but not to listings located further away (e.g. 325 feet away). [16]

Fake reviews

[edit]

As previously explained (see above), reviews are deemed to be an important ranking factor. Joy Hawkins, a Google Top Contributor and local SEO expert, highlights the problems due to fake reviews: [17]

- Lack of an appropriate process for business owners to report fake reviews on competitors' sites. GMB support will not consider requests about businesses other than if they come from the business owners themselves. So if a **competitor** nearby has been collecting fake reviews, the only way to bring this to the attention of GMB is via the Google My Business Forum.
- Unlike Yelp, Google does not show a label warning users of abnormal review behavior for those businesses that buy reviews or that receive unnatural numbers of negative reviews because of media attention.
- Current Google algorithms do not identify unnatural review patterns. Abnormal review patterns often do not need human gauging and should be easily identified by algorithms. As a result, both fake listings and rogue reviewer profiles should be suspended.

See also

[edit]

- **Local search (optimization)**

References

[edit]

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15. ^ *"Everything you need to know about Google's 'Possum' algorithm update"*. Search Engine Land. 2016-09-21. Retrieved 2017-05-18.
16. ^ [a b](#) *"August 22, 2017: The day the 'Hawk' Google local algorithm update swooped in"*. Search Engine Land. 2017-09-08. Retrieved 2017-10-02.
17. ^ *"Dear Google: 4 suggestions for fixing your massive problem with fake reviews"*. Search Engine Land. 2017-06-15. Retrieved 2017-07-16.

External links

[[edit](#)]

- [Google Search Engine Optimization \(SEO\) Starter Guide](#)
- [Google Local Businesses Guide](#)

About World Wide Web

This article is about the global system of pages accessed via HTTP. For the worldwide computer network, see [Internet](#). For the web browser, see [WorldWideWeb](#).

"WWW" and "The Web" redirect here. For other uses, see [WWW \(disambiguation\)](#) and [The Web \(disambiguation\)](#).

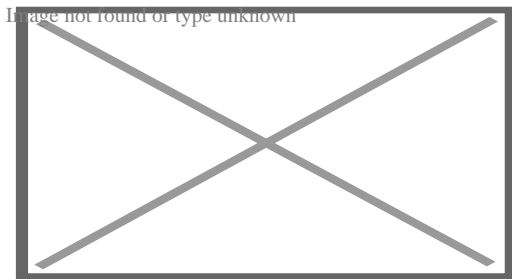
World Wide Web

Abbreviation WWW

Year started 1989; 36 years ago by [Tim Berners-Lee](#)

Organization

- [CERN](#) (1989–1994)
- [W3C](#) (1994–current)



A [web page](#) from [Wikipedia](#) displayed in [Google Chrome](#)

The **World Wide Web** (**WWW** or simply **the Web**) is an [information system](#) that enables [content](#) sharing over the [Internet](#) through user-friendly ways meant to appeal to users beyond [IT specialists](#) and hobbyists.^[1] It allows documents and other [web resources](#) to be accessed over the Internet according to specific rules of the [Hypertext Transfer Protocol](#) (HTTP).^[2]

The Web was invented by English computer scientist [Tim Berners-Lee](#) while at [CERN](#) in 1989 and opened to the public in 1993. It was conceived as a "universal linked information system".^{[3][4][5]} Documents and other media content are made available to the network through [web servers](#) and can be accessed by programs such as [web browsers](#). Servers and resources on the World Wide Web are identified and located through character strings called [uniform resource locators](#) (URLs).

The original and still very common document type is a [web page](#) formatted in [Hypertext Markup Language](#) (HTML). This markup language supports [plain text](#), [images](#), embedded [video](#) and [audio](#) contents, and [scripts](#) (short programs) that implement complex user interaction. The HTML language also supports [hyperlinks](#) (embedded URLs) which provide immediate access to other web resources. [Web navigation](#), or web surfing, is the common practice of following such hyperlinks across multiple websites. [Web applications](#) are web pages that function as [application software](#). The information in the Web is transferred across the Internet using HTTP. Multiple web resources with a common theme and usually a common [domain name](#) make up a [website](#). A single web server may provide multiple websites, while some websites, especially the most popular ones, may be provided by

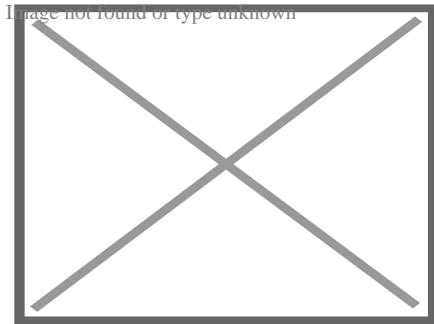
multiple servers. Website content is provided by a myriad of companies, organizations, government agencies, and **individual users**; and comprises an enormous amount of educational, entertainment, commercial, and government information.

The Web has become the world's dominant **information systems platform**.^{[6][7][8][9]} It is the primary tool that billions of people worldwide use to interact with the Internet. ^[2]

History

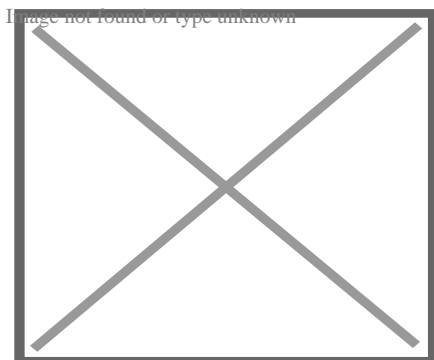
^[edit]

Main article: **History of the World Wide Web**



This **NeXT Computer** was used by **Sir Tim Berners-Lee** at **CERN** and became the world's first **Web server**.

The Web was invented by English computer scientist **Tim Berners-Lee** while working at **CERN**.^{[10][11]} He was motivated by the problem of storing, updating, and finding documents and data files in that large and constantly changing organization, as well as distributing them to collaborators outside CERN. In his design, Berners-Lee dismissed the common **tree structure** approach, used for instance in the existing CERNDOC documentation system and in the **Unix filesystem**, as well as approaches that relied in tagging files with **keywords**, as in the VAX/NOTES system. Instead he adopted concepts he had put into practice with his private **ENQUIRE** system (1980) built at CERN. When he became aware of **Ted Nelson's hypertext** model (1965), in which documents can be linked in unconstrained ways through **hyperlinks** associated with "hot spots" embedded in the text, it helped to confirm the validity of his concept.^{[12][13]}



The historic World Wide Web logo, designed by [Robert Cailliau](#). Currently, there is no widely accepted logo in use for the WWW.

The model was later popularized by [Apple's HyperCard](#) system. Unlike Hypercard, Berners-Lee's new system from the outset was meant to support links between multiple databases on independent computers, and to allow simultaneous access by many users from any computer on the Internet. He also specified that the system should eventually handle other media besides text, such as graphics, speech, and video. Links could refer to mutable data files, or even fire up programs on their server computer. He also conceived "gateways" that would allow access through the new system to documents organized in other ways (such as traditional computer [file systems](#) or the [Usenet](#)). Finally, he insisted that the system should be decentralized, without any central control or coordination over the creation of links. [\[4\]\[14\]\[10\]\[11\]](#)

Berners-Lee submitted a proposal to CERN in May 1989, without giving the system a name. [\[4\]](#) He got a working system implemented by the end of 1990, including a browser called [WorldWideWeb](#) (which became the name of the project and of the network) and [an HTTP server](#) running at CERN. As part of that development he defined the first version of the HTTP protocol, the basic URL syntax, and implicitly made HTML the primary document format. [\[15\]](#) The technology was released outside CERN to other research institutions starting in January 1991, and then to the whole Internet on 23 August 1991. The Web was a success at CERN, and began to spread to other scientific and academic institutions. Within the next two years, [there were 50 websites created.](#)[\[16\]\[17\]](#)

CERN made the Web protocol and code available royalty free in 1993, enabling its widespread use.[\[18\]\[19\]](#) After the [NCSA](#) released the [Mosaic web browser](#) later that year, the Web's popularity grew rapidly as [thousands of websites](#) sprang up in less than a year.[\[20\]\[21\]](#) Mosaic was a graphical browser that could display inline images and submit [forms](#) that were processed by the [HTTPd server](#).[\[22\]\[23\]](#) [Marc Andreessen](#) and [Jim Clark](#) founded [Netscape](#) the following year and released the [Navigator browser](#), which introduced [Java](#) and [JavaScript](#) to the Web. It quickly became the dominant browser. Netscape [became a public company](#) in 1995 which triggered a frenzy for the Web and started the [dot-com bubble](#).[\[24\]](#) Microsoft responded by developing its own browser, [Internet Explorer](#), starting the [browser wars](#). By bundling it with Windows, it became the dominant browser for 14 years. [\[25\]](#)

Berners-Lee founded the [World Wide Web Consortium](#) (W3C) which created [XML](#) in 1996 and recommended replacing HTML with stricter [XHTML](#).[\[26\]](#) In the meantime, developers began exploiting an IE feature called [XMLHttpRequest](#) to make [Ajax](#) applications and launched the [Web 2.0](#) revolution. [Mozilla](#), [Opera](#), and Apple rejected XHTML and created the [WHATWG](#) which developed [HTML5](#).[\[27\]](#) In 2009, the W3C conceded and abandoned XHTML.[\[28\]](#) In 2019, it ceded control of the HTML specification to the WHATWG.[\[29\]](#)

The World Wide Web has been central to the development of the [Information Age](#) and is the primary tool billions of people use to interact on the [Internet](#).[\[30\]\[31\]\[32\]\[9\]](#)

Nomenclature

[[edit](#)]



This section **needs additional citations for [verification](#)**. Please help [improve this article by adding citations to reliable sources](#) in this section. Unsourced material may be challenged and removed. (*August 2023*) ([Learn how and when to remove this message](#))

Tim Berners-Lee states that *World Wide Web* is officially spelled as three separate words, each capitalised, with no intervening hyphens.^[33] Nonetheless, it is often called simply *the Web*, and also often *the web*; see [Capitalization of Internet](#) for details. In Mandarin Chinese, *World Wide Web* is commonly translated via a [phono-semantic matching](#) to *wàn wéi wǎng* (万维网), which satisfies *www* and literally means "10,000-dimensional net", a translation that reflects the design concept and proliferation of the World Wide Web.

