

Google Overview

Created by Phil Wane

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Google

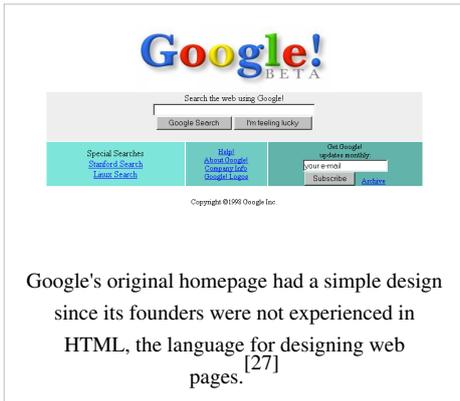
	
Type	Public (NASDAQ: GOOG ^[1] , FWB: GGQ1 ^[2])
Industry	Internet, Computer software
Founded	Menlo Park, California (September 4, 1998) ^[3] ^[4]
Founder(s)	Sergey M. Brin Lawrence E. Page
Headquarters	1600 Amphitheatre Parkway, Mountain View, California, United States
Area served	Worldwide
Key people	Eric E. Schmidt (Chairman & CEO) Sergey M. Brin (Technology President) Lawrence E. Page (Products President)
Products	See list of Google products.
Revenue	▲ US\$23.651 billion (2009) ^[5] ^[6]
Operating income	▲ US\$8.312 billion (2009) ^[5] ^[6]
Profit	▲ US\$6.520 billion (2009) ^[5] ^[6]
Total assets	▲ US\$40.497 billion (2009) ^[5] ^[6]
Total equity	▲ US\$36.004 billion (2009) ^[6]
Employees	23,331 (2010) ^[7]
Subsidiaries	YouTube, DoubleClick, On2 Technologies, GrandCentral, Picnik, Aardvark, AdMob
Website	Google.com ^[8]

Google Inc. is a multinational public corporation invested in Internet search, cloud computing, and advertising technologies. Google hosts and develops a number of Internet-based services and products,^[9] and generates profit primarily from advertising through its AdWords program.^[5] ^[10] The company was founded by Larry Page and Sergey Brin, often dubbed the "Google Guys",^[11] ^[12] ^[13] while the two were attending Stanford University as Ph.D. candidates. It was first incorporated as a privately held company on September 4, 1998, and its initial public offering followed on August 19, 2004. The company's stated mission from the outset was "to organize the world's information and make it universally accessible and useful",^[14] and the company's unofficial slogan – coined by Google engineer Paul Buchheit – is "Don't be evil".^[15] ^[16] In 2006, the company moved to their current headquarters in Mountain View, California.

Google runs over one million servers in data centers around the world,^[17] and processes over one billion search requests^[18] and about twenty-four petabytes of user-generated data every day.^[19] ^[20] ^[21] ^[22] Google's rapid growth since its incorporation has triggered a chain of products, acquisitions, and partnerships beyond the company's core search engine. The company offers online productivity software, such as its Gmail e-mail software, and social networking tools, including Orkut and, more recently, Google Buzz. Google's products extend to the desktop as well,

with applications such as the web browser Google Chrome, the Picasa photo organization and editing software, and the Google Talk instant messaging application. Notably, Google leads the development of the Android mobile phone operating system, used on a number of phones such as the Nexus One and Motorola Droid. Alexa lists the main U.S.-focused google.com site as the Internet's most visited website, and numerous international google sites (google.co.in, google.co.uk etc.) are in the top hundred, as are several other Google-owned sites such as Youtube, Blogger, and Orkut.^[23] Google is also BrandZ's most powerful brand in the world.^[24] The dominant market position of Google's services has led to criticism of the company over issues including privacy, copyright, and censorship.^[25] [26]

History



Google began in January 1996 as a research project by Larry Page and Sergey Brin when they were both PhD students at Stanford University in California.^[3]

While conventional search engines ranked results by counting how many times the search terms appeared on the page, the two theorized about a better system that analyzed the relationships between websites.^[28] They called this new technology PageRank, where a website's relevance was determined by the number of pages, and the importance of those pages, that linked back to the original site.^[29] [30]

A small search engine called "RankDex" from IDD Information Services designed by Robin Li was, since 1996, already exploring a similar strategy for site-scoring and page ranking.^[31] The technology in RankDex would be patented^[32] and used later when Li founded Baidu in China.^[33] [34]

Page and Brin originally nicknamed their new search engine "BackRub", because the system checked backlinks to estimate the importance of a site.^[35] [36] [37]

Eventually, they changed the name to Google, originating from a misspelling of the word "googol",^[38] [39] the number one followed by one hundred zeros, which was meant to signify the amount of information the search engine was to handle.^[40] Originally, Google ran under the Stanford University website, with the domain *google.stanford.edu*.^[41]

The domain name for Google was registered on September 15, 1997,^[42] and the company was incorporated on September 4, 1998. It was based in a friend's (Susan Wojcicki^[3]) garage in Menlo Park, California. Craig Silverstein, a fellow Ph.D. student at Stanford, was hired as the first employee.^[3] [43] [44]

Financing and initial public offering

The first funding for Google was an August 1998 contribution of US\$100,000 from Andy Bechtolsheim, co-founder of Sun Microsystems, given before Google was even incorporated.^[46] Early in 1999, while still graduate students, Brin and Page decided that the search engine they had developed was taking up too much of their time from academic pursuits. They went to Excite CEO George Bell and offered to sell it to him for \$1 million. He rejected the offer, and later criticized Vinod Khosla, one of Excite's venture capitalists, after he had negotiated Brin and Page down to \$750,000. On June 7, 1999, a \$25 million round of funding was announced,^[47] with major investors including the venture capital firms Kleiner Perkins Caufield & Byers and Sequoia Capital.^[46]

Google's initial public offering (IPO) took place five years later on August 19, 2004. The company offered 19,605,052 shares at a price of \$85 per share.^[48] ^[49] Shares were sold in a unique online auction format using a system built by Morgan Stanley and Credit Suisse, underwriters for the deal.^[50] ^[51] The sale of \$1.67 billion gave Google a market capitalization of more than \$23 billion.^[52] The vast majority of the 271 million shares remained under the control of Google, and many Google employees became instant paper millionaires. Yahoo!, a competitor of Google, also benefited because it owned 8.4 million shares of Google before the IPO took place.^[53]

Some people speculated that Google's IPO would inevitably lead to changes in company culture. Reasons ranged from shareholder pressure for employee benefit reductions to the fact that many company executives would become instant paper millionaires.^[54] As a reply to this concern, co-founders Sergey Brin and Larry Page promised in a report to potential investors that the IPO would not change the company's culture.^[55] In 2005, however, articles in *The New York Times* and other sources began suggesting that Google had lost its anti-corporate, no evil philosophy.^[56] ^[57] ^[58] In an effort to maintain the company's unique culture, Google designated a Chief Culture Officer, who also serves as the Director of Human Resources. The purpose of the Chief Culture Officer is to develop and maintain the culture and work on ways to keep true to the core values that the company was founded on: a flat organization with a collaborative environment.^[59] Google has also faced allegations of sexism and ageism from former employees.^[60] ^[61]

The stock's performance after the IPO went well, with shares hitting \$700 for the first time on October 31, 2007,^[62] primarily because of strong sales and earnings in the online advertising market.^[63] The surge in stock price was fueled mainly by individual investors, as opposed to large institutional investors and mutual funds.^[63] The company is now listed on the NASDAQ stock exchange under the ticker symbol GOOG and under the Frankfurt Stock Exchange under the ticker symbol GGQ1.

Growth

In March 1999, the company moved its offices to Palo Alto, California, home to several other noted Silicon Valley technology startups.^[64] The next year, against Page and Brin's initial opposition toward an advertising-funded search engine,^[65] Google began selling advertisements associated with search keywords.^[3] In order to maintain an uncluttered page design and increase speed, advertisements were solely text-based. Keywords were sold based on a combination of price bids and click-throughs, with bidding starting at five cents per click.^[3] This model of selling keyword advertising was first pioneered by Goto.com, an Idealab spin-off created by Bill Gross.^[66] ^[67] When the company changed names to Overture Services, it sued Google over alleged infringements of the company's pay-per-click and bidding patents. Overture Services would later be bought by Yahoo! and renamed Yahoo! Search Marketing. The case was then settled out of court, with Google agreeing to issue shares of common stock to Yahoo!



The first iteration of Google production servers was built with inexpensive hardware.^[45]

in exchange for a perpetual license.^[68]

During this time, Google was granted a patent describing its PageRank mechanism.^[69] The patent was officially assigned to Stanford University and lists Lawrence Page as the inventor. In 2003, after outgrowing two other locations, the company leased its current office complex from Silicon Graphics at 1600 Amphitheatre Parkway in Mountain View, California.^[70] The complex has since come to be known as the Googleplex, a play on the word googolplex, the number one followed by a googol zeroes. Three years later, Google would buy the property from SGI for \$319 million.^[71] By that time, the name "Google" had found its way into everyday language, causing the verb "google" to be added to the Merriam Webster Collegiate Dictionary and the Oxford English Dictionary, denoted as "to use the Google search engine to obtain information on the Internet."^{[72] [73]}

Acquisitions and partnerships

Since 2001, Google has acquired many companies, mainly focusing on small venture capital companies. In 2004, Google acquired Keyhole, Inc..^[74] The start-up company developed a product called Earth Viewer that gave a 3-D view of the Earth. Google renamed the service to Google Earth in 2005. Two years later, Google bought the online video site YouTube for \$1.65 billion in stock.^[75] On April 13, 2007, Google reached an agreement to acquire DoubleClick for \$3.1 billion, giving Google valuable relationships that DoubleClick had with Web publishers and advertising agencies.^[76] Later that same year, Google purchased GrandCentral for \$50 million.^[77] The site would later be changed over to Google Voice. On August 5, 2009, Google bought out its first public company, purchasing video software maker On2 Technologies for \$106.5 million.^[78] Google also acquired Aardvark, a social network search engine, for \$50 million. Google commented in their internal blog, "we're looking forward to collaborating to see where we can take it".^[79] And, in April 2010, Google announced it had acquired a hardware startup, Agnilux.^[80]

In addition to the numerous companies Google has purchased, the company has partnered with other organizations for everything from research to advertising. In 2005, Google partnered with NASA Ames Research Center to build 1000000 square feet (93000 m²) of offices.^[81] The offices would be used for research projects involving large-scale data management, nanotechnology, distributed computing, and the entrepreneurial space industry. Later that year, Google entered into a partnership with Sun Microsystems in October 2005 to help share and distribute each other's technologies.^[82] The company also partnered with AOL of Time Warner,^[83] to enhance each other's video search services. Google's 2005 partnerships also included financing the new .mobi top-level domain for mobile devices, along with other companies including Microsoft, Nokia, and Ericsson.^[84] Google would later launch "AdSense for Mobile", taking advantage of the emerging mobile advertising market.^[85] Increasing their advertising reach even further, Google and Fox Interactive Media of News Corp. entered into a \$900 million agreement to provide search and advertising on popular social networking site MySpace.^[86]