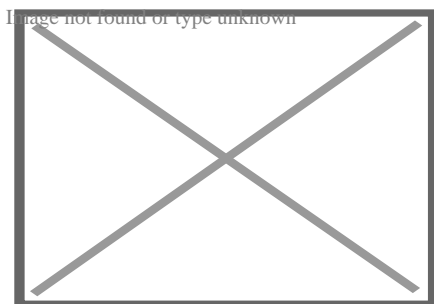
Use of the *www* prefix has been declining, especially when [web applications](#) sought to brand their domain names and make them easily pronounceable. As the [mobile Web](#) grew in popularity,^{[[citation needed](#)]} services like [Gmail.com](#), [Outlook.com](#), [Myspace.com](#), [Facebook.com](#) and [Twitter.com](#) are most often mentioned without adding "*www.*" (or, indeed, ".com") to the domain.^[34]

In English, *www* is usually read as *double-u double-u double-u*.^[35] Some users pronounce it *dub-dub-dub*, particularly in New Zealand.^[36] [Stephen Fry](#), in his "Podgrams" series of podcasts, pronounces it *wuh wuh wuh*.^[37] The English writer [Douglas Adams](#) once quipped in *The Independent on Sunday* (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".^[38]

Function

[[edit](#)]

Main articles: [HTTP](#) and [HTML](#)



The World Wide Web functions as an [application layer protocol](#) that is run "on top of" (figuratively) the Internet, helping to make it more functional. The advent of the [Mosaic](#) web browser helped to make the web much more usable, to include the

display of images and moving images (GIFs).

The terms *Internet* and *World Wide Web* are often used without much distinction. However, the two terms do not mean the same thing. The Internet is a global system of computer networks interconnected through telecommunications and optical networking. In contrast, the World Wide Web is a global collection of documents and other resources, linked by hyperlinks and URIs. Web resources are accessed using HTTP or HTTPS, which are application-level Internet protocols that use the Internet transport protocols. [2]

Viewing a web page on the World Wide Web normally begins either by typing the URL of the page into a web browser or by following a hyperlink to that page or resource. The web browser then initiates a series of background communication messages to fetch and display the requested page. In the 1990s, using a browser to view web pages—and to move from one web page to another through hyperlinks—came to be known as 'browsing,' 'web surfing' (after channel surfing), or 'navigating the Web'. Early studies of this new behaviour investigated user patterns in using web browsers. One study, for example, found five user patterns: exploratory surfing, window surfing, evolved surfing, bounded navigation and targeted navigation. [39]

The following example demonstrates the functioning of a web browser when accessing a page at the URL `http://example.org/home.html`. The browser resolves the server name of the URL (`example.org`) into an Internet Protocol address using the globally distributed Domain Name System (DNS). This lookup returns an IP address such as `203.0.113.4` or `2001:db8:2e::7334`. The browser then requests the resource by sending an HTTP request across the Internet to the computer at that address. It requests service from a specific TCP port number that is well known for the HTTP service so that the receiving host can distinguish an HTTP request from other network protocols it may be servicing. HTTP normally uses port number 80 and for HTTPS it normally uses port number 443. The content of the HTTP request can be as simple as two lines of text:

```
GET /home.html HTTP/1.1  
Host: example.org
```

The computer receiving the HTTP request delivers it to web server software listening for requests on port 80. If the web server can fulfil the request it sends an HTTP response back to the browser indicating success:

```
HTTP/1.1 200 OK  
Content-Type: text/html; charset=UTF-8
```

followed by the content of the requested page. Hypertext Markup Language (HTML) for a basic web page might look like this:

```
<html>
  <head>
    <title>Example.org – The World Wide Web</title>
  </head>
  <body>
    <p>The World Wide Web, abbreviated as WWW and commonly known ... </p>
  </body>
</html>
```

The web browser **parses** the HTML and interprets the markup (`<title>`, `<p>` for paragraph, and such) that surrounds the words to format the text on the screen. Many web pages use HTML to reference the URLs of other resources such as images, other embedded media, **scripts** that affect page behaviour, and **Cascading Style Sheets** that affect page layout. The browser makes additional HTTP requests to the web server for these other **Internet media types**. As it receives their content from the web server, the browser progressively **renders** the page onto the screen as specified by its HTML and these additional resources.

HTML

[[edit](#)]

Main article: [HTML](#)

Hypertext Markup Language (HTML) is the standard **markup language** for creating **web pages** and **web applications**. With **Cascading Style Sheets** (CSS) and **JavaScript**, it forms a triad of **cornerstone** technologies for the World Wide Web.^[40]

Web browsers receive HTML documents from a **web server** or from local storage and **render** the documents into multimedia web pages. HTML describes the structure of a web page **semantically** and originally included cues for the appearance of the document.

HTML elements are the building blocks of HTML pages. With HTML constructs, **images** and other objects such as **interactive forms** may be embedded into the rendered page. HTML provides a means to create **structured documents** by denoting structural **semantics** for text such as headings, paragraphs, lists, **links**, quotes and other items. HTML elements are delineated by *tags*, written using **angle brackets**. Tags such as `` and `<input />` directly introduce content into the page. Other tags such as `<p>` surround and provide information about document text and may include other tags as sub-elements. Browsers do not display the HTML tags, but use them to interpret the content of the page.

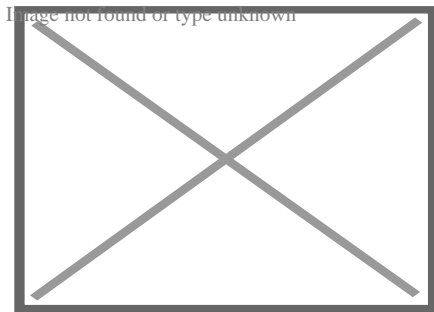
HTML can embed programs written in a **scripting language** such as **JavaScript**, which affects the behaviour and content of web pages. Inclusion of CSS defines the look and layout of content. The **World Wide Web Consortium** (W3C), maintainer of both the HTML and the CSS

standards, has encouraged the use of CSS over explicit presentational HTML since 1997. [41]

Linking

[edit]

Most web pages contain hyperlinks to other related pages and perhaps to downloadable files, source documents, definitions and other web resources. In the underlying HTML, a hyperlink looks like this: `Example.org Homepage`.



Graphic representation of a minute fraction of the WWW, demonstrating **hyperlinks**

Such a collection of useful, related resources, interconnected via hypertext links is dubbed a *web* of information. Publication on the Internet created what Tim Berners-Lee first called the *WorldWideWeb* (in its original **CamelCase**, which was subsequently discarded) in November 1990. [42]

The hyperlink structure of the web is described by the **webgraph**: the nodes of the web graph correspond to the web pages (or URLs) the directed edges between them to the hyperlinks. Over time, many web resources pointed to by hyperlinks disappear, relocate, or are replaced with different content. This makes hyperlinks obsolete, a phenomenon referred to in some circles as link rot, and the hyperlinks affected by it are often called "**dead**" **links**. The ephemeral nature of the Web has prompted many efforts to archive websites. The **Internet Archive**, active since 1996, is the best known of such efforts.

WWW prefix

[edit]

Many hostnames used for the World Wide Web begin with `www` because of the long-standing practice of naming **Internet** hosts according to the services they provide. The **hostname** of a **web server** is often `www`, in the same way that it may be `ftp` for an **FTP server**, and `news` or `nnntp` for a **Usenet news server**. These hostnames appear as Domain Name System (DNS) or **subdomain** names, as in `www.example.com`. The use of `www` is not required by any technical or policy standard and many websites do not use it; the first web server was `nxoc01.cern.ch`. [43] According to Paolo Palazzi, who worked at CERN along with Tim Berners-Lee, the

popular use of *www* as subdomain was accidental; the World Wide Web project page was intended to be published at *www.cern.ch* while *info.cern.ch* was intended to be the CERN home page; however the DNS records were never switched, and the practice of prepending *www* to an institution's website domain name was subsequently copied. ^[44]^{*[better source needed]*} Many established websites still use the prefix, or they employ other subdomain names such as *www2*, *secure* or *en* for special purposes. Many such web servers are set up so that both the main domain name (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 to different web sites. The use of a subdomain name is useful for **load balancing** incoming web traffic by creating a **CNAME record** that points to a cluster of web servers. Since, currently^{*[as of?]*}, only a subdomain can be used in a CNAME, the same result cannot be achieved by using the bare domain root. ^[45]^{*[dubious – discuss]*}

When a user submits an incomplete domain name to a web browser in its address bar input field, some web browsers automatically try adding the prefix "www" to the beginning of it and possibly ".com", ".org" and ".net" at the end, depending on what might be missing. For example, entering "microsoft" may be transformed to *http://www.microsoft.com/* and "openoffice" to *http://www.openoffice.org*. This feature started appearing in early versions of **Firefox**, when it still had the working title 'Firebird' in early 2003, from an earlier practice in browsers such as **Lynx**.^[46]^{*[unreliable source?]*} It is reported that Microsoft was granted a US patent for the same idea in 2008, but only for mobile devices. ^[47]

Scheme specifiers

^{*[edit]*}

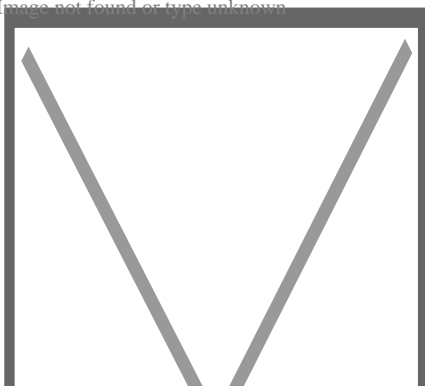
The scheme specifiers *http://* and *https://* at the start of a web **URI** refer to **Hypertext Transfer Protocol** or **HTTP Secure**, respectively. They specify the communication protocol to use for the request and response. The HTTP protocol is fundamental to the operation of the World Wide Web, and the added encryption layer in HTTPS is essential when browsers send or retrieve confidential data, such as passwords or banking information. Web browsers usually automatically prepend *http://* to user-entered URIs, if omitted.

Pages

^{*[edit]*}

Main article: **Web page**

Image not found or type unknown



A screenshot of the home page of Wikimedia Commons

A *web page* (also written as *webpage*) is a document that is suitable for the World Wide Web and **web browsers**. A web browser displays a web page on a **monitor** or **mobile device**.