In October 2006, Google announced that it had acquired the video-sharing site YouTube for US\$1.65 billion in Google stock, and the deal was finalized on November 13, 2006.^[87] Google does not provide detailed figures for YouTube's running costs, and YouTube's revenues in 2007 were noted as "not material" in a regulatory filing.^[88] In June 2008, a *Forbes* magazine article projected the 2008 YouTube revenue at US\$200 million, noting progress in advertising sales.^[89] In 2007, Google began sponsoring NORAD Tracks Santa, a service that pretends to follow Santa Claus' progress on Christmas Eve,^[90] using Google Earth to "track Santa" in 3-D for the first time,^[91] and displacing former sponsor AOL. Google-owned YouTube gave NORAD Tracks Santa its own channel.^[92]

In 2008, Google developed a partnership with GeoEye to launch a satellite providing Google with high-resolution (0.41 m monochrome, 1.65 m color) imagery for Google Earth. The satellite was launched from Vandenberg Air Force Base on September 6, 2008.^[93] Google also announced in 2008 that it was hosting an archive of Life Magazine's photographs as part of its latest partnership. Some of the images in the archive were never published in the magazine.^[94] The photos were watermarked and originally had copyright notices posted on all photos, regardless of public domain status.^[95]

In 2010, Google Energy made its first investment in a renewable-energy project, putting up \$38.8 million into two wind farms in North Dakota. The company announced the two locations will generate 169.5 megawatts of power, or enough to supply 55,000 homes. The farms, which were developed by NextEra Energy Resources, will reduce fossil fuel use in the region and return profits. NextEra Energy Resources sold Google a twenty percent stake in the project in order to get funding for project development.^[96] Also in 2010, Google purchased Global IP Solutions, a Norway based company that provides web-based teleconferencing and other related services. This acquisition will enable Google to add telephone-style services to its list of products.^[97] On May 27, 2010, Google announced it had also closed the acquisition of the mobile ad network, AdMob. This purchase occurred days after the Federal Trade Commission closed its investigation into the purchase.^[98] Google acquired the company for an undisclosed amount.^[99] In July 2010, Google signed an agreement with an Iowa wind farm to buy 114 megawatts of energy for 20 years.^[100]

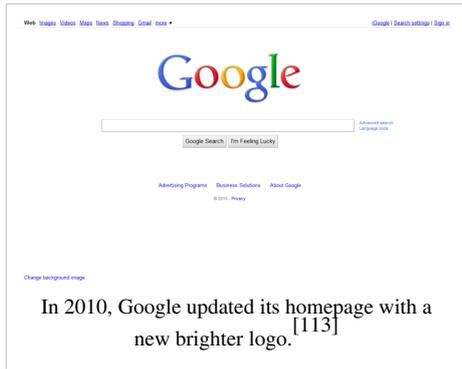
Products and services

Advertising

Ninety-nine percent of Google's revenue is derived from its advertising programs.^[101] For the 2006 fiscal year, the company reported \$10.492 billion in total advertising revenues and only \$112 million in licensing and other revenues.^[102] Google has implemented various innovations in the online advertising market that helped make them one of the biggest brokers in the market. Using technology from the company DoubleClick, Google can determine user interests and target advertisements so they are relevant to their context and the user that is viewing them.^[103] ^[104] Google Analytics allows website owners to track where and how people use their website, for example by examining click rates for all the links on a page.^[105] Google advertisements can be placed on third-party websites in a two-part program. Google's AdWords allows advertisers to display their advertisements in the Google content network, through either a cost-per-click or cost-per-view scheme. The sister service, Google AdSense, allows website owners to display these advertisements on their website, and earn money every time ads are clicked.^[106]

One of the disadvantages and criticisms of this program is Google's inability to combat click fraud, when a person or automated script "clicks" on advertisements without being interested in the product, to earn money for the website owner. Industry reports in 2006 claim that approximately 14 to 20 percent of clicks were in fact fraudulent or invalid.^[107] Furthermore, there has been controversy over Google's "search within a search", where a secondary search box enables the user to find what they are looking for within a particular website. It was soon reported that when performing a search within a search for a specific company, advertisements from competing and rival companies often showed up along with those results, drawing users away from the site they were originally searching.^[108] Another complaint against Google's advertising is their censorship of advertisers, though many cases concern compliance with the Digital Millennium Copyright Act. For example, in February 2003, Google stopped showing the advertisements of Oceana, a non-profit organization protesting a major cruise ship's sewage treatment practices. Google cited its editorial policy at the time, stating "Google does not accept advertising if the ad or site advocates against other individuals, groups, or organizations."^[109] The policy was later changed.^[110] In June 2008, Google reached an advertising agreement with Yahoo!, which would have allowed Yahoo! to feature Google advertisements on their web pages. The alliance between the two companies was never completely realized due to antitrust concerns by the U.S. Department of Justice. As a result, Google pulled out of the deal in November 2008.^[111] ^[112]

Search engine



The Google web search engine is the company's most popular service. According to market research published by comScore in November 2009, Google is the dominant search engine in the United States market, with a market share of 65.6%.^[114] Google indexes trillions of web pages, so that users can search for the information they desire, through the use of keywords and operators. Despite its popularity, it has received criticism from a number of organizations. In 2003, *The New York Times* complained about Google's indexing, claiming that Google's caching of content on their site infringed on their copyright for the content.^[115] In this case, the United States District Court of

Nevada ruled in favor of Google in *Field v. Google* and *Parker v. Google*.^[116] ^[117] Furthermore, the publication 2600: The Hacker Quarterly has compiled a list of words that the web giant's new instant search feature will not search.^[118] Google Watch has also criticized Google's PageRank algorithms, saying that they discriminate against new websites and favor established sites,^[119] and has made allegations about connections between Google and the NSA and the CIA.^[120] Despite criticism, the basic search engine has spread to specific services as well, including an image search engine, the Google News search site, Google Maps, and more. In early 2006, the company launched Google Video, which allowed users to upload, search, and watch videos from the Internet.^[121] In 2009, however, uploads to Google Video were discontinued so that Google could focus more on the search aspect of the service.^[122] The company even developed Google Desktop, a desktop search application used to search for files local to one's computer. Google's most recent development in search is their partnership with the United States Patent and Trademark Office to create Google Patents, which enables free access to information about patents and trademarks.

One of the more controversial search services Google hosts is Google Books. The company began scanning books and uploading limited previews, and full books where allowed, into their new book search engine. The Authors Guild, a group that represents 8,000 U.S. authors, filed a class action suit in a Manhattan federal court against Google in 2005 over this new service. Google replied that it is in compliance with all existing and historical applications of copyright laws regarding books.^[123] Google eventually reached a revised settlement in 2009 to limit its scans to books from the U.S., the U.K., Australia and Canada.^[124] Furthermore, the Paris Civil Court ruled against Google in late 2009, asking them to remove the works of La Martinière (Éditions du Seuil) from their database.^[125] In competition with Amazon.com, Google plans to sell digital versions of new books.^[126] Similarly, in response to newcomer Bing, on July 21, 2010, Google updated their image search to display a streaming sequence of thumbnails that enlarge when pointed at. Though web searches still appear in a batch per page format, on July 23, 2010, dictionary definitions for certain English words began appearing above the linked results for web searches.^[127]

Productivity tools

In addition to its standard web search services, Google has released over the years a number of online productivity tools. Gmail, a free webmail service provided by Google, was launched as an invitation-only beta program on April 1, 2004,^[128] and became available to the general public on February 7, 2007.^[129] The service was upgraded from beta status on July 7, 2009,^[130] at which time it had 146 million users monthly.^[131] The service would be the first online email service with one gigabyte of storage, and the first to keep emails from the same conversation together in one thread, similar to an Internet forum.^[128] The service currently offers over 7400 MB of free storage with additional storage ranging from 20 GB to 16 TB available for US\$0.25 per 1 GB per year.^[132] Furthermore, software developers know Gmail for its pioneering use of AJAX, a programming technique that allows web pages to be interactive without refreshing the browser.^[133] One criticism of Gmail has been the potential for data disclosure, a risk associated with many online web applications. Steve Ballmer (Microsoft's CEO),^[134] Liz Figueroa,^[135] Mark Rasch,^[136] and the editors of Google Watch^[137] believe the processing of email message content goes beyond

proper use, but Google claims that mail sent to or from Gmail is never read by a human being beyond the account holder, and is only used to improve relevance of advertisements.^[138]

Google Docs, another part of Google's productivity suite, allows users to create, edit, and collaborate on documents in an online environment, not dissimilar to Microsoft Word. The service was originally called Writely, but was obtained by Google on March 9, 2006, where it was released as an invitation-only preview.^[139] On June 6 after the acquisition, Google created an experimental spreadsheet editing program,^[140] which would be combined with Google Docs on October 10.^[141] A program to edit presentations would complete the set on September 17, 2007,^[142] before all three services were taken out of beta along with Gmail, Google Calendar and all products from the Google Apps Suite on July 7, 2009.^[130]

Enterprise products

Google entered the enterprise market in February 2002 with the launch of its Google Search Appliance, targeted toward providing search technology for larger organizations.^[3] Google launched the Mini three years later, which was targeted at smaller organizations. Late in 2006, Google began to sell Custom Search Business Edition, providing customers with an advertising-free window into Google.com's index. The service was renamed Google Site Search in 2008.^[143]

Another one of Google's enterprise products is Google Apps Premier Edition. The service, and its accompanying Google Apps Education Edition and Standard Edition, allow companies, schools, and other organizations to bring Google's online applications, such as Gmail and Google Documents, into their own domain. The Premier Edition specifically includes extras over the Standard Edition such as more disk space, API access, and premium support, and it costs \$50 per user per year. A large implementation of Google Apps with 38,000 users is at Lakehead University in Thunder Bay, Ontario, Canada. In the same year Google Apps was launched, Google acquired Postini^[144] and proceeded to integrate the company's security technologies into Google Apps^[145] under the name Google Postini Services.^[146]



Google's search appliance at the 2008 RSA Conference

Other products

Google Translate is a server-side machine translation service, which can translate between 35 different languages. Browser extensions allow for easy access to Google Translate from the browser. The software uses corpus linguistics techniques, where the program "learns" from professionally translated documents, specifically United Nations and European Parliament proceedings.^[147] Furthermore, a "suggest a better translation" feature accompanies the translated text, allowing users to indicate where the current translation is incorrect or otherwise inferior to another translation.

Google launched its Google News service in 2002. The site proclaimed that the company had created a "highly unusual" site that "offers a news service compiled solely by computer algorithms without human intervention. Google employs no editors, managing editors, or executive editors."^[148] The site hosted less licensed news content than Yahoo! News, and instead presented topically selected links to news and opinion pieces along with reproductions of their headlines, story leads, and photographs.^[149] The photographs are typically reduced to thumbnail size and placed next to headlines from other news sources on the same topic in order to minimize copyright infringement claims. Nevertheless, Agence France Presse sued Google for copyright infringement in federal court in the District of Columbia, a case which Google settled for an undisclosed amount in a pact that included a license of the full text of AFP articles for use on Google News.^[150]

In 2006, Google made a bid to offer free wireless broadband access throughout the city of San Francisco in conjunction with Internet service provider Earthlink. Large telecommunications companies such as Comcast and Verizon opposed such efforts, claiming it was "unfair competition" and that cities would be violating their commitments to offer local monopolies to these companies. In his testimony before Congress on Net Neutrality in 2006, Google's Chief Internet Evangelist Vint Cerf blamed such tactics on the fact that nearly half of all consumers lack meaningful choice in broadband providers.^[151] Google currently offers free wi-fi access in its hometown of Mountain View, California.^[152]

One year later, reports surfaced that Google was planning the release of its own mobile phone, possibly a competitor to Apple's iPhone.^{[153] [154] [155]} The project, called Android, turned out not to be a phone but an operating system for mobile devices, which Google acquired and then released as an open-source project under the Apache 2.0 license.^[156] Google provides a software development kit for developers so applications can be created to be run on Android-based phone. In September 2008, T-Mobile released the G1, the first Android-based phone.^[157] More than a year later on January 5, 2010, Google released an Android phone under its own company name called the Nexus One.^[158]

Other projects Google has worked on include a new collaborative communication service, a web browser, and even a mobile operating system. The first of these was first announced on May 27, 2009. Google Wave was described as a product that helps users communicate and collaborate on the web. The service is Google's "email redesigned", with realtime editing, the ability to embed audio, video, and other media, and extensions that further enhance the communication experience. Google Wave was previously in a developer's preview, where interested users had to be invited to test the service, but was released to the general public on May 19, 2010, at Google's I/O keynote. On September 1, 2008, Google pre-announced the upcoming availability of Google Chrome, an open-source web browser,^[159] which was then released on September 2, 2008. The next year, on 7 July 2009, Google announced Google Chrome OS, an open-source Linux-based operating system that includes only a web browser and is designed to log users into their Google account.^{[160] [161]}

Corporate affairs and culture

Google is known for having an informal corporate culture. On *Fortune* magazine's list of best companies to work for, Google ranked first in 2007 and 2008^{[162] [163]} and fourth in 2009 and 2010.^{[164] [165]} Google was also nominated in 2010 to be the world's most attractive employer to graduating students in the Universum Communications talent attraction index.^[166] Google's corporate philosophy embodies such casual principles as "you can make money without doing evil," "you can be serious without a suit," and "work should be challenging and the challenge should be fun."^[167]



Google CEO Eric E. Schmidt with Sergey Brin and Larry Page (left to right)

Employees



New employees are called "Nooglers," and are given a propeller beanie hat to wear at their first TGIF.^[168]

Google's stock performance following its IPO has enabled many early employees to be competitively compensated.^[169] After the company's IPO, founders Sergey Brin and Larry Page and CEO Eric Schmidt requested that their base salary be cut to \$1. Subsequent offers by the company to increase their salaries have been turned down, primarily because their main compensation continues to come from owning stock in Google. Prior to 2004, Schmidt was making \$250,000 per year, and Page and Brin each earned a salary of \$150,000.^[170]

In 2007 and through early 2008, Google has seen the departure of several top executives. In October 2007, former chief financial officer of YouTube Gideon Yu joined Facebook^[171] along with Benjamin Ling, a high-ranking engineer.^[172] In March 2008, Sheryl Sandberg, then vice-president of global online sales and operations, began her position as chief operating officer of Facebook^[173] while Ash EIDifrawi, formerly head of brand advertising, left to become chief marketing officer of Netshops, an online retail company that was renamed Hayneedle in 2009.^[174]

As a motivation technique, Google uses a policy often called Innovation Time Off, where Google engineers are encouraged to spend twenty percent of their work time on projects that interest them. Some of Google's newer services, such as Gmail, Google News, Orkut, and AdSense originated from these independent endeavors.^[175] In a talk at Stanford University, Marissa Mayer, Google's Vice President of Search Products and User Experience, showed that half of all new product launches at the time had originated from the Innovation Time Off.^[176]

Googleplex



The Googleplex, Google's original and largest corporate campus

Google's headquarters in Mountain View, California is referred to as "the Googleplex", a play of words on the number googolplex and the headquarters itself being a complex of buildings. The lobby is decorated with a piano, lava lamps, old server clusters, and a projection of search queries on the wall. The hallways are full of exercise balls and bicycles. Each employee has access to the corporate recreation center. Recreational amenities are scattered throughout the campus and include a workout room with weights and rowing machines, locker rooms, washers and dryers, a massage room, assorted video games, foosball, a baby grand piano, a pool table, and ping pong. In addition to

the rec room, there are snack rooms stocked with various foods and drinks.^[177] In 2006, Google moved into 311000 square feet (28900 m²) of office space in New York City, at 111 Eighth Ave. in Manhattan.^[178] The office was specially designed and built for Google, and it now houses its largest advertising sales team, which has been instrumental in securing large partnerships.^[178] In 2003, they added an engineering staff in New York City, which has been responsible for more than 100 engineering projects, including Google Maps, Google Spreadsheets, and others. It is estimated that the building costs Google \$10 million per year to rent and is similar in design and functionality to its Mountain View headquarters, including foosball, air hockey, and ping-pong tables, as well as a video game area. In November 2006, Google opened offices on Carnegie Mellon's campus in Pittsburgh.^[179] By late 2006, Google also established a new headquarters for its AdWords division in Ann Arbor, Michigan.^[180] Furthermore, Google has offices all around the world, and in the United States, including Atlanta, Austin, Boulder, San Francisco, Seattle, and Washington DC.

Google is taking steps to ensure that their operations are environmentally sound. In October 2006, the company announced plans to install thousands of solar panels to provide up to 1.6 megawatts of electricity, enough to satisfy approximately 30% of the campus' energy needs.^[181] The system will be the largest solar power system constructed on a U.S. corporate campus and one of the largest on any corporate site in the world.^[181] In addition, Google announced in 2009 that it was deploying herds of goats to keep grassland around the Googleplex short, helping to prevent the threat from seasonal bush fires while also reducing the carbon footprint of mowing the extensive grounds.^{[182] [183]} The idea of trimming lawns using goats originated from R. J. Widlar, an engineer who worked for National Semiconductor.^[184] Despite this, Google has faced accusations in Harper's Magazine of being extremely excessive with their energy usage, and were accused of employing their "Don't be evil" motto as well as their very public energy saving campaigns as means of trying to cover up or make up for the massive amounts of energy their servers actually require.^[185]



Google's NYC office building houses their largest advertising sales team.^[178]

Easter eggs and April Fool's Day jokes

Google has a tradition of creating April Fool's Day jokes. For example, Google MentalPlex allegedly featured the use of mental power to search the web.^[186] In 2007, Google announced a free Internet service called TiSP, or Toilet Internet Service Provider, where one obtained a connection by flushing one end of a fiber-optic cable down their toilet.^[187] Also in 2007, Google's Gmail page displayed an announcement for Gmail Paper, allowing users to have email messages printed and shipped to them.^[188] In 2010, Google jokingly changed its company name to Topeka in honor of Topeka, Kansas, whose mayor actually changed the city's name to Google for a short amount of time in an attempt to sway Google's decision in its new Google Fiber Project.^{[189] [190]}

In addition to April Fool's Day jokes, Google's services contain a number of Easter eggs. For instance, Google included the Swedish Chef's "Bork bork bork," Pig Latin, "Hacker" or leetspeak, Elmer Fudd, and Klingon as language selections for its search engine.^[191] In addition, the search engine calculator provides the Answer to the Ultimate Question of Life, the Universe, and Everything from Douglas Adams' *The Hitchhiker's Guide to the Galaxy*.^[192] Furthermore, when searching the word "recursion", the spell-checker's result for the properly spelled word is exactly the same word, creating a recursive link.^[193] Likewise, when searching for the word "anagram," meaning a rearrangement of letters from one word to form other valid words, Google's suggestion feature displays "Did you mean: nag a ram?"^[194] In Google Maps, searching for directions between places separated by large bodies of water, such as Los Angeles and Tokyo, results in instructions to "kayak across the Pacific Ocean." During FIFA World Cup 2010, search queries like 'world cup', 'fifa', etc. will cause the "Goooo...gle" page indicator at the bottom of every result page to read "Goooo...al!" instead.

Philanthropy

In 2004, Google formed the not-for-profit philanthropic Google.org, with a start-up fund of \$1 billion.^[195] The mission of the organization is to create awareness about climate change, global public health, and global poverty. One of its first projects was to develop a viable plug-in hybrid electric vehicle that can attain 100 miles per gallon. Google hired Dr. Larry Brilliant as the program's executive director in 2004^[196] and the current director is Megan Smith.^[197]

In 2008 Google announced its "project 10¹⁰⁰," which accepted ideas for how to help the community and then allowed Google users to vote on their favorites.^[198] After two years of silence, during which many wondered what had happened to the program,^[199] Google revealed the winners of the project, giving a total of ten million dollars to various ideas ranging from non-profit organizations that promote education to a website that intends to make all legal documents public and online.^[200]

Network neutrality

Google is a noted supporter of network neutrality. According to Google's *Guide to Net Neutrality*:

Network neutrality is the principle that Internet users should be in control of what content they view and what applications they use on the Internet. The Internet has operated according to this neutrality principle since its earliest days... Fundamentally, net neutrality is about equal access to the Internet. In our view, the broadband carriers should not be permitted to use their market power to discriminate against competing applications or content. Just as telephone companies are not permitted to tell consumers who they can call or what they can say, broadband carriers should not be allowed to use their market power to control activity online.^[201]

On February 7, 2006, Vinton Cerf, a co-inventor of the Internet Protocol (IP), and current Vice President and "Chief Internet Evangelist" at Google, in testimony before Congress, said, "allowing broadband carriers to control what people see and do online would fundamentally undermine the principles that have made the Internet such a success."^[202]