The term *web page* usually refers to what is visible, but may also refer to the contents of the **computer file** itself, which is usually a **text file** containing **hypertext** written in **HTML** or a comparable **markup language**. Typical web pages provide **hypertext** for browsing to other web pages via **hyperlinks**, often referred to as *links*. Web browsers will frequently have to access multiple **web resource** elements, such as reading **style sheets**, **scripts**, and images, while presenting each web page.

On a network, a web browser can retrieve a web page from a remote **web server**. The web server may restrict access to a private network such as a corporate intranet. The web browser uses the **Hypertext Transfer Protocol** (HTTP) to make such requests to the **web server**.

A **static web page** is delivered exactly as stored, as **web content** in the web server's **file system**. In contrast, a **dynamic web page** is generated by a **web application**, usually driven by **server-side software**. Dynamic web pages are used when each user may require completely different information, for example, bank websites, web email etc.

Static page

[**edit**]

Main article: **Static web page**

A *static web page* (sometimes called a *flat page/stationary page*) is a **web page** that is delivered to the user exactly as stored, in contrast to **dynamic web pages** which are generated by a **web application**.

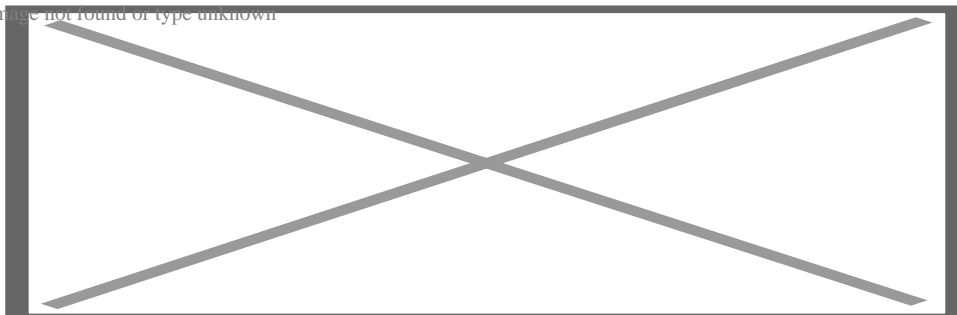
Consequently, a static web page displays the same information for all users, from all contexts, subject to modern capabilities of a **web server** to **negotiate content-type** or language of the document where such versions are available and the server is configured to do so.

Dynamic pages

[**edit**]

Main articles: **Dynamic web page** and **Ajax (programming)**

Image not found or type unknown



Dynamic web page: example of server-side scripting (PHP and MySQL)

A *server-side dynamic web page* is a **web page** whose construction is controlled by an **application server** processing server-side scripts. In server-side scripting, **parameters** determine how the assembly of every new web page proceeds, including the setting up of more client-side processing.

A *client-side dynamic web page* processes the web page using JavaScript running in the browser. JavaScript programs can interact with the document via **Document Object Model**, or DOM, to query page state and alter it. The same client-side techniques can then dynamically update or change the DOM in the same way.

A dynamic web page is then reloaded by the user or by a **computer program** to change some variable content. The updating information could come from the server, or from changes made to that page's DOM. This may or may not truncate the browsing history or create a saved version to go back to, but a *dynamic web page update* using **Ajax** technologies will neither create a page to go back to nor truncate the **web browsing history** forward of the displayed page. Using Ajax technologies the end **user** gets *one dynamic page* managed as a single page in the **web browser** while the actual **web content** rendered on that page can vary. The Ajax engine sits only on the browser requesting parts of its DOM, *the* DOM, for its client, from an application server.

Dynamic HTML, or DHTML, is the umbrella term for technologies and methods used to create web pages that are not **static web pages**, though it has fallen out of common use since the popularization of **AJAX**, a term which is now itself rarely used.^[*citation needed*] Client-side-scripting, server-side scripting, or a combination of these make for the dynamic web experience in a browser.

JavaScript is a **scripting language** that was initially developed in 1995 by **Brendan Eich**, then of **Netscape**, for use within web pages.^[48] The standardised version is **ECMAScript**.^[48] To make web pages more interactive, some web applications also use JavaScript techniques such as **Ajax** (**asynchronous** JavaScript and **XML**). **Client-side script** is delivered with the page that can make additional HTTP requests to the server, either in response to user actions such as mouse movements or clicks, or based on elapsed time. The server's responses are used to modify the current page rather than creating a new page with each response, so the server needs only to provide limited, incremental information. Multiple Ajax requests can be handled at the same time, and users can interact with the page while data is retrieved. Web pages may also regularly **poll** the server to check whether new information is available.^[49]

Website

[**edit**]

Image not found or type unknown



The [usap.gov](https://www.usap.gov) website

Main article: [Website](#)

A *website*^[50] is a collection of related web resources including [web pages](#), [multimedia](#) content, typically identified with a common [domain name](#), and published on at least one [web server](#). Notable examples are [wikipedia.org](https://www.wikipedia.org), [google.com](https://www.google.com), and [amazon.com](https://www.amazon.com).

A website may be accessible via a public [Internet Protocol](#) (IP) network, such as the [Internet](#), or a private [local area network](#) (LAN), by referencing a [uniform resource locator](#) (URL) that identifies the site.

Websites can have many functions and can be used in various fashions; a website can be a [personal website](#), a corporate website for a company, a government website, an organization website, etc. Websites are typically dedicated to a particular topic or purpose, ranging from entertainment and [social networking](#) to providing news and education. All publicly accessible websites collectively constitute the World Wide Web, while private websites, such as a company's website for its employees, are typically a part of an [intranet](#).

Web pages, which are the building blocks of websites, are [documents](#), typically composed in [plain text](#) interspersed with [formatting instructions](#) of Hypertext Markup Language ([HTML](#), [XHTML](#)). They may incorporate elements from other websites with suitable [markup anchors](#). Web pages are accessed and transported with the [Hypertext Transfer Protocol](#) (HTTP), which may optionally employ encryption ([HTTP Secure](#), HTTPS) to provide security and privacy for the user. The user's application, often a [web browser](#), renders the page content according to its HTML markup instructions onto a [display terminal](#).

[Hyperlinking](#) between web pages conveys to the reader the [site structure](#) and guides the navigation of the site, which often starts with a [home page](#) containing a directory of the site [web content](#). Some websites require user registration or [subscription](#) to access content. Examples of [subscription websites](#) include many business sites, news websites, [academic journal](#) websites, gaming websites, file-sharing websites, [message boards](#), web-based [email](#), [social networking](#) websites, websites providing real-time price quotations for different types of markets, as well as sites providing various other services. [End users](#) can access websites on a range of devices, including [desktop](#) and [laptop computers](#), [tablet computers](#), [smartphones](#) and [smart TVs](#).

Browser

[[edit](#)]

Main article: [Web browser](#)

A *web browser* (commonly referred to as a *browser*) is a [software user agent](#) for accessing information on the World Wide Web. To connect to a website's [server](#) and display its pages, a

user needs to have a web browser program. This is the program that the user runs to download, format, and display a web page on the user's computer.

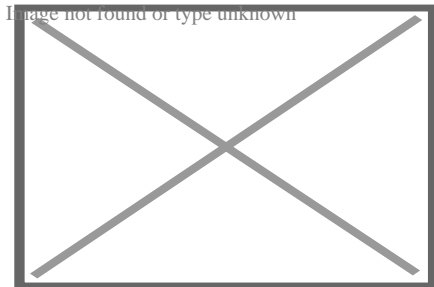
In addition to allowing users to find, display, and move between web pages, a web browser will usually have features like keeping bookmarks, recording history, managing cookies (see below), and home pages and may have facilities for recording passwords for logging into websites.

The most popular browsers are [Chrome](#), [Safari](#), [Edge](#), [Samsung Internet](#) and [Firefox](#).^[51]

Server

[\[edit\]](#)

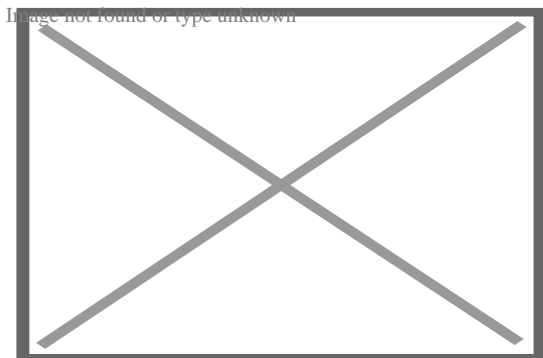
Main article: [Web server](#)



The inside and front of a [Dell PowerEdge](#) web server, a computer designed for [rack mounting](#)

A *Web server* is [server software](#), or hardware dedicated to running said software, that can satisfy World Wide Web client requests. A web server can, in general, contain one or more websites. A web server processes incoming network requests over [HTTP](#) and several other related protocols.

The primary function of a web server is to store, process and deliver [web pages](#) to [clients](#).^[52] The communication between client and server takes place using the [Hypertext Transfer Protocol \(HTTP\)](#). Pages delivered are most frequently [HTML documents](#), which may include [images](#), [style sheets](#) and [scripts](#) in addition to the text content.



Multiple web servers may be used for a high traffic website; here, Dell servers are installed together to be used for the Wikimedia Foundation.

A user agent, commonly a web browser or web crawler, initiates communication by making a request for a specific resource using HTTP and the server responds with the content of that resource or an error message if unable to do so. The resource is typically a real file on the server's secondary storage, but this is not necessarily the case and depends on how the webserver is implemented.

While the primary function is to serve content, full implementation of HTTP also includes ways of receiving content from clients. This feature is used for submitting web forms, including uploading of files.

Many generic web servers also support server-side scripting using Active Server Pages (ASP), PHP (Hypertext Preprocessor), or other scripting languages. This means that the behaviour of the webserver can be scripted in separate files, while the actual server software remains unchanged. Usually, this function is used to generate HTML documents dynamically ("on-the-fly") as opposed to returning static documents. The former is primarily used for retrieving or modifying information from databases. The latter is typically much faster and more easily cached but cannot deliver dynamic content.

Web servers can also frequently be found embedded in devices such as printers, routers, webcams and serving only a local network. The web server may then be used as a part of a system for monitoring or administering the device in question. This usually means that no additional software has to be installed on the client computer since only a web browser is required (which now is included with most operating systems).