Privacy

Eric Schmidt, Google's chief executive, said 2007 in an interview with the Financial Times: "The goal is to enable Google users to be able to ask the question such as 'What shall I do tomorrow?' and 'What job shall I take?'"^[203] Schmidt reaffirmed this 2010 in an interview with the Wall Street Journal: "I actually think most people don't want Google to answer their questions, they want Google to tell them what they should be doing next."^[204]

On December 2009, Google's CEO, Eric Schmidt, declared after privacy concerns: "If you have something that you don't want anyone to know, maybe you shouldn't be doing it in the first place. If you really need that kind of privacy, the reality is that search engines — including Google — do retain this information for some time and it's important, for example, that we are all subject in the United States to the Patriot Act and it is possible that all that information could be made available to the authorities."^[205] Privacy International ranked Google as "Hostile to Privacy", its lowest rating on their report, making Google the only company in the list to receive that ranking.^{[206] [207]}

At the Techonomy conference in 2010 Eric Schmidt predicted that "true transparency and no anonymity" is the way forward for the internet: "In a world of asynchronous threats it is too dangerous for there not to be some way to identify you. We need a [verified] name service for people. Governments will demand it." He also said that "If I look at enough of your messaging and your location, and use artificial intelligence, we can predict where you are going to go. Show us 14 photos of yourself and we can identify who you are. You think you don't have 14 photos of yourself on the internet? You've got Facebook photos!"^[208]

The non-profit group Public Information Research launched Google Watch, a website advertised as "a look at Google's monopoly, algorithms, and privacy issues."^{[209] [210]} The site raised questions relating to Google's storage of cookies, which in 2007 had a life span of more than 32 years and incorporated a unique ID that enabled creation of a user data log.^[211] Google's has also faced criticism with its release of Google Buzz, Google's version of social networking, where Gmail users had their contact lists automatically made public unless they opted out.^[212] Google has been criticized for its censorship of certain sites in specific countries and regions. Until March 2010, Google adhered to the Internet censorship policies of China, enforced by means of filters known colloquially as "The Great Firewall of China".^[213]

Despite being highly influential in local and national public policy, Google does not disclose its political spending online. In August of 2010, New York City Public Advocate Bill de Blasio launched a national campaign urging the corporation to disclose all of its political spending.^[214]

During 2006-2010 Google Streetview camera cars collected about 600 gigabytes of data from users of unencrypted public and private WiFi networks in more than 30 countries. No disclosures nor privacy policy was given to those affected, nor to the owners of the WiFi stations. A Google representative claimed that they were not aware of their

own data collection activities until an inquiry from German regulators was received, and that none of this data was used in Google's search engine or other services. A representative of Consumer Watchdog replied, "Once again, Google has demonstrated a lack of concern for privacy. Its computer engineers run amok, push the envelope and gather whatever data they can until their fingers are caught in the cookie jar." In a sign that legal penalties may result, Google said it will not destroy the data until permitted by regulators.^{[215] [216]}

See also

- Google logo
- Google China
- Google Ventures – venture capital fund
- Googlebot – web crawler
- Google Platform
- Criticism of Google
- *Planet Google* (book)
- Google: The Thinking Factory (film)
- Google: Behind the Screen (film)

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Criticism of Google

Google is a corporation that compiles information and makes it searchable via the Internet. Google's stated mission is "to organize the world's information and make it universally accessible and useful,"^[1] but this mission, and the means used to accomplish it, have raised concerns among the company's critics. The policies and practices for which Google has been criticized include its use of others' intellectual property, concerns that its compilation of data may violate people's privacy, censorship of search results, and the energy consumption of its servers. Much of the criticism of Google pertains to issues that have not yet been addressed by cyber law.

Page Rank

Danger of influencing the society through page rank manipulation

A group of Austrian researchers^[2] claim that they observe a tendency of misusing the Google engine as a "reality interface". Not just ordinary users, but even journalists tend to rely on the first pages of Google search, assuming that everything not listed there is either not important or merely does not exist. The referenced source says that "Google has become the main interface for our whole reality. To be precise: With the Google interface the user gets the impression that the search results imply a kind of totality. In fact, one only sees a small part of what one could see if one also integrates other research tools". The mentioned group warns that page rank can be influenced by individual views of the Google staff: "it became clear that not only mathematical algorithms and software, but also human brains in the Google headquarter will edit information processed by Google and decide what will go online and in which form."

The New York Times reported on an online business whose owner had discovered poor customer service would generate higher Page Rank due to online criticism at consumer watchdog sites. He subsequently sought a bad reputation as his search engine optimization strategy.^[3]

Page ranking related lawsuits

In 2006, the parental advice Internet site Kinderstart.com sued Google for setting its Page rank to zero, claiming that the reset caused the site to lose 70 percent of its audience^[4]. In this lawsuit, it was stated, that "Google does not generally inform Web sites that they have been penalized nor does it explain in detail why the Web site was penalized."^[5] Kinderstart claimed that they were penalized for being a Google competitor (setting up the search engine). Kinderstart has formally lost the process (while their rank seems no longer zero). Google claims that allowing one to win such process would set a dangerous precedent, encouraging other penalized sites to protest as well.

Google bombing

The page ranking algorithm of Google can and has been manipulated for political and humorous reasons. To illustrate the view that Google's search engine could be subjected to manipulation, Google Watch implemented a Google bomb by linking the phrase "out-of-touch executives" to Google's own page on its corporate management. The attempt was mistakenly attributed to disgruntled Google employees by *The New York Times*, which later printed a correction.^{[6] [7]}

Copyright issues

Google Print

Google's ambitious plans to scan millions of books and make them readable through its search engine have been criticized for copyright violations^[8]. Also, Association for Learned and Professional Society Publishers and the Association of American University Presses have both issued statements strongly opposing Google Print, stating that "Google, an enormously successful company, claims a sweeping right to appropriate the property of others for its own commercial use unless it is told, case by case and instance by instance, not to."^[9]

Copyright issues

Kazaa and the Church of Scientology have used the Digital Millennium Copyright Act to demand that Google remove references to allegedly copyrighted material on their sites.^{[10] [11]} While Google potentially faces lawsuits when not removing such links,^[12] critics argue that Google has an obligation to direct users to intended content and not censor results based on copyright.

The New York Times has complained that the caching of their content during a web crawl, a feature utilized by search engines including Google Web Search, violates copyright.^[13] Google observes Internet standard mechanisms for requesting that caching be disabled via the robots.txt file, which is another mechanism that allows operators of a website to request that part or all of their site not be included in search engine results, or via META tags, which allow a content editor to specify whether a document can be crawled or archived, or whether the links on the document can be followed. The U.S. District Court of Nevada ruled that Google's caches do not constitute copyright infringement under American law in *Field v. Google* and *Parker v. Google*.^{[14] [15]}

On September 20, 2005, the Authors Guild, a group that represents 8,000 U.S. authors, filed a class action suit in federal court in Manhattan against Google over its unauthorized scanning and copying of books through its Google Library program. Google states that it is in compliance with all existing and historical applications of copyright laws regarding books.^[16] The publicized contract between Google and the University of Michigan makes it clear that Google will provide only excerpts of copyright text in a search. The contract says^[17] that it will comply with "fair use", an exemption in copyright law that allows people to reproduce portions of text of copyrighted material for research purposes.

On July 14, 2008, Viacom compromised to protect YouTube users' personal data in their \$1 billion copyright lawsuit. Google agreed it will anonymize user information and internet protocol addresses from its YouTube subsidiary before handing the data over to Viacom. The privacy deal also applied to other litigants including the FA Premier League, the Rodgers & Hammerstein organization and the Scottish Premier League.^{[18] [19]} The deal however did not extend the anonymity to employees, because Viacom wishes to prove that Google staff are aware of the uploading of illegal material to the site. The parties therefore will further meet on the matter lest the data be made available to the court.^[20]

Google Watch

In 2002, the non-profit group Public Information Research launched a website known as Google Watch, which advertised itself as "a look at Google's monopoly, algorithms, and privacy issues."^[21] ^[22] The site raised questions relating to Google's storage of cookies, which in 2007 had a life span of more than 32 years and incorporated a unique ID that enabled creation of a user data log.^[23] Google Watch has also criticized Google's PageRank algorithms, saying that they discriminate against new websites and favor established sites,^[24] and has made allegations about connections between Google and the NSA and the CIA.^[25] Connection with the CIA has been discussed by others as well.^[26] In February 2003, Google Watch nominated Google for a Big Brother Award, describing Google as a "privacy time bomb."^[21] Google now anonymizes its IP data after 9 months and its cookies after 18 months, according to Google's privacy FAQ.^[27]

Privacy

In December 2009, Google's CEO, Eric Schmidt, declared after privacy concerns: "If you have something that you don't want anyone to know, maybe you shouldn't be doing it in the first place. If you really need that kind of privacy, the reality is that search engines - including Google - do retain this information for some time and it's important, for example, that we are all subject in the United States to the Patriot Act and it is possible that all that information could be made available to the authorities."^[28]

Privacy International has raised concerns regarding the dangers and privacy implications of having a centrally-located, widely popular data warehouse of millions of Internet users' searches, and how under controversial existing U.S. law, Google can be forced to hand over all such information to the U.S. government.^[29]

In its 2007 Consultation Report, Privacy International ranked Google as "Hostile to Privacy", its lowest rating on their report, making Google the only company in the list to receive that ranking.^[30] ^[31]

Carl Hewitt noted that intimate personal information is a "toxic asset" in Google datacenters because it will lead to government regulation "analogous to medical and legal practitioners." Consequently, he recommended that Google should perform semantic integration in equipment controlled by a client so that client information in Google datacenters could be decrypted only by using a client's private key.^[32] ^[33]

Potential for data disclosure

In early 2005, the United States Department of Justice filed a motion in federal court to force Google to comply with a subpoena for, "the text of each search string entered onto Google's search engine over a two-month period (absent any information identifying the person who entered such query)."^[34] Google fought the subpoena, due to concerns about users' privacy.^[35] In March 2006, the court ruled partially in Google's favor, recognizing the privacy implications of turning over search terms and refusing to grant access.^[36]

Google Dashboard

Google Dashboard is a service launched by Google that allows a person with a Google Account to compile all the personal information associated with their account.^[37] The tool pulls together personal information from Google's applications and services, such as Gmail, YouTube, or Blogger, and indicates whether the information is public or not.^[38] The service was launched in November, 2009.

Google created Dashboard in response to privacy concerns about how the company handles personal information.^[39] ^[40] It launched the service at the 31st International Conference of Data Protection and Privacy Commissioners.^[39]

The service allows a user to review and delete recent Google searches and view documents and other content created using Blogger, Picasa, Google Calendar, and other services.^[41] Dashboard uses a small icon to indicate whether the personal information is public or not.

Dashboard also provides links to privacy policies, help pages, and account settings pages when available.