Optical Networking

[edit]

Optical networking is a sophisticated infrastructure that utilizes optical fiber to transmit data over long distances, connecting countries, cities, and even private residences. The technology uses optical microsystems like tunable lasers, filters, attenuators, switches, and wavelength-selective switches to manage and operate these networks. [53][54]

The large quantity of optical fiber installed throughout the world at the end of the twentieth century set the foundation of the Internet as it's used today. The information highway relies heavily on optical networking, a method of sending messages encoded in light to relay information in various telecommunication networks. [55]

The Advanced Research Projects Agency Network (ARPANET) was one of the first iterations of the Internet, created in collaboration with universities and researchers 1969. [56][57][58][59] However, access to the ARPANET was limited to researchers, and in 1985, the National

[Science Foundation](#) founded the [National Science Foundation Network](#) (NSFNET), a program that provided supercomputer access to researchers.[\[59\]](#)

Limited public access to the Internet led to pressure from consumers and corporations to privatize the network. In 1993, the US passed the [National Information Infrastructure Act](#), which dictated that the National Science Foundation must hand over control of the optical capabilities to commercial operators.[\[60\]\[61\]](#)

The privatization of the Internet and the release of the World Wide Web to the public in 1993 led to an increased demand for Internet capabilities. This spurred developers to seek solutions to reduce the time and cost of laying new fiber and increase the amount of information that can be sent on a single fiber, in order to meet the growing needs of the public.[\[62\]\[63\]\[64\]\[65\]](#)

In 1994, Pirelli S.p.A.'s optical components division introduced a wavelength-division multiplexing (WDM) system to meet growing demand for increased data transmission. This four-channel WDM technology allowed more information to be sent simultaneously over a single optical fiber, effectively boosting network capacity.[\[66\]\[67\]](#)

Pirelli wasn't the only company that developed a WDM system; another company, the [Ciena Corporation](#) (Ciena), created its own technology to transmit data more efficiently. [David Huber](#), an optical networking engineer and entrepreneur [Kevin Kimberlin](#) founded Ciena in 1992.[\[68\]\[69\]\[70\]](#) Drawing on laser technology from [Gordon Gould](#) and William Culver of [Optelecom, Inc.](#), the company focused on utilizing optical amplifiers to transmit data via light.[\[71\]\[72\]\[73\]](#) Under chief executive officer Pat Nettles, Ciena developed a dual-stage optical amplifier for dense wavelength-division multiplexing (DWDM), patented in 1997 and deployed on the Sprint network in 1996.[\[74\]\[75\]\[76\]\[77\]\[78\]](#)

Cookie

[\[edit\]](#)

Main article: [HTTP cookie](#)

An *HTTP cookie* (also called *web cookie*, *Internet cookie*, *browser cookie*, or simply *cookie*) is a small piece of data sent from a website and stored on the user's computer by the user's [web browser](#) while the user is browsing. Cookies were designed to be a reliable mechanism for websites to remember [stateful](#) information (such as items added in the shopping cart in an online store) or to record the user's browsing activity (including clicking particular buttons, [logging in](#), or recording which pages were visited in the past). They can also be used to remember arbitrary pieces of information that the user previously entered into form fields such as names, addresses, passwords, and credit card numbers.

Cookies perform essential functions in the modern web. Perhaps most importantly, *authentication cookies* are the most common method used by web servers to know whether

the user is logged in or not, and which account they are logged in with. Without such a mechanism, the site would not know whether to send a page containing sensitive information or require the user to authenticate themselves by logging in. The security of an authentication cookie generally depends on the security of the issuing website and the user's **web browser**, and on whether the cookie data is encrypted. Security vulnerabilities may allow a cookie's data to be read by a **hacker**, used to gain access to user data, or used to gain access (with the user's credentials) to the website to which the cookie belongs (see **cross-site scripting** and **cross-site request forgery** for examples).[79]

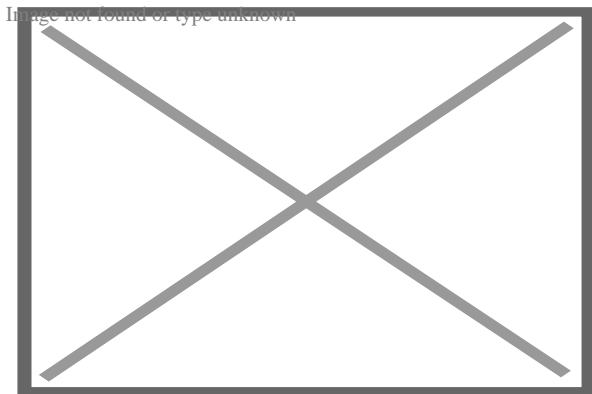
Tracking cookies, and especially third-party tracking cookies, are commonly used as ways to compile long-term records of individuals' browsing histories – a potential **privacy concern** that prompted European[80] and U.S. lawmakers to take action in 2011.[81][82] European law requires that all websites targeting **European Union** member states gain "informed consent" from users before storing non-essential cookies on their device.

Google **Project Zero** researcher Jann Horn describes ways cookies can be read by **intermediaries**, like **Wi-Fi** hotspot providers. When in such circumstances, he recommends using the browser in **private browsing** mode (widely known as **Incognito mode** in Google Chrome).[83]

Search engine

[**edit**]

Main article: **Search engine**



The results of a search for the term "lunar eclipse" in a web-based **image search** engine

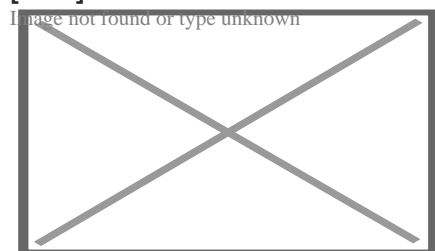
A *web search engine* or *Internet search engine* is a **software system** that is designed to carry out *web search* (*Internet search*), which means to search the World Wide Web in a systematic way for particular information specified in a **web search query**. The search results are generally presented in a line of results, often referred to as **search engine results pages** (SERPs). The information may be a mix of **web pages**, images, videos, infographics, articles, research papers, and other types of files. Some search engines also **mine data** available in

databases or open directories. Unlike web directories, which are maintained only by human editors, search engines also maintain real-time information by running an algorithm on a web crawler. Internet content that is not capable of being searched by a web search engine is generally described as the deep web.

In 1990, Archie, the world's first search engine, was released. The technology was originally an index of File Transfer Protocol (FTP) sites, which was a method for moving files between a client and a server network.[84][85] This early search tool was superseded by more advanced engines like Yahoo! in 1995 and Google in 1998.[86][87]

Deep web

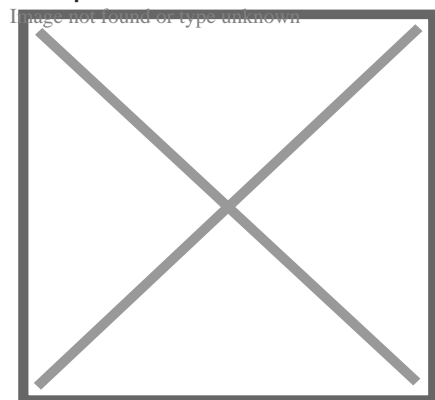
[edit]



Deep web diagram



Deep web vs surface web



Surface Web & Deep Web

Main article: [Deep web](#)

The deep web,[88] invisible web,[89] or hidden web[90] are parts of the World Wide Web whose contents are not indexed by standard web search engines. The opposite term to the

deep web is the **surface web**, which is accessible to anyone using the Internet.[91] **Computer scientist** Michael K. Bergman is credited with coining the term *deep web* in 2001 as a search indexing term.[92]

The content of the deep web is hidden behind **HTTP** forms,[93][94] and includes many very common uses such as **web mail**, **online banking**, and services that users must pay for, and which is protected by a **paywall**, such as **video on demand**, some online magazines and newspapers, among others.

The content of the deep web can be located and accessed by a direct **URL** or **IP address** and may require a password or other security access past the public website page.

Caching

[edit]

A **web cache** is a server computer located either on the public Internet or within an enterprise that stores recently accessed web pages to improve response time for users when the same content is requested within a certain time after the original request. Most web browsers also implement a **browser cache** by writing recently obtained data to a local data storage device. HTTP requests by a browser may ask only for data that has changed since the last access. Web pages and resources may contain expiration information to control caching to secure sensitive data, such as in **online banking**, or to facilitate frequently updated sites, such as news media. Even sites with highly dynamic content may permit basic resources to be refreshed only 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. Enterprise **firewalls** often cache Web resources requested by one user for the benefit of many users. Some **search engines** store cached content of frequently accessed websites.

Security

[edit]

For **criminals**, the Web has become a venue to spread **malware** and engage in a range of **cybercrime**, including (but not limited to) **identity theft**, **fraud**, **espionage**, and **intelligence gathering**. [95] Web-based **vulnerabilities** now outnumber traditional computer security concerns,[96][97] and as measured by **Google**, about one in ten web pages may contain malicious code.[98] Most web-based **attacks** take place on legitimate websites, and most, as measured by **Sophos**, are hosted in the United States, China and Russia.[99] The most common of all malware **threats** is **SQL injection** attacks against websites.[100] Through HTML and URIs, the Web was vulnerable to attacks like **cross-site scripting** (XSS) that came with the introduction of JavaScript[101] and were exacerbated to some degree by **Web 2.0** and Ajax **web design** that favours the use of scripts.[102] In one 2007 estimate, 70% of all websites are

open to XSS attacks on their users.[103] **Phishing** is another common threat to the Web. In February 2013, RSA (the security division of EMC) estimated the global losses from phishing at \$1.5 billion in 2012.[104] Two of the well-known phishing methods are Covert Redirect and Open Redirect.

Proposed solutions vary. Large security companies like **McAfee** already design governance and compliance suites to meet post-9/11 regulations,[105] and some, like **Finjan Holdings** have recommended active real-time inspection of programming code and all content regardless of its source.[95] Some have argued that for enterprises to see Web security as a business opportunity rather than a **cost centre**,[106] while others call for "ubiquitous, always-on **digital rights management**" enforced in the infrastructure to replace the hundreds of companies that secure data and networks.[107] **Jonathan Zittrain** has said users sharing responsibility for computing safety is far preferable to locking down the Internet.[108]

Privacy

[[edit](#)]

Main article: [Internet privacy](#)

Every time a client requests a web page, the server can identify the request's **IP address**. Web servers usually log IP addresses in a **log file**. Also, unless set not to do so, most web browsers record requested web pages in a viewable *history* feature, and usually **cache** much of the content locally. Unless the server-browser communication uses HTTPS encryption, web requests and responses travel in plain text across the Internet and can be viewed, recorded, and cached by intermediate systems. Another way to hide **personally identifiable information** is by using a **virtual private network**. A VPN **encrypts** traffic between the client and VPN server, and masks the original IP address, lowering the chance of user identification.