Cookies

Google originally placed a cookie on each registered user's computer, which can be used to track that person's search history, and that cookie was not set to expire until 2038.^[23] As of 2007, Google's cookie now expires in two years but renews itself when a Google service is used.^[23] There is no evidence that Google turns over information to the FBI or the NSA, though some users remain anxious about the possibility.^[23] In response, Google claims cookies are necessary to maintain user preferences between sessions and offer other search features. Other popular search engines, such as Yahoo! Search and Microsoft's Bing, use cookies with distant expiration dates as well; an alternative set up by privacy advocates, Scroogle^[42], does not.

Gmail

Steve Ballmer (Microsoft's CEO),^[43] Liz Figueroa,^[44] Mark Rasch,^[45] and the editors of Google Watch^[46] believe the processing of email message content by Google's Gmail service goes beyond proper use. Google claims that mail sent to or from Gmail is never read by a human being beyond the account holder, and is only used to improve relevance of advertisements.^[47] Whether Google is the only email provider that reviews the contents of users' mail, or simply the only one that publicly admits it is unknown. The privacy policies of other popular email services, like Hotmail and Yahoo, allow users' personal information to be collected and utilized for advertising purposes, but do not specify precisely what information and which services.^[48] ^[49]

Street View

Google's online map service, "Street View" has been accused of taking pictures and coming too close inside people's private homes and/or people who walk down the street not knowing they are being watched on Google's service.^[50] ^[51] Aaron and Christine Boring, a Pittsburgh couple, sued Google for "invasion of privacy". They claimed that Street View made a photo of their home available online, and it diminished the value of their house, which was purchased for its privacy.^[52] They lost their case in a Pennsylvania court. "While it is easy to imagine that many whose property appears on Google's virtual maps resent the privacy implications, it is hard to believe that any – other than the most exquisitely sensitive – would suffer shame or humiliation," Judge Hay ruled.^[53] So far Germany has not allowed Street View but Google has images from Panoramio (which is owned by Google) available in Street View. In the Czech Republic Street View has been banned since 2010 by the Czech Office for Personal Data Protection after more than 5 months of unsuccessful negotiation between the Czech Republic and Google. The Office described Google's program as taking pictures "beyond the extent of the ordinary sight from a street", and claimed that it "disproportionately invaded citizens' privacy."^[54] ^[55] Google's Street View cars even faced vandalism on Channel island Guernsey.^[56] Google Maps also censor certain international entities such as bodies of waters, usually due to political pressures. One such omission is Google's refusal to name "Persian Gulf" in its maps when one looks at the map of the Asian continent, and its previous attempts to censor or hide this internationally recognized name with other locally unrecognized alternative versions.

Surveillance of WiFi networks

Google collected about 600 gigabytes of data from users of public WiFi stations (which are not owned by Google) during 2006-2010, including snippets of emails. No disclosures nor privacy policy was given to those affected, nor to the owners of the WiFi stations, in more than 30 countries. A Google representative claimed that they were not aware of their own data collection activities until an inquiry from German regulators was received, and that none of this data was used in Google's search engine or other services. A representative of Consumer Watchdog replied, "Once again, Google has demonstrated a lack of concern for privacy. Its computer engineers run amok, push the envelope and gather whatever data they can until their fingers are caught in the cookie jar." In a sign that legal penalties may result, Google said it will not destroy the data until permitted by regulators.^[57] ^[58]

Google Buzz

On Feb 9, 2010 Google launched Google Buzz, Google's microblogging service. Anyone with a Gmail account is automatically added as a contact to pre-existing Gmail contacts, and must opt-out if they do not wish to participate.^[59]

The launch of Google Buzz as an "opt-out" social network immediately drew criticism for violating user privacy because it automatically allowed Gmail users' contacts to view their other contacts.^{[60] [61] [62]}

Privacy and data protection cases and issues by state

European Union

European Union (EU) data protection officials (the Article 29 working party who advise the EU on privacy policy) have written to Google asking the company to justify its policy of keeping information on individuals' internet searches for up to two years. The letter questioned whether Google has "fulfilled all the necessary requirements" on the EU laws concerning data protection.^[63] The probe by the EU into the data protection issue, As of 24 May 2007 is continuing. On 1 June Google agreed that its privacy policy is vague, and that they are constantly working at making it clearer to users.^[64] The resulting modifications to its privacy policies have been met with praise.^[65]

Germany

Google refused to comply with a German demand to surrender data illegally collected from unsecured home wireless networks. Google said its cars collected 600 gigabytes of "fragmentary data" including fragments of e-mails, from unsecured wireless networks in 34 countries.^[66]

In November 2010, vandals in Germany targeted houses that had opted out of Google's Street View.^[67]

Italy

Google-Vividown: in February 2010, three Google executives were handed six-month suspended sentences for breach of the Italian Personal Data Protection Code.^{[68] [69]}

Norway

The Data Inspectorate of Norway (Norway is not a member of the EU) has investigated Google (and others) and has stated that the 18- to 24-month period for retaining data proposed by Google was too long.^[70]

USA

A U.S. court ordered Google to hand over two copies of wireless data that the company's Street View program collected as it photographed neighborhoods.^[71]

Censorship

Google has been criticized for various instances of censoring its search results, most notably in cooperation with the government of China.

Web search

In the United States, Google commonly censors search results to comply with Digital Millennium Copyright Act-related legal complaints,^[72] such as in 2002 when Google censored websites that provided information critical of Scientology.^{[73] [74]} Furthermore, in February 2003, Google stopped showing the advertisements of Oceana, a non-profit organization protesting a major cruise ship operation's sewage treatment practices. Google cited its editorial policy at the time, stating "Google does not accept advertising if the ad or site advocates against other individuals, groups, or organizations."^[75] The policy was later changed.^[76]

Google voice search censors certain words. For example, the word "ass" is replaced with "###". However, this is likely a result of Google's realization that voice recognition software is imperfect. Replacing words recognized as vulgarities with "####" prevents a non-vulgarity being incorrectly translated as a vulgarity, which could potentially cause offense to the user.

In the United Kingdom, it was reported that Google had 'delisted' Inquisition 21st Century, a website which claims to challenge moral authoritarian and sexually absolutist ideas in the United Kingdom. Google later released a press statement suggesting Inquisition 21 had attempted to manipulate search results.^[77] In addition, in April 2008, Google refused to run ads for a UK Christian group opposed to abortion, explaining that "At this time, Google policy does not permit the advertisement of websites that contain 'abortion and religion-related content.'"^[78] In Germany and France, a study reported that approximately 113 White Nationalist, Nazi, anti-semitic, radical Islamic and other websites had been removed from the German and French versions of Google.^[79] Google has complied with these laws by not including sites containing such material in its search results. However, Google does list the number of excluded results at the bottom of the search result page and links to Chilling Effects for explanation.^[80]

On Google Maps, Google removed street view and 360 degree images of military bases per the Pentagon's request.^[81]

China

Until March 2010, Google adhered to the Internet censorship policies of China,^[82] enforced by filters colloquially known as "The Great Firewall of China". Google.cn search results were filtered so as not to bring up any results concerning the Tiananmen Square protests of 1989, sites supporting the independence movements of Tibet and Taiwan, the Falun Gong movement, and other information perceived to be harmful to the People's Republic of China (PRC). Google claimed that some censorship is necessary in order to keep the Chinese government from blocking Google entirely, as occurred in 2002.^[83] The company claims it did not plan to give the government information about users who search for blocked content, and will inform users that content has been restricted if they attempt to search for it.^[84] As of 2009, Google was the only major China-based search engine to explicitly *inform* the user when search results are blocked or hidden.

Some Chinese Internet users have been critical of Google for assisting the Chinese government in repressing its own citizens, particularly those dissenting against the government and advocating for human rights.^[85] Furthermore, Google has been denounced and called hypocritical by Free Media Movement for agreeing to China's demands while simultaneously fighting the United States government's requests for similar information.^[86] Google China has also been condemned by Reporters Without Borders^[86], Human Rights Watch^[87] and Amnesty International^[88].

In 2009, China Central Television, Xinhua News Agency, People's Daily reported Google's "dissemination of obscene information", People's Daily claimed that "Google's 'don't be evil' motto becomes a fig leaf".^[89]^[90] Chinese government imposed administrative penalties to Google China, and demanded for a reinforcement of the censorship.^[91]

However, on January 12, 2010, in response to an apparent hacking of Google's servers in an attempt to access information about Chinese dissidents, Google announced that "we are no longer willing to continue censoring our results on Google.cn, and so over the next few weeks we will be discussing with the Chinese government the basis on which we could operate an unfiltered search engine within the law, if at all."^[92] On March 22, 2010, after talks with Chinese authorities failed to reach an agreement, the company redirected its censor-complying Google China service to its Google Hong Kong service, which is outside the jurisdiction of Chinese censorship laws. However, at least as of March 23, 2010, "The Great Firewall" continues to censor search results from the Hong Kong portal, www.google.com.hk (as it does with the US portal, www.google.com) for controversial terms such as "Falun gong" and "the June 4th incident" (Tiananmen Square incident).^[93]^[94]^[95]

YouTube

YouTube—a video sharing website and subsidiary of Google—in its Terms of Service prohibits the posting of videos which violate copyrights or depict pornography, illegal acts, gratuitous violence, or hate speech.^[96] User-posted videos that violate such terms may be removed and replaced with a message stating: "This video has been removed due to terms of use violation".

YouTube blocked the account of Wael Abbas, an activist who posted videos of police brutality, voting irregularities and anti-government demonstrations.^[97] His account was subsequently restored. YouTube also removed a video produced by the American Life League which is critical of Planned Parenthood. It has since been restored.^[98]

In 2006, Thailand blocked access to YouTube for users with Thai IP addresses. Thai authorities identified 20 offensive videos and demanded that Google remove them before it would unblock any YouTube content.^[80] In 2007 a Turkish judge ordered access to YouTube blocked because of content that insulted Mustafa Kemal Atatürk, a crime under Turkish law.^[80] On February 22, 2008, Pakistan Telecommunications attempted to block regional access to YouTube following a government order. The attempt subsequently caused a worldwide YouTube blackout that took 2 hours to correct. Four days later, Pakistan Telecom lifted the ban after YouTube removed controversial religious comments made by a Dutch government official^[99] concerning Islam.^[100]

In October 2008, YouTube removed a video by Pat Condell titled *Welcome to Saudi Britain*; in response his fans re-uploaded the video themselves and the National Secular Society wrote to YouTube in protest.^[101] The video was eventually restored.^[102] During the December 2008 Gaza Strip airstrikes, YouTube removed videos of air strikes against Hamas that were posted by the IDF.^[103] During the 2008-2009 Gaza airstrikes, many videos that were criticizing Israel's actions in Gaza were being reported for removal by Pro-Israeli groups such as The JIDF. Approximately 6 weeks before the 2009 New York City mayoral election, YouTube also suspended the account of New York City artist and citizen journalist Suzannah B. Troy, who posted videos criticizing the controversial change in term limits law that enabled Michael Bloomberg to run for a third mayoral term in 2009.^[104] Her account was subsequently restored.^{[105] [106]}

On November 5, 2009 YouTube cancelled the account and all videos from Michael Patton of dogtv.com after Patton uploaded a short documentary style video^[107] on his experience over the years with dogs, two of whom were fighting to the death until they were trained not to do so by Patton. In another blocked video, the camera caught a spontaneous dog attack on another dog. The fight is quickly stopped before any harm is done and instructions are given on how to break up dog fights which inevitably occur in multiple dog households.