When a web page asks for, and the user supplies, personally identifiable information—such as their real name, address, e-mail address, etc. web-based entities can associate current web traffic with that individual. If the website uses **HTTP cookies**, username, and password authentication, or other tracking techniques, it can relate other web visits, before and after, to the identifiable information provided. In this way, a web-based organization can develop and build a profile of the individual people who use its site or sites. It may be able to build a record for an individual that includes information about their leisure activities, their shopping interests, their profession, and other aspects of their **demographic profile**. These profiles are of potential interest to marketers, advertisers, and others. Depending on the website's **terms and conditions** and the local laws that apply information from these profiles may be sold, shared, or passed to other organizations without the user being informed. For many ordinary people, this means little more than some unexpected emails in their inbox or some uncannily relevant advertising on a future web page. For others, it can mean that time spent indulging an unusual interest can result in a deluge of further targeted marketing that may be unwelcome. Law enforcement, counterterrorism, and espionage agencies can also identify, target, and track individuals based on their interests or proclivities on the Web.

Social networking sites usually try to get users to use their real names, interests, and locations, rather than pseudonyms, as their executives believe that this makes the social networking experience more engaging for users. On the other hand, uploaded photographs or unguarded statements can be identified to an individual, who may regret this exposure. Employers, schools, parents, and other relatives may be influenced by aspects of social networking profiles, such as text posts or digital photos, that the posting individual did not intend for these audiences. **Online bullies** may make use of personal information to harass or **stalk** users. Modern social networking websites allow fine-grained control of the privacy settings for each posting, but these can be complex and not easy to find or use, especially for beginners.[109] Photographs and videos posted onto websites have caused particular problems, as they can add a person's face to an online profile. With modern and potential **facial recognition technology**, it may then be possible to relate that face with other, previously anonymous, images, events, and scenarios that have been imaged elsewhere. Due to image caching, mirroring, and copying, it is difficult to remove an image from the World Wide Web.

Standards

[[edit](#)]

Main article: [Web standards](#)

Web standards include many interdependent standards and specifications, some of which govern aspects of the **Internet**, not just the World Wide Web. Even when not web-focused, such standards directly or indirectly affect the development and administration of websites and **web services**. Considerations include the **interoperability**, **accessibility** and **usability** of web pages and web sites.

Web standards, in the broader sense, consist of the following:

- *Recommendations* published by the **World Wide Web Consortium** (W3C)[110]
- "Living Standard" made by the **Web Hypertext Application Technology Working Group** (WHATWG)
- *Request for Comments* (RFC) documents published by the **Internet Engineering Task Force** (IETF)[111]
- *Standards* published by the **International Organization for Standardization** (ISO)[112]
- *Standards* published by **Ecma International** (formerly ECMA)[113]
- *The Unicode Standard* and various *Unicode Technical Reports* (UTRs) published by the **Unicode Consortium**[114]
- Name and number registries maintained by the **Internet Assigned Numbers Authority** (IANA)[115]

Web standards are not fixed sets of rules but are constantly evolving sets of finalized technical specifications of web technologies.[116] Web standards are developed by **standards organizations**—groups of interested and often competing parties chartered with the task of standardization—not technologies developed and declared to be a standard by a single

individual or company. It is crucial to distinguish those specifications that are under development from the ones that already reached the final development status (in the case of **W3C** specifications, the highest maturity level).

Accessibility

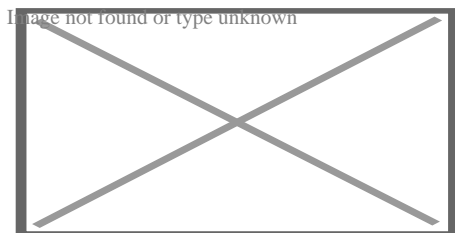
[[edit](#)]

Main article: [Web accessibility](#)

There are methods for accessing the Web in alternative mediums and formats to facilitate use by individuals with **disabilities**. These disabilities may be visual, auditory, physical, speech-related, cognitive, neurological, or some combination. Accessibility features also help people with temporary disabilities, like a broken arm, or ageing users as their abilities change. ^[117] The Web is receiving information as well as providing information and interacting with society. The World Wide Web Consortium claims that it is essential that the Web be accessible, so it can provide equal access and **equal opportunity** to people with disabilities. ^[118] Tim Berners-Lee once noted, "The power of the Web is in its universality. Access by everyone regardless of disability is an essential aspect." ^[117] Many countries regulate web accessibility as a requirement for websites. ^[119] International co-operation in the W3C **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**. ^[117]^[120]

Internationalisation

[[edit](#)]



A global map of the **Web Index** for countries in 2014

The W3C **Internationalisation** Activity assures that web technology works in all languages, scripts, and cultures. ^[121] Beginning in 2004 or 2005, **Unicode** gained ground and eventually in December 2007 surpassed both **ASCII** and Western European as the Web's most frequently used **character map**. ^[122] Originally **RFC 3986** allowed resources to be identified by **URI** in a subset of US-ASCII.

RFC 3987 allows more characters—any character in the **Universal Character Set**—and now a resource can be identified by **IRI** in any language. ^[123]

See also

[[edit](#)]

-  [Engineering portal](#)
-  [Internet portal](#)
-  [World portal](#)

- [Decentralized web](#)
- [Electronic publishing](#)
- [Gopher \(protocol\)](#), an early alternative to the WWW
- [Internet metaphors](#)
- [Internet security](#)
- [Lists of websites](#)
- [Minitel](#), a predecessor of the WWW
- [Streaming media](#)
- [Web 1.0](#)
- [Web 2.0](#)
- [Web 3.0](#)
- [Web3](#)
- [Web3D](#)
- [Web development tools](#)
- [Web literacy](#)

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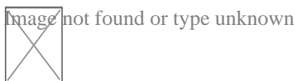
Further reading

[[edit](#)]

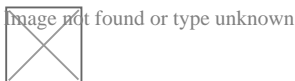
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External links

[[edit](#)]



Wikimedia Commons has media related to **World Wide Web**.



Wikibooks has a book on the topic of: **Nets, Webs and the Information Infrastructure**

- **The first website**
- **Early archive of the first Web site**
- **Internet Statistics: Growth and Usage of the Web and the Internet**
- **Living Internet** A comprehensive history of the Internet, including the World Wide Web
- **World Wide Web Consortium (W3C)**
- **W3C Recommendations Reduce "World Wide Wait"**
- **World Wide Web Size** Daily estimated size of the World Wide Web

- Antonio A. Casilli, Some Elements for a Sociology of Online Interactions
- The Erdős-Rényi Webgraph Server Archived 1 March 2021 at the Wayback Machine offers weekly updated graph representation of a constantly increasing fraction of the WWW
- The 25th Anniversary of the World Wide Web Archived 11 July 2021 at the Wayback Machine is an animated video produced by USAID and TechChange which explores the role of the WWW in addressing extreme poverty

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Telecommunications

History

- Beacon
- Broadcasting
- Cable protection system
- Cable TV
- Communications satellite
- Computer network
- Data compression
 - audio
 - DCT
 - image
 - video
- Digital media
 - Internet video
 - online video platform
 - social media
 - streaming
- Drums
- Edholm's law
- Electrical telegraph
- Fax
- Heliographs
- Hydraulic telegraph
- Information Age
- Information revolution
- Internet
- Mass media
- Mobile phone
 - Smartphone
- Optical telecommunication
- Optical telegraphy
- Pager
- Photophone
- Prepaid mobile phone
- Radio
- Radiotelephone
- Satellite communications
- Semaphore
 - Phryctoria
- Semiconductor
 - device
 - MOSFET
 - transistor
- Smoke signals
- Telecommunications history
- Telautograph
- Telegraphy
- Teleprinter (teletype)

Pioneers

- Nasir Ahmed
- Edwin Howard Armstrong
- Mohamed M. Atalla
- John Logie Baird
- Paul Baran
- John Bardeen
- Alexander Graham Bell
- Emile Berliner
- Tim Berners-Lee
- Francis Blake
- Jagadish Chandra Bose
- Charles Bourseul
- Walter Houser Brattain
- Vint Cerf
- Claude Chappe
- Yogen Dalal
- Donald Davies
- Daniel Davis Jr.
- Amos Dolbear
- Thomas Edison
- Philo Farnsworth
- Reginald Fessenden
- Lee de Forest
- Elisha Gray
- Oliver Heaviside
- Robert Hooke
- Erna Schneider Hoover
- Harold Hopkins
- Gardiner Greene Hubbard
- Bob Kahn
- Dawon Kahng
- Charles K. Kao
- Narinder Singh Kapany
- Hedy Lamarr
- Roberto Landell
- Innocenzo Manzetti
- Guglielmo Marconi
- Robert Metcalfe
- Antonio Meucci
- Samuel Morse
- Jun-ichi Nishizawa
- Charles Grafton Page
- Radia Perlman
- Alexander Stepanovich Popov
- Tivadar Puskás
- Johann Philipp Reis
- Claude Shannon

Transmission media

- Coaxial cable
- Fiber-optic communication
 - optical fiber
- Free-space optical communication
- Molecular communication
- Radio waves
 - wireless
- Transmission line
 - telecommunication circuit

Network topology and switching

- Bandwidth
- Links
- Network switching
 - circuit
 - packet
- Nodes
 - terminal
- Telephone exchange

Multiplexing

- Space-division
- Frequency-division
- Time-division
- Polarization-division
- Orbital angular-momentum
- Code-division

Concepts

- Communication protocol
- Computer network
- Data transmission
- Store and forward
- Telecommunications equipment

Types of network





- Cellular network
- Ethernet
- ISDN
- LAN
- Mobile
- NGN
- Public Switched Telephone
- Radio
- Television
- Telex
- UUCP
- WAN
- Wireless network

Notable networks

- ARPANET
- BITNET
- CYCLADES
- FidoNet
- Internet
- Internet2
- JANET
- NPL network
- Toasternet
- Usenet

Locations

- Africa
- Americas
 - North
 - South
- Antarctica
- Asia
- Europe
- Oceania
- *Global telecommunications regulation bodies*

-  **Telecommunication portal**
-  **Category**
-  **Outline**
-  **Commons**

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Web syndication

History

Blogging

Podcasting

Vlogging

Web syndication technology

Types

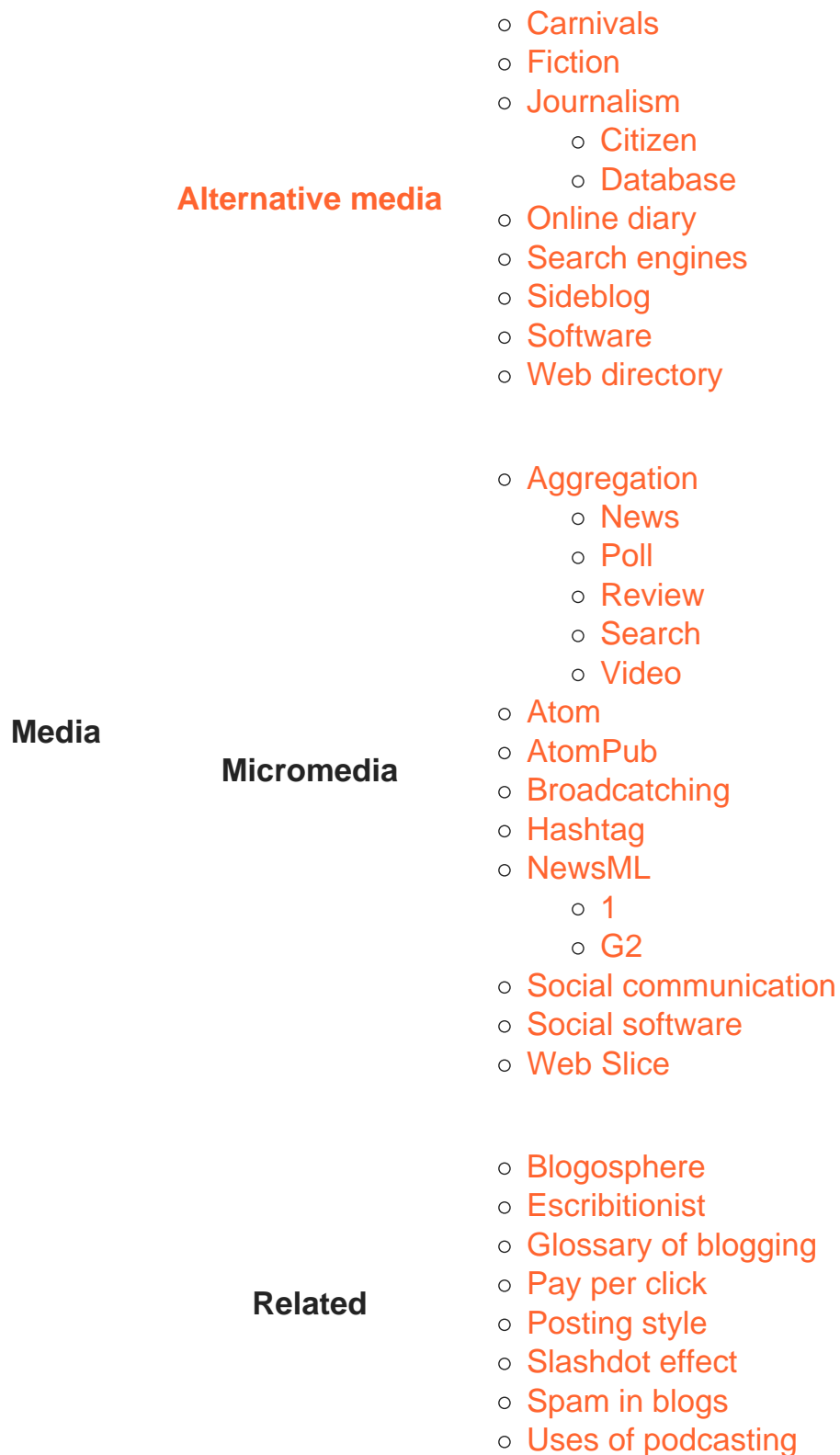
- Art
- Bloggernacle
- Classical music
- Corporate
- Dream diary
- Edublog
- Electronic journal
- Fake
- Family
- Fashion
- Food
- Health
- Law
- Lifelog
- MP3
- News
- Photoblog
- Police
- Political
- Project
- Reverse
- Travel
- Warblog

Technology	General	<ul style="list-style-type: none"> ○ BitTorrent ○ Feed URI scheme
	Features	<ul style="list-style-type: none"> ○ Linkback ○ Permalink ○ Ping ○ Pingback ○ Reblogging ○ Refback ○ Rollback ○ Trackback
	Mechanism	<ul style="list-style-type: none"> ○ Thread ○ Geotagging ○ RSS enclosure ○ Synchronization
	Memetics	<ul style="list-style-type: none"> ○ Atom feed ○ Data feed ○ Photofeed ○ Product feed ○ RDF feed ○ Web feed
	RSS	<ul style="list-style-type: none"> ○ GeoRSS ○ MRSS ○ RSS TV
	Social	<ul style="list-style-type: none"> ○ Inter-process communication ○ Mashup ○ Referencing ○ RSS editor ○ RSS tracking ○ Streaming media
	Standard	<ul style="list-style-type: none"> ○ OPML ○ RSS Advisory Board ○ Usenet ○ World Wide Web ○ XBEL ○ XOXO

- Audio podcast
- Enhanced podcast
- Mobilecast
- Narrowcasting
- Peercasting
- Screencast
- Slidecasting
- Videocast
- Webcomic
- Webtoon
- Web series

Form

- Anonymous blogging
- Collaborative blog
- Columnist
- Instant messaging
- Liveblogging
- Microblog
- Mobile blogging
- Spam blog
- Video blogging
- Motovlogging



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Semantic Web

Background

- Databases
- Hypertext
- Internet
- Ontologies
- Semantics
- Semantic networks
- World Wide Web

Sub-topics

- Dataspaces
- Hyperdata
- Linked data
- Rule-based systems

Applications

- Semantic analytics
- Semantic broker
- Semantic computing
- Semantic mapper
- Semantic matching
- Semantic publishing
- Semantic reasoner
- Semantic search
- Semantic service-oriented architecture
- Semantic wiki
- Solid

Related topics

- [Collective intelligence](#)
- [Description logic](#)
- [Folksonomy](#)
- [Geotagging](#)
- [Information architecture](#)
- [iXBRL](#)
- [Knowledge extraction](#)
- [Knowledge management](#)
- [Knowledge representation and reasoning](#)
- [Library 2.0](#)
- [Digital library](#)
- [Digital humanities](#)
- [Metadata](#)
- [References](#)
- [Topic map](#)
- [Web 2.0](#)
- [Web engineering](#)
- [Web Science Trust](#)

Syntax and supporting technologies

- HTTP
- IRI
 - URI
- RDF
 - triples
 - RDF/XML
 - JSON-LD
 - Turtle
 - TriG
 - Notation3
 - N-Triples
 - TriX (no W3C standard)
- RRID
- SPARQL
- XML
- Semantic HTML

Schemas, ontologies and rules

- Common Logic
- OWL
- RDFS
- Rule Interchange Format
- Semantic Web Rule Language
- ALPS
- SHACL

Standards

Semantic annotation

- eRDF
- GRDDL
- Microdata
- Microformats
- RDFa
- SAWSDL
- Facebook Platform

Common vocabularies

- DOAP
- Dublin Core
- FOAF
- Schema.org
- SIOC
- SKOS

Microformat vocabularies

- hAtom
- hCalendar
- hCard

Authority control databases Image not found or type unknown Edit this at Wikidata

International

- **FAST**

National

- **Germany**
- **United States**
- **France**
- **BnF data**
- **Czech Republic**
- **Spain**
- **Latvia**
- **Israel**

Other

- **NARA**

About Search engine optimization



This article needs to be **updated**. Please help update this article to reflect recent events or newly available information. *(December 2024)*



This article **is written like a personal reflection, personal essay, or argumentative essay** that states a Wikipedia editor's personal feelings or presents an original argument about a topic. Please **help improve it** by rewriting it in an **encyclopedic style**. (*January 2025*) *(Learn how and when to remove this message)*



This article has multiple issues. Please help **improve it** or discuss these issues on the **talk page**. *(Learn how and when to remove these messages)*

(Learn how and when to remove this message)

"SEO" redirects here. For other uses, see **Seo (disambiguation)**.

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Part of a series on

Internet marketing

- Search engine optimization
- Local search engine optimisation
- Social media marketing
- Email marketing
- Referral marketing
- Content marketing
- Native advertising

Search engine marketing

- Pay-per-click
- Cost per impression
- Search analytics
- Web analytics

Display advertising

- Ad blocking
- Contextual advertising
- Behavioral targeting

Affiliate marketing

- Cost per action
- Revenue sharing

Mobile advertising

Search engine optimization (SEO) is the process of improving the quality and quantity of **website traffic** to a **website** or a **web page** from **search engines**.^{[1][2]} SEO targets unpaid search traffic (usually referred to as "**organic**" results) rather than direct traffic, referral traffic, social media traffic, or **paid traffic**.

Unpaid search engine traffic may originate from a variety of kinds of searches, including **image search**, **video search**, **academic search**,^[3] news search, and industry-specific **vertical search** engines.