Following the 2010 Moscow Metro bombings, the consequent video claim to the attacks by the Caucasus Emirate claimed 800,000 viewers in four days before it was removed, along with *all* videos of Doku Umarov, from the site. It was reported that over 300 videos from the Kavkaz Center were removed citing "inappropriate content." Russia was blamed for having pressured Youtube to take such measures.^[108]

AdSense/AdWords

In August 2008, Google closed the AdSense account of a site that carried a negative view of Scientology and this was the second closing of such a site within 3 months.^[109] It is not certain if the account revocations actually were on the grounds of anti-religious content, however the cases have raised questions about Google's terms in regards to AdSense/AdWords. The AdSense policy defines that "Sites displaying Google ads may not include [...] advocacy against any individual, group, or organization",^[110] which allows Google to revoke the above mentioned AdSense accounts.

Search within search

For some search results, Google provides a secondary search box within search page that enables the user to find what they are looking for within a particular website. This idea originated from the way users were searching. According to software engineer Ben Lee and Product Manager Jack Menzel, "teleporting" on the web is what helps Google users to complete their search. Google took this concept a step further and instead of just "teleporting", which means users need only to type part of the name of a website into Google (no need to remember the entire URL) in order to find the correct site, users could type in keywords to search within the website of their choice.^[111] It appeared that users were often not finding exactly what they needed while trying to explore within a company site.

Although this is an innovative search tool for users, it sparked some controversy among some online publishers and retailers. When performing a search within a search for a specific company, advertisements from competing and rival companies often showed up along with those results, drawing users away from the site they were originally searching.^[112] "While the service could help increase traffic, some users could be siphoned away as Google uses the prominence of the brands to sell ads, typically to competing companies."^[113] In order to combat this controversy, Google has offered to turn off this feature for companies who request to have it removed.^[113]

Digital rights management

Announced on January 6, 2006 at the CES in Las Vegas, Nevada, the Google Video store began selling copyrighted content at the Google Video website. Initially, this service was restricted to the United States and certain other countries. To protect copyright of some video programming, Google created a Google DRM (Digital Rights Management) lock for certain paid content.^[114]

On 2007-08-15 Google discontinued its DTO/DTR (download-to-own/rent) program. Videos which had been previously purchased under that program, as a result of the embedded DRM licenses being revoked, are no longer viewable despite being purchased for ownership. Google chose to refund all its customers by issuing "gift certificates" (or "bonuses") to their "Google Checkout Account" accounting for the full amount spent on videos. After public uproar against the chosen method of refund, Google issued full refunds to credit cards of the Google Video users without revoking the gift certificates.^[115] ^[116]

Other

Energy consumption

Google has been criticized for the high amount of energy used to maintain its servers.^[117] Google has pledged to spend millions of dollars to investigate cheap, clean, renewable energy, and has installed solar panels on the roofs at its Mountain View facilities.^[118] ^[119] Google also recently invested \$39 million in wind power.^[120]

Doodles

Google was criticized in 2007 for not featuring versions of the Google logo (known as "Doodles") for American patriotic holidays such as Memorial Day and Veterans Day.^[121] That year, Google featured a logo commemorating Veterans Day.^[122]

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AdWords

	
Developer(s)	Google Inc.
Initial release	October 23, 2000 ^[1]
Operating system	Cross-platform (web-based application)
Type	Online advertising
Website	www.google.com/adwords ^[2]

AdWords is Google's flagship advertising product and main source of revenue. Google's total advertising revenues were USD\$23 billion in 2009^[3]. AdWords offers pay-per-click (PPC) advertising, and site-targeted advertising for text, banner, and rich-media ads. The AdWords program includes local, national, and international distribution. Google's text advertisements are short, consisting of one headline and two additional text lines. Image ads can be one of several different Interactive Advertising Bureau (IAB) standard sizes.

Sales and Support for Google's AdWords division is based in Mountain View, California, with major secondary offices in Ann Arbor, Michigan^[4], the company's third-largest US facility behind its Mountain View, California, headquarters and New York City office.^[5] Engineering for AdWords is based in Mountain View, California.

Pay-Per-Click advertisements (PPC)

Advertisers select the words that should trigger their ads and the maximum amount they will pay per click. When a user searches on Google, ads (also known as creatives by Google) for relevant words are shown as "sponsored links" on the right side of the screen, and sometimes above the main search results. Clickthrough rates (CTR) for the ads are about 8% for the first ad, 5% for the second one, and 2.5% for the third one. Search results can return from 0 to 12 ads.^[6]

The ordering of the paid-for listings depends on other advertisers' bids (PPC) and the "quality score" of all ads shown for a given search. The quality score is calculated by historical click-through rates, relevance of an advertiser's ad text and keywords, an advertiser's account history, and other relevance factors as determined by Google. The quality score is also used by Google to set the minimum bids for an advertiser's keywords.^[7] The minimum bid takes into consideration the quality of the landing page as well, which includes the relevancy and originality of content, navigability, and transparency into the nature of the business.^[8] Though Google has released a list of full guidelines for sites,^[9] the precise formula and meaning of relevance and its definition is in part secret to Google and the parameters used can change dynamically.

The auction mechanism that determines the order of the ads is a generalized second-price auction.^[10] ^[11] This is claimed to have the property that the participants *do not necessarily* fare best when they truthfully reveal any private information asked for by the auction mechanism (in this case, the value of the keyword to them, in the form of a "truthful" bid).

AdWords Features

IP Address Exclusion

In addition to controlling ad placements through methods such as location and language targeting, ad targeting can be refined with Internet Protocol (IP) address exclusion. This feature enables advertisers to specify IP address ranges where they don't want their ads to appear.

Up to 20 IP addresses, or ranges of addresses, can be excluded per campaign. All ads in the campaign are prevented from showing for users with the IP addresses specified.

Location-based exclusion is also offered as a method of narrowing targeted users.^[12]

Frequency Capping

Frequency capping limits the number of times ads appear to the same unique user on the Google Content Network. It doesn't apply to the Search Network. If frequency capping is enabled for a campaign, a limit must be specified as to the number of impressions allowed per day, week, or month for an individual user. The cap can be configured to apply to each ad, ad group, or campaign.^[13]

Placement targeted advertisements (formerly Site-Targeted Advertisements)

In 2003 Google introduced site-targeted advertising. Using the AdWords control panel, advertisers can enter keywords, domain names, topics, and demographic targeting preferences, and Google places the ads on what they see as relevant sites within their content network. If domain names are targeted, Google also provides a list of related sites for placement. Advertisers may bid on a cost per impression (CPM) or cost per click (CPC) basis for site targeting.^[14]

With placement targeting, it is possible for an ad to take up the entire ad block rather than have the ad block split into 2 to 4 ads, resulting in higher visibility for the advertiser.

The minimum cost-per-thousand impressions bid for placement targeted campaigns is 25 cents. There is no minimum CPC bid, however.

AdWords distribution

All AdWords ads are eligible to be shown on www.google.com. Advertisers also have the option of enabling their ads to show on Google's partner networks. The "search network" includes AOL search, Ask.com, and Netscape. Like www.google.com, these search engines show AdWords ads in response to user searches, but do not affect quality score.

The "Google Display Network" (formerly referred to as the "content network") shows AdWords ads on sites that are not search engines. These content network sites are those that use AdSense and DoubleClick, the other side of the Google advertising model. AdSense is used by website owners who wish to make money by displaying ads on their websites. Click through rates on the display network are typically much lower than those on the search network and are therefore ignored when calculating an advertiser's quality score. It has been reported that using both AdSense and AdWords may cause a website to pay Google a commission when the website advertises itself.^[15]

Google automatically determines the subject of pages and displays relevant ads based on the advertisers' keyword lists. AdSense publishers may select channels to help direct Google's ad placements on their pages, to increase performance of their ad units. There are many different types of ads that can run across Google's network, including text ads, image ads (banner ads), mobile text ads, and in-page video ads.

Google AdWords' main competitors are Yahoo! Search Marketing and Microsoft adCenter.

AdWords account management

To help clients with the complexity of building and managing AdWords accounts search engine marketing agencies and consultants offer account management as a business service. This has allowed organizations without advertising expertise to reach a global, online audience. Google has started the Google Advertising Professionals program to certify agencies and consultants who have met specific qualifications and passed an exam.^[16] Google also provides account management software, called AdWords Editor^[17].

Another useful feature is the My Client Centre available to Google Professionals (even if not yet passed the exam or budget parameters) whereby a Google professional has access and a dashboard summary of several accounts and can move between those accounts without logging in to each account.

The Google Adwords Keyword Tool provides a list of related keywords for a specific website or keyword.^[18]

Recently, numerous complaints have been filed with the San Jose Better Business Bureau (BBB)^[19] regarding treatment small businesses have received from Google Adwords customer service. As a result, the company now has a A- rating with the San Jose BBB.

Click-to-Call

Google Click-to-Call was a service provided by Google which allows users to call advertisers from Google search results pages. Users enter their phone number, Google calls them back and connects to the advertiser. Calling charges are paid by Google. It was discontinued in 2007.^[20] For some time similar click-to-call functionality was available for results in Google Maps. In the Froyo release of Google's operating system, in certain advertisements, there is a very similar functionality, where a user can easily call an advertiser.

History

The original idea was invented by Bill Gross from Idealab who, in turn borrowed the idea from Yellow Pages. Google wanted to buy the idea but a deal could not be reached. Not wanting to give up on this form of advertisement, the company launched its own solution, AdWords in 2000.^[21] AdWords followed a model that was significantly similar to Bill Gross' creation which led to legal action between the two parties. Eventually the dispute was settled out of court.

At first AdWords advertisers would pay a monthly amount, and Google would then set up and manage their campaign. To accommodate small businesses and those who wanted to manage their own campaigns, Google soon introduced the AdWords self-service portal. Starting in 2005 Google provided a campaign management service called Jumpstart^[22] to assist advertisers in setting up their campaigns. However, this service is no longer available, so companies needing assistance must hire a third-party service provider.

In 2005, Google launched the Google Advertising Professional (GAP) Program to certify individuals and companies who completed AdWords training and passed an exam. Due to the complexity of AdWords and the amount of money at stake, some advertisers hire a consultant to manage their campaigns.

In 2008, Google launched the Google Online Marketing Challenge (<http://www.google.com/onlinechallenge/>), an in-class academic exercise for tertiary students. Over 8,000 students from 47 countries participated in the 2008 Challenge and over 10,000 students from 58 countries took part in 2009. The Challenge runs annually, roughly from January to June. Registration^[23] is at the instructor rather than student level.

In 2009, Google revised the AdWords interface, introduced Local Business Ads for Google Maps and Video Ads.

Legal context

AdWords has generated lawsuits in the area of trademark law (see *Google, Inc. v. Am. Blind & Wallpaper Factory and Rescuedcom Corp. v. Google Inc.*), fraud (see *Goddard v. Google, Inc.*), and click fraud. In 2006, Google settled a click fraud lawsuit for US\$90 million.^[24]

Overture Services, Inc. sued Google for patent infringement in April 2002 in relation to the AdWords service. Following Yahoo!'s acquisition of Overture, the suit was settled in 2004 with Google agreeing to issue 2.7 million shares of common stock to Yahoo! in exchange for a perpetual license under the patent.^[25]

Technology

The AdWords system was initially implemented on top of the MySQL database engine. After the system had been launched, management decided to use a commercial database (Oracle) instead. The system became much slower, so eventually it was returned to MySQL [26]. The interface has also been revamped to offer better work flow with additional new features, such as Spreadsheet Editing, Search Query Reports, and better conversion metrics.

Ad Content Restrictions

As of April 2008 Google AdWords no longer allows for the display URL to deviate from that of the destination URL. Prior to its introduction, Google paid advertisements could feature different landing page URLs to that of what was being displayed on the search network. Google expounds that the policy change stems from both user and advertiser feedback. The concern prompting the restriction change is believed to be the premise on which users clicked advertisements. Users were in some cases, being misled and further targeted by AdWords advertisers.^[27]

Allowed keywords

Google has also come under fire for allowing AdWords advertisers to bid on trademarked keywords. In 2004, Google started allowing advertisers to bid on a wide variety of search terms in the US and Canada, including the trademarks of their competitors^[28] and in May 2008 expanded this policy to the UK and Ireland. Advertisers are restricted from using other companies' trademarks in their advertisement text if the trademark has been registered with Advertising Legal Support team. Google does, however, require certification to run regulated keywords, such as those related to pharmaceuticals keywords, and some keywords, such as those related to hacking, are not allowed at all. These restrictions may vary by location.^[29] From June 2007, Google banned AdWords adverts for student essay writing services, a move which was welcomed by universities.^[30]

Google has other restrictions, for example the advertising of a book by Aaron Greenspan called *Authoritas: One Student's Harvard Admissions and the Founding of the Facebook Era*, was restricted from advertising on AdWords because it contained the word Facebook in it. Google's rationale was that it was prohibited from advertising a book which used a trademarked name in its title.^[31]

See also

- AdSense
- List of Google tools and services
- Click fraud
- Search engine marketing
- Central ad server
- Performance-based advertising
- Search analytics

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External links

- Google AdWords (<https://adwords.google.com/>)
 - Google AdWords: Keyword Tool (<https://adwords.google.com/select/KeywordToolExternal>)
-

AdSense

	
Developer(s)	Google Inc.
Initial release	June 18, 2003 ^[1]
Operating system	Cross-platform (web-based application)
Type	Online advertising
Website	http://www.google.com/adsense ^[2]

AdSense is an ad serving application run by Google Inc. Website owners can enroll in this program to enable text, image, and video advertisements on their websites. These advertisements are administered by Google and generate revenue on either a per-click or per-impression basis. Google beta tested a cost-per-action service, but discontinued it in October 2008 in favor of a DoubleClick offering (also owned by Google).^[3] In Q1 2010, Google earned US\$2.04 billion (\$8.16 billion annualized), or 30% of total revenue, through AdSense.^[4]

Overview

Google uses its Internet search technology to serve advertisements based on website content, the user's geographical location, and other factors. Those wanting to advertise with Google's targeted advertisement system may enroll through AdWords. AdSense has become a popular method of placing advertising on a website because the advertisements are less intrusive than most banners, and the content of the advertisements is often relevant to the website.

Many websites use AdSense to monetize their content; it is the most popular advertising network^[5]. AdSense has been particularly important for delivering advertising revenue to small websites that do not have the resources for developing advertising sales programs and sales people. To fill a website with advertisements that are relevant to the topics discussed, webmasters implement a brief script on the websites' pages. Websites that are content-rich have been very successful with this advertising program, as noted in a number of publisher case studies on the AdSense website.

Some webmasters invest significant effort into maximizing their own AdSense income. They do this in three ways:

1. They use a wide range of traffic-generating techniques, including but not limited to online advertising.
2. They build valuable content on their websites that attracts AdSense advertisements, which pay out the most when they are clicked.
3. They use text content on their websites that encourages visitors to click on advertisements. Note that Google prohibits webmasters from using phrases like "Click on my AdSense ads" to increase click rates. The phrases accepted are "Sponsored Links" and "Advertisements".

The source of all AdSense income is the AdWords program, which in turn has a complex pricing model based on a Vickrey second price auction. AdSense commands an advertiser to submit a sealed bid (i.e., a bid not observable by competitors). Additionally, for any given click received, advertisers only pay one bid increment above the second-highest bid. Google currently shares 68% of revenues generated by AdSense with content network partners.^[6]

History

Oingo, Inc., a privately held company located in Los Angeles, was started in 1998 by Gilad Elbaz and Adam Weissman. Oingo developed a proprietary search algorithm that was based on word meanings and built upon an underlying lexicon called WordNet, which was developed over the previous 15 years by researchers at Princeton University, led by George Miller.^[7]

Oingo changed its name to Applied Semantics (company) in 2001,^[8] which was later acquired by Google in April 2003 for US\$102 million.^[9]

In 2009, Google AdSense announced that it would now be offering new features, including the ability to "enable multiple networks to display ads".

Types

AdSense for Feeds

In May 2005, Google announced a limited-participation beta version of **AdSense for Feeds**, a version of AdSense that runs on RSS and Atom feeds that have more than 100 active subscribers. According to the Official Google Blog, "advertisers have their ads placed in the most appropriate feed articles; publishers are paid for their original content; readers see relevant advertising—and in the long run, more quality feeds to choose from."^[10]

AdSense for Feeds works by inserting images into a feed. When the image is displayed by a RSS reader or Web browser, Google writes the advertising content into the image that it returns. The advertisement content is chosen based on the content of the feed surrounding the image. When the user clicks the image, he or she is redirected to the advertiser's website in the same way as regular AdSense advertisements.

AdSense for Feeds remained in its beta state until August 15, 2008, when it became available to all AdSense users.

AdSense for search

A companion to the regular AdSense program, **AdSense for search**, allows website owners to place Google search boxes on their websites. When a user searches the Internet or the website with the search box, Google shares 51% of the advertising revenue it makes from those searches with the website owner.^[6] However the publisher is paid only if the advertisements on the page are clicked; AdSense does not pay publishers for mere searches.

AdSense for mobile content

AdSense for mobile content allows publishers to generate earnings from their mobile websites using targeted Google advertisements. Just like AdSense for content, Google matches advertisements to the content of a website — in this case, a mobile website.

AdSense for domains

AdSense for domains allows advertisements to be placed on domain names that have not been developed. This offers domain name owners a way to monetize domain names that are otherwise dormant. AdSense for domains is currently being offered to some users, with plans to make it available to all in stages.

On December 12, 2008, *TechCrunch* reported that AdSense for Domains is available for all US publishers.^[11]

AdSense for video

AdSense for video allows publishers with video content to generate revenue using ad placements from Google's extensive Advertising network including popular Youtube videos.^[12]

XHTML compatibility

As of September 2007, the HTML code for the AdSense search box does not validate as XHTML, and does not follow modern principles of website design because of its use of

- non-standard end tags, such as `` and `</input>`,
- the attribute checked rather than `checked="checked"`,
- presentational attributes other than `id`, `class`, or `style` — for example, `bgcolor` and `align`,
- a table structure for purely presentational (i.e., non-tabular) purposes,¹ and
- the font tag.²

1: using a table structure for unintended purposes is strongly discouraged by the W3C,^[13] but nevertheless does not cause a document to fail validation — there is currently no algorithmic method of determining whether a table is used "correctly" (for displaying tabular data or for displaying elements, that get proportionally wider or narrower when browser window resizes in width without active client side scripting).

2: the font tag is deprecated but does not fail validation in any XHTML standard.

Additionally, the AdSense advertisement units use the JavaScript method `document.write()`, which does not work correctly when rendered with the `application/xhtml+xml` MIME type. The units also use the `iframe` HTML tag, which is not validated correctly with the *XHTML 1.0 Strict* or *XHTML 1.0 Transitional* DOCTYPEs.

The terms of the AdSense program forbid its affiliates from modifying the code, thus preventing these participants from having valid XHTML websites.

However, a workaround has been found by creating a separate HTML webpage containing only the AdSense advertisement units, and then importing this page into an XHTML webpage with an `object` tag.^[14] This workaround appears to be accepted by Google.^[15]

How AdSense works

- The webmaster inserts the AdSense JavaScript code into a webpage.
- Each time this page is visited, the JavaScript code uses inlined JSON to display content fetched from Google's servers.
- For contextual advertisements, Google's servers use a cache of the page to determine a set of high-value keywords. If keywords have been cached already, advertisements are served for those keywords based on the AdWords bidding system. (More details are described in the AdSense patent^[16].)
- For site-targeted advertisements, the advertiser chooses the page(s) on which to display advertisements, and pays based on cost per mille (CPM), or the price advertisers choose to pay for every thousand advertisements displayed.^[17] ^[18]
- For referrals, Google adds money to the advertiser's account when visitors either download the referred software or subscribe to the referred service.^[19] The referral program was retired in August 2008.^[20]
- Search advertisements are added to the list of results after the visitor performs a search.
- Because the JavaScript is sent to the Web browser when the page is requested, it is possible for other website owners to copy the JavaScript code into their own webpages. To protect against this type of fraud, AdSense customers can specify the pages on which advertisements should be shown. AdSense then ignores clicks from pages other than those specified.

Abuse

Some webmasters create websites tailored to lure searchers from Google and other engines onto their AdSense website to make money from clicks. These "zombie" websites often contain nothing but a large amount of interconnected, automated content (e.g., a directory with content from the Open Directory Project, or scraper websites relying on RSS feeds for content). Possibly the most popular form of such "AdSense farms" are splogs (spam blogs), which are centered around known high-paying keywords. Many of these websites use content from

other websites, such as Wikipedia, to attract visitors. These and related approaches are considered to be search engine spam and can be reported to Google.