As an **Internet marketing** strategy, SEO considers how search engines work, the computer-programmed **algorithms** that dictate search engine results, what people search for, the actual search queries or **keywords** typed into search engines, and which search engines are

preferred by a target audience. SEO is performed because a website will receive more visitors from a search engine when websites rank higher within a [search engine results page](#) (SERP), with the aim of either converting the visitors or building brand awareness. [4]

History

[[edit](#)]

[Webmasters](#) and content providers began optimizing websites for search engines in the mid-1990s, as the first search engines were cataloging the early [Web](#). Initially, webmasters submitted the address of a page, or [URL](#) to the various search engines, which would send a [web crawler](#) to *crawl* that page, extract links to other pages from it, and return information found on the page to be [indexed](#). [5]

According to a 2004 article by former industry analyst and current [Google](#) employee [Danny Sullivan](#), the phrase "search engine optimization" probably came into use in 1997. Sullivan credits SEO practitioner Bruce Clay as one of the first people to popularize the term. [6]

Early versions of search [algorithms](#) relied on webmaster-provided information such as the keyword [meta tag](#) or index files in engines like [ALIWEB](#). Meta tags provide a guide to each page's content. Using metadata to index pages was found to be less than reliable, however, because the webmaster's choice of keywords in the meta tag could potentially be an inaccurate representation of the site's actual content. Flawed data in meta tags, such as those that were inaccurate or incomplete, created the potential for pages to be mischaracterized in irrelevant searches. [7] [[dubious](#) – [discuss](#)] Web content providers also manipulated attributes within the [HTML](#) source of a page in an attempt to rank well in search engines. [8] By 1997, search engine designers recognized that webmasters were making efforts to rank in search engines and that some webmasters were [manipulating their rankings](#) in search results by stuffing pages with excessive or irrelevant keywords. Early search engines, such as [Altavista](#) and [Infoseek](#), adjusted their algorithms to prevent webmasters from manipulating rankings. [9]

By heavily relying on factors such as [keyword density](#), which were exclusively within a webmaster's control, early search engines suffered from abuse and ranking manipulation. To provide better results to their users, search engines had to adapt to ensure their [results pages](#) showed the most relevant search results, rather than unrelated pages stuffed with numerous keywords by unscrupulous webmasters. This meant moving away from heavy reliance on term density to a more holistic process for scoring semantic signals. [10]

Search engines responded by developing more complex [ranking algorithms](#), taking into account additional factors that were more difficult for webmasters to manipulate. [[citation needed](#)]

Some search engines have also reached out to the SEO industry and are frequent sponsors and guests at SEO conferences, webchats, and seminars. Major search engines provide information and guidelines to help with website optimization. [11][12] Google has a [Sitemaps](#)

program to help webmasters learn if Google is having any problems indexing their website and also provides data on Google traffic to the website.[13] [Bing Webmaster Tools](#) provides a way for webmasters to submit a sitemap and web feeds, allows users to determine the "crawl rate", and track the web pages index status.

In 2015, it was reported that [Google](#) was developing and promoting mobile search as a key feature within future products. In response, many brands began to take a different approach to their Internet marketing strategies.[14]

Relationship with Google

[[edit](#)]

In 1998, two graduate students at [Stanford University](#), [Larry Page](#) and [Sergey Brin](#), developed "Backrub", a search engine that relied on a mathematical algorithm to rate the prominence of web pages. The number calculated by the algorithm, [PageRank](#), is a function of the quantity and strength of [inbound links](#). [15] PageRank estimates the likelihood that a given page will be reached by a web user who randomly surfs the web and follows links from one page to another. In effect, this means that some links are stronger than others, as a higher PageRank page is more likely to be reached by the random web surfer.

Page and Brin founded Google in 1998. [16] Google attracted a loyal following among the growing number of [Internet](#) users, who liked its simple design. [17] Off-page factors (such as PageRank and hyperlink analysis) were considered as well as on-page factors (such as keyword frequency, [meta tags](#), headings, links and site structure) to enable Google to avoid the kind of manipulation seen in search engines that only considered on-page factors for their rankings. Although PageRank was more difficult to [game](#), webmasters had already developed link-building tools and schemes to influence the [Inktomi](#) search engine, and these methods proved similarly applicable to gaming PageRank. Many sites focus on exchanging, buying, and selling links, often on a massive scale. Some of these schemes involved the creation of thousands of sites for the sole purpose of [link spamming](#). [18]

By 2004, search engines had incorporated a wide range of undisclosed factors in their ranking algorithms to reduce the impact of link manipulation. [19] The leading search engines, Google, [Bing](#), and [Yahoo](#), do not disclose the algorithms they use to rank pages. Some SEO practitioners have studied different approaches to search engine optimization and have shared their personal opinions. [20] Patents related to search engines can provide information to better understand search engines. [21] In 2005, Google began personalizing search results for each user. Depending on their history of previous searches, Google crafted results for logged in users. [22]

In 2007, Google announced a campaign against paid links that transfer PageRank. [23] On June 15, 2009, Google disclosed that they had taken measures to mitigate the effects of PageRank sculpting by use of the [nofollow](#) attribute on links. [Matt Cutts](#), a well-known

software engineer at Google, announced that Google Bot would no longer treat any no follow links, in the same way, to prevent SEO service providers from using nofollow for PageRank sculpting.[24] As a result of this change, the usage of nofollow led to evaporation of PageRank. In order to avoid the above, SEO engineers developed alternative techniques that replace nofollowed tags with obfuscated JavaScript and thus permit PageRank sculpting. Additionally, several solutions have been suggested that include the usage of iframes, Flash, and JavaScript.[25]

In December 2009, Google announced it would be using the web search history of all its users in order to populate search results.[26] On June 8, 2010 a new web indexing system called Google Caffeine was announced. Designed to allow users to find news results, forum posts, and other content much sooner after publishing than before, Google Caffeine was a change to the way Google updated its index in order to make things show up quicker on Google than before. According to Carrie Grimes, the software engineer who announced Caffeine for Google, "Caffeine provides 50 percent fresher results for web searches than our last index..." [27] Google Instant, real-time-search, was introduced in late 2010 in an attempt to make search results more timely and relevant. Historically site administrators have spent months or even years optimizing a website to increase search rankings. With the growth in popularity of social media sites and blogs, the leading engines made changes to their algorithms to allow fresh content to rank quickly within the search results.[28]

In February 2011, Google announced the Panda update, which penalizes websites containing content duplicated from other websites and sources. Historically websites have copied content from one another and benefited in search engine rankings by engaging in this practice. However, Google implemented a new system that punishes sites whose content is not unique.[29] The 2012 Google Penguin attempted to penalize websites that used manipulative techniques to improve their rankings on the search engine.[30] Although Google Penguin has been presented as an algorithm aimed at fighting web spam, it really focuses on spammy links[31] by gauging the quality of the sites the links are coming from. The 2013 Google Hummingbird update featured an algorithm change designed to improve Google's natural language processing and semantic understanding of web pages. Hummingbird's language processing system falls under the newly recognized term of "conversational search", where the system pays more attention to each word in the query in order to better match the pages to the meaning of the query rather than a few words.[32] With regards to the changes made to search engine optimization, for content publishers and writers, Hummingbird is intended to resolve issues by getting rid of irrelevant content and spam, allowing Google to produce high-quality content and rely on them to be 'trusted' authors.

In October 2019, Google announced they would start applying BERT models for English language search queries in the US. Bidirectional Encoder Representations from Transformers (BERT) was another attempt by Google to improve their natural language processing, but this time in order to better understand the search queries of their users.[33] In terms of search engine optimization, BERT intended to connect users more easily to relevant content and increase the quality of traffic coming to websites that are ranking in the Search Engine Results

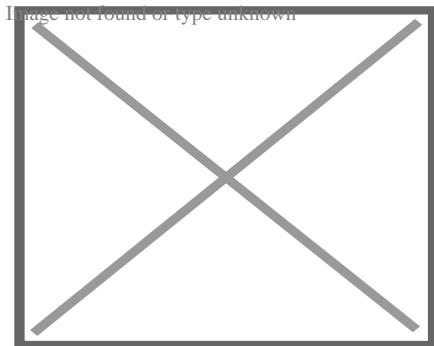
Page.

Methods

[edit]

Getting indexed

[edit]



A simple illustration of the **Pagerank** algorithm. Percentage shows the perceived importance.

The leading search engines, such as Google, Bing, and Yahoo!, use **crawlers** to find pages for their algorithmic search results. Pages that are linked from other search engine-indexed pages do not need to be submitted because they are found automatically. The **Yahoo! Directory** and **DMOZ**, two major directories which closed in 2014 and 2017 respectively, both required manual submission and human editorial review. [34] Google offers **Google Search Console**, for which an XML **Sitemap** feed can be created and submitted for free to ensure that all pages are found, especially pages that are not discoverable by automatically following links [35] in addition to their URL submission console. [36] Yahoo! formerly operated a paid submission service that guaranteed to crawl for a **cost per click**; [37] however, this practice was discontinued in 2009.

Search engine crawlers may look at a number of different factors when **crawling** a site. Not every page is indexed by search engines. The distance of pages from the root directory of a site may also be a factor in whether or not pages get crawled. [38]

Mobile devices are used for the majority of Google searches. [39] In November 2016, Google announced a major change to the way they are crawling websites and started to make their index mobile-first, which means the mobile version of a given website becomes the starting point for what Google includes in their index. [40] In May 2019, Google updated the rendering engine of their crawler to be the latest version of Chromium (74 at the time of the announcement). Google indicated that they would regularly update the **Chromium** rendering engine to the latest version. [41] In December 2019, Google began updating the User-Agent string of their crawler to reflect the latest Chrome version used by their rendering service. The

delay was to allow webmasters time to update their code that responded to particular bot User-Agent strings. Google ran evaluations and felt confident the impact would be minor. [42]

Preventing crawling

[edit]

Main article: [Robots exclusion standard](#)

To avoid undesirable content in the search indexes, webmasters can instruct spiders not to crawl certain files or directories through the standard [robots.txt](#) file in the root directory of the domain. Additionally, a page can be explicitly excluded from a search engine's database by using a [meta tag](#) specific to robots (usually `<meta name="robots" content="noindex">`). When a search engine visits a site, the robots.txt located in the [root directory](#) is the first file crawled. The robots.txt file is then parsed and will instruct the robot as to which pages are not to be crawled. As a search engine crawler may keep a cached copy of this file, it may on occasion crawl pages a webmaster does not wish to crawl. Pages typically prevented from being crawled include login-specific pages such as shopping carts and user-specific content such as search results from internal searches. In March 2007, Google warned webmasters that they should prevent indexing of internal search results because those pages are considered search spam. [43]

In 2020, Google [sunsetted](#) the standard (and open-sourced their code) and now treats it as a hint rather than a directive. To adequately ensure that pages are not indexed, a page-level robot's meta tag should be included. [44]

Increasing prominence

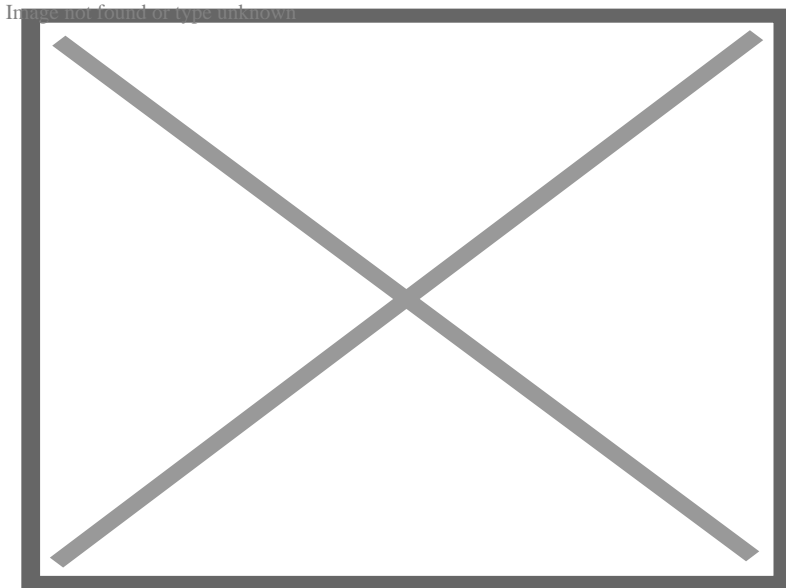
[edit]

A variety of methods can increase the prominence of a webpage within the search results. [Cross linking](#) between pages of the same website to provide more links to important pages may improve its visibility. Page design makes users trust a site and want to stay once they find it. When people bounce off a site, it counts against the site and affects its credibility. [45]

Writing content that includes frequently searched keyword phrases so as to be relevant to a wide variety of search queries will tend to increase traffic. Updating content so as to keep search engines crawling back frequently can give additional weight to a site. Adding relevant keywords to a web page's metadata, including the [title tag and meta description](#), will tend to improve the relevancy of a site's search listings, thus increasing traffic. [URL canonicalization](#) of web pages accessible via multiple URLs, using the [canonical link element](#) [46] or via [301 redirects](#) can help make sure links to different versions of the URL all count towards the page's link popularity score. These are known as incoming links, which point to the URL and can count towards the page link's popularity score, impacting the credibility of a website. [45]

White hat versus black hat techniques

[[edit](#)]



Common white-hat methods of search engine optimization

SEO techniques can be classified into two broad categories: techniques that search engine companies recommend as part of good design ("white hat"), and those techniques of which search engines do not approve ("black hat"). Search engines attempt to minimize the effect of the latter, among them [spamdexing](#). Industry commentators have classified these methods and the practitioners who employ them as either [white hat](#) SEO or [black hat](#) SEO.[\[47\]](#) White hats tend to produce results that last a long time, whereas black hats anticipate that their sites may eventually be banned either temporarily or permanently once the search engines discover what they are doing.[\[48\]](#)

An SEO technique is considered a white hat if it conforms to the search engines' guidelines and involves no deception. As the search engine guidelines[\[11\]\[12\]\[49\]](#) are not written as a series of rules or commandments, this is an important distinction to note. White hat SEO is not just about following guidelines but is about ensuring that the content a search engine indexes and subsequently ranks is the same content a user will see. White hat advice is generally summed up as creating content for users, not for search engines, and then making that content easily accessible to the online "spider" algorithms, rather than attempting to trick the algorithm from its intended purpose. White hat SEO is in many ways similar to web development that promotes accessibility,[\[50\]](#) although the two are not identical.

Black hat SEO attempts to improve rankings in ways that are disapproved of by the search engines or involve deception. One black hat technique uses hidden text, either as text colored similar to the background, in an invisible [div](#), or positioned off-screen. Another method gives a different page depending on whether the page is being requested by a human visitor or a

search engine, a technique known as **cloaking**. Another category sometimes used is **grey hat SEO**. This is in between the black hat and white hat approaches, where the methods employed avoid the site being penalized but do not act in producing the best content for users. Grey hat SEO is entirely focused on improving search engine rankings.

Search engines may penalize sites they discover using black or grey hat methods, either by reducing their rankings or eliminating their listings from their databases altogether. Such penalties can be applied either automatically by the search engines' algorithms or by a manual site review. One example was the February 2006 Google removal of both **BMW Germany** and **Ricoh Germany** for the use of deceptive practices.[51] Both companies subsequently apologized, fixed the offending pages, and were restored to Google's search engine results page.[52]

Companies that employ black hat techniques or other spammy tactics can get their client websites banned from the search results. In 2005, the *Wall Street Journal* reported on a company, **Traffic Power**, which allegedly used high-risk techniques and failed to disclose those risks to its clients.[53] *Wired* magazine reported that the same company sued blogger and SEO Aaron Wall for writing about the ban.[54] Google's **Matt Cutts** later confirmed that Google had banned Traffic Power and some of its clients.[55]

As marketing strategy

[edit]

SEO is not an appropriate strategy for every website, and other Internet marketing strategies can be more effective, such as paid advertising through pay-per-click (**PPC**) campaigns, depending on the site operator's goals.[editorializing] **Search engine marketing (SEM)** is the practice of designing, running, and optimizing search engine ad campaigns. Its difference from SEO is most simply depicted as the difference between paid and unpaid priority ranking in search results. SEM focuses on prominence more so than relevance; website developers should regard SEM with the utmost importance with consideration to visibility as most navigate to the primary listings of their search.[56] A successful Internet marketing campaign may also depend upon building high-quality web pages to engage and persuade internet users, setting up **analytics** programs to enable site owners to measure results, and improving a site's **conversion rate**. [57][58] In November 2015, Google released a full 160-page version of its Search Quality Rating Guidelines to the public,[59] which revealed a shift in their focus towards "usefulness" and **mobile local search**. In recent years the mobile market has exploded, overtaking the use of desktops, as shown in by **StatCounter** in October 2016, where they analyzed 2.5 million websites and found that 51.3% of the pages were loaded by a mobile device.[60] Google has been one of the companies that are utilizing the popularity of mobile usage by encouraging websites to use their **Google Search Console**, the Mobile-Friendly Test, which allows companies to measure up their website to the search engine results and determine how user-friendly their websites are. The closer the keywords are together their ranking will improve based on key terms.[45]

SEO may generate an adequate **return on investment**. However, search engines are not paid for organic search traffic, their algorithms change, and there are no guarantees of continued referrals. Due to this lack of guarantee and uncertainty, a business that relies heavily on search engine traffic can suffer major losses if the search engines stop sending visitors. [61] Search engines can change their algorithms, impacting a website's search engine ranking, possibly resulting in a serious loss of traffic. According to Google's CEO, **Eric Schmidt**, in 2010, Google made over 500 algorithm changes – almost 1.5 per day. [62] It is considered a wise business practice for website operators to liberate themselves from dependence on search engine traffic. [63] In addition to accessibility in terms of web crawlers (addressed above), user **web accessibility** has become increasingly important for SEO.

International markets and SEO

[edit]

Optimization techniques are highly tuned to the dominant search engines in the target market. The search engines' market shares vary from market to market, as does competition. In 2003, **Danny Sullivan** stated that **Google** represented about 75% of all searches. [64] In markets outside the United States, Google's share is often larger, and data showed Google was the dominant search engine worldwide as of 2007. [65] As of 2006, Google had an 85–90% market share in Germany. [66] While there were hundreds of SEO firms in the US at that time, there were only about five in Germany. [66] As of March 2024, Google still had a significant market share of 89.85% in Germany. [67] As of June 2008, the market share of Google in the UK was close to 90% according to **Hitwise**. [68] [obsolete source] As of March 2024, Google's market share in the UK was 93.61%. [69]

Successful search engine optimization (SEO) for international markets requires more than just translating web pages. It may also involve registering a domain name with a **country-code top-level domain** (ccTLD) or a relevant **top-level domain** (TLD) for the target market, choosing web hosting with a local IP address or server, and using a **Content Delivery Network** (CDN) to improve website speed and performance globally. It is also important to understand the local culture so that the content feels relevant to the audience. This includes conducting keyword research for each market, using hreflang tags to target the right languages, and building local backlinks. However, the core SEO principles—such as creating high-quality content, improving user experience, and building links—remain the same, regardless of language or region. [66]

Regional search engines have a strong presence in specific markets:

- China: **Baidu** leads the market, controlling about 70 to 80% market share. [70]
- South Korea: Since the end of 2021, **Naver**, a domestic web portal, has gained prominence in the country. [71][72]
- Russia: **Yandex** is the leading search engine in Russia. As of December 2023, it accounted for at least 63.8% of the market share. [73]

The Evolution of International SEO

[\[edit\]](#)

By the early 2000s, businesses recognized that the web and search engines could help them reach global audiences. As a result, the need for multilingual SEO emerged.^[74] In the early years of international SEO development, simple translation was seen as sufficient. However, over time, it became clear that localization and transcreation—adapting content to local language, culture, and emotional resonance—were far more effective than basic translation. ^[75]

Legal precedents

[\[edit\]](#)

On October 17, 2002, SearchKing filed suit in the [United States District Court](#), Western District of Oklahoma, against the search engine Google. SearchKing's claim was that Google's tactics to prevent spamdexing constituted a [tortious interference](#) with contractual relations. On May 27, 2003, the court granted Google's motion to dismiss the complaint because SearchKing "failed to state a claim upon which relief may be granted."^{[76][77]}

In March 2006, KinderStart filed a lawsuit against Google over search engine rankings. KinderStart's website was removed from Google's index prior to the lawsuit, and the amount of traffic to the site dropped by 70%. On March 16, 2007, the [United States District Court for the Northern District of California](#) ([San Jose](#) Division) dismissed KinderStart's complaint without leave to amend and partially granted Google's motion for [Rule 11](#) sanctions against KinderStart's attorney, requiring him to pay part of Google's legal expenses.^{[78][79]}

See also

[\[edit\]](#)

- [Competitor backlinking](#)
- [List of search engines](#)
- [Search engine marketing](#)
- [Search neutrality](#), the opposite of search manipulation
- [User intent](#)
- [Website promotion](#)
- [Search engine results page](#)
- [Search engine scraping](#)

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Frequently Asked Questions

What does SEO mean for my business?

SEO, or search engine optimisation, means improving your website's structure, content, and overall performance to rank higher in search results. This leads to more organic traffic, increased brand visibility, and better conversion rates, ultimately supporting your business's

growth.

What is SEO marketing?

SEO marketing is the process of using search engine optimization techniques to enhance your online presence. By optimizing your website, creating relevant content, and building authority, you attract organic traffic from search engines, increase brand awareness, and drive conversions.

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