A Made for AdSense (MFA) website or webpage has little or no content, but is filled with advertisements so that users have no choice but to click on advertisements. Such pages were tolerated in the past, but due to complaints, Google now disables such accounts.

There have also been reports of Trojan horses engineered to produce counterfeit Google advertisements that are formatted looking like legitimate ones. The Trojan uploads itself onto an unsuspecting user's computer through a webpage and then replaces the original advertisements with its own set of malicious advertisements.^[21]

Criticism

Due to alleged concerns about click fraud, Google AdSense has been criticized by some search engine optimization firms as a large source of what Google calls "invalid clicks", in which one company clicks on a rival's search engine advertisements to drive up the other company's costs.^[22]

To help prevent click fraud, AdSense publishers can choose from a number of click-tracking programs. These programs display detailed information about the visitors who click on the AdSense advertisements. Publishers can use this to determine whether or not they have been a victim of click fraud. There are a number of commercial tracking scripts available for purchase.

The payment terms for webmasters have also been justly criticized.^[23] Google withholds payment until an account reaches US\$100,^[24] but many micro content providers require a long time—years in some cases—to build up this much AdSense revenue. However, Google will pay all earned revenue greater than US\$10 when an AdSense account is closed and not disabled.

Many website owners complain that their AdSense accounts have been disabled just before they were supposed to receive their first paycheck from Google. Google claims accounts have been disabled due to click fraud or forbidden content, but have offered no proof of this. An automated email is sent to the publisher's owner which offers no reasoning, or options but a link to file an appeal. In the email, Google states that "Because we have a responsibility to protect our AdWords advertisers from inflated costs due to invalid activity, we've found it necessary to disable your AdSense account. Your outstanding balance and Google's share of the revenue will both be fully refunded back to the affected advertisers." The revenue generated whether legitimate or not is taken.^[25]

Google came under fire when the official Google AdSense Blog showcased the French video website Imineo.com. This website violated Google's AdSense Program Policies by displaying AdSense alongside sexually explicit material. Typically, websites displaying AdSense have been banned from showing such content.^[26] Some sites have been banned for distributing copyrighted material even when they hold the copyright themselves or are authorized by the copyright holder to distribute the material.^[27]

It has been reported that using both AdSense and AdWords may cause a website to pay Google a commission when the website advertises itself.^[28]

In some cases, AdSense displays inappropriate or offensive ads. For example, in a news story about a terrorist attack in India, an advert was generated for a (presumably non-existent) educational qualification in terrorism.^[29]

AdSense sets tracking cookies that are viewed by some^[30] as important threat for the privacy. Webmasters that use AdSense must place the appropriate warning in the privacy policy page^[31].

See also

- *The AdSense Code* (book)
- Google AdWords
- List of Google products
- Pay per play
- Scraper website

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External links

- Google AdSense (<http://www.adsense.com/>)
- Google AdSense patent application (<http://appft1.uspto.gov/netacgi/nph-Parser?Sect1=PTO2&Sect2=HITOFF&p=1&u=/netahtml/PTO/search-bool.html&r=1&f=G&l=50&co1=AND&d=PG01&s1=20040059708&OS=20040059708&RS=20040059708>)
- Inside AdSense (<http://adsense.blogspot.com/>) — Google's official weblog on AdSense

List of Google products

This **list of Google products** include all major desktop, mobile and online products released or acquired by Google Inc. They are either a gold release, in beta development, or part official of the Google Labs initiative. This list also includes previous products, that have either been merged, discarded or renamed. Features within products, such as web search features, are not listed.

Desktop products

Standalone applications

AdWords Editor (Mac OS X, Windows 2000 SP3+/XP/Vista)

Desktop application to manage a Google AdWords account. The application allows users to make changes to their account and advertising campaigns before synchronizing with the online service.

Chrome (Windows XP/Vista/7, GNU/Linux, Mac OS X)

Web browser.

Desktop (Mac OS X, Windows 2000 SP3+/XP/Vista, 7, Linux)

Desktop search application, that indexes e-mails, documents, music, photos, chats, Web history and other files. It allows the installation of Google Gadgets.

Earth (Linux, Mac OS X, Windows 2000/XP/Vista/7, iPhone, iPad)

Virtual 3D globe that uses satellite imagery, aerial photography and GIS from Google's repository.

Gmail/Google Notifier (Mac OS X, Windows 2000/XP)

Alerts the user of new messages in their Gmail account.

Pack (Windows XP/Vista/7)

Collection of computer applications—some Google-created, some not—including Google Earth, Google Desktop, Picasa, Google Talk, and Google Chrome.

Photos Screensaver

Slideshow screensaver as part of Google Pack, which displays images sourced from a hard disk, or through RSS and Atom Web feeds.

Picasa (Mac OS X, Linux and Windows 2000/XP/Vista/7)

Photo organization and editing application, providing photo library options and simple effects. Also includes Facial Recognition and GeoTagging features.



Google appliance as shown at RSA Conference 2008

Picasa Web Albums Uploader (Mac OS X)

An application to upload images to the "Picasa Web Albums" service. It consists of both an iPhoto plug-in and a stand-alone application.

Quick Search box (Windows, Mac OS X)

A search box, based on Quicksilver (software), which allows the user to easily view installed applications or perform online searches.

Secure Access (Windows 2000/XP)

VPN client for Google WiFi users, whose equipment does not support WPA or 802.1x protocols

SketchUp (Mac OS X and Windows 2000/Windows XP/Windows Vista/Windows 7)

Modelling application to sketch simple 3D structures for integration into Google Earth.

Talk (Windows 2000/Windows XP/Server 2003/Vista, 7)

Application for VoIP and instant messaging. It consists of both a service and a client used to connect to the service, which uses the XMPP protocol.

Visigami (Mac OS X Leopard)

Image search application screen saver that searches files from Google Images, Picasa and Flickr.

Pinyin Input Method (Windows 2000/Windows XP/Windows Vista) (Google China)

Input Method Editor that is used to convert Chinese Pinyin characters, which can be entered on Western-style keyboards, to Chinese characters.

Japanese Input (Windows XP SP2+/Windows Vista SP1+/Windows 7 and Mac OS X Leopard+) (Google Japan)

Japanese Input Method Editor.

Google Indic Input Method (Windows 2000/Windows XP/Windows Vista) (Google India)

Input Method Editor that is used to convert Indic characters, which can be entered on Western-style keyboards, to Indian Language characters.

Desktop extensions

These products created by Google are extensions to software created by other organizations.

Blogger Web Comments (Firefox only)

Displays related comments from other Blogger users.

Dashboard Widgets for Mac (Mac OS X Dashboard Widgets)

Collection of mini-applications including Gmail, Blogger and Search History.

Gears (Google Chrome, Firefox, Internet Explorer and Safari)

A browser plug-in that enables development of off-line browser applications.

Send to Mobile (Firefox) (*Discontinued*)

Allows users to send text messages to their mobile phone (US only) about web content.

Toolbar (Firefox and Internet Explorer)

Web browser toolbar with features such as a Google Search box, pop-up blocker as well as the ability for website owners to create buttons.

Mobile products

Online mobile products

These products can be accessed through a browser on a mobile device.

Blogger Mobile

Only available on some US networks. Allows you to update your Blogger blog from a mobile device.

Buzz

Buzz is a social networking service built into Gmail. It was released on February 9, 2010.

Calendar

Displays a list of all Google Calendar events on a mobile device. Users are able to quickly add events to your personal calendar.

Documents

View documents on a mobile device.

Gmail

Access a Gmail account from a mobile device using a standard mobile web browser. Alternatively, Google provides a specific mobile application to access and download Gmail messages quicker. You **MUST** now provide a phone number to verify your account.

News

Allows the user to access Google News in a mobile-optimized view.

Google Mobilizer

Optimizes web pages for mobile web browsers.

iGoogle

Mobile version of iGoogle that can be easily customised with modules.

Orkut

Connect and share with friends on the go.

Product Search

Updated version of the previous Froogle Mobile that allows users to easily search for information about a product.

Reader

Displays Google Reader on a mobile device.

Mobile search

Search web pages, images, local listings and mobile-specific web pages through the Google search engine. Mobile view is enabled by default.

Picasa Web Albums

Lets you view and share photo albums that you have stored online on Picasa.

Google Latitude

Google Latitude is a mobile geolocation tool that lets your friends know where you are via Google Maps.

Google Maps Navigation (Android only)

An Android navigation application for GPS-enabled mobile devices (such as the Google Nexus One) with 3D views, voice guided turn-by-turn navigation and automatic rerouting. It is currently available in the United States, Canada, UK, Ireland, France, Italy, Germany, Spain, Netherlands, Denmark, Austria, Switzerland and

Belgium.^[1]

Downloadable mobile products

Some of these products must be downloaded and run from a mobile device.

Gmail

A downloadable application that has many advantages over accessing Gmail through a web [interface] on a mobile such as the ability to interact with Gmail features including labels and archiving. Requires a properly configured Java Virtual Machine, which is not available by default on some platforms (such as Palm's Treo).

Maps (Android, BlackBerry, Windows Mobile, iPhone†, Symbian, Palm OS, Palm WebOS, and J2ME)

A mobile application for viewing maps on a mobile device. The application lets you find addresses and plot directions. Teamed with a GPS the application can use your geolocation and show your current location on the map. You can also share your current location with friends through Latitude. The device must have either a specific application to use Google maps or any phone with a properly configured Java Virtual Machine.

Sync

Synchronizes a mobile phone with multiple Google calendars as well as contacts using a Google Account.

Talk (BlackBerry, Android, iPhone† only)

VoIP and text application exclusively for BlackBerry and Android smart phones. The Android version is lacking the VoIP function present in BlackBerry version and is text only.

Sky Map (Mobile, Android only)

Augmented reality program displaying a star map which is scrolled by moving the phone.

Voice (Android, Blackberry)

A downloadable application for accessing Google Voice functions on selected devices.

YouTube

A downloadable application for viewing YouTube videos on selected devices.

Listen (Mobile, Android only, from Google Labs)

A downloadable application for subscribing to and streaming podcasts and Web audio.

Goggles (Android, iPhone†; from Google Labs)

A downloadable application that uses image recognition for triggering searches based on pictures taken with the device's built-in camera. For example, taking a picture of a famous landmark will search for information about it or taking a picture of a product's barcode will search for information on the product.^[2]

Google Shopper (Android only)

A downloadable application that make shopping easier and smarter.

†Apps marked for iPhone are available on iPod Touch and iPad, as well.

Web products

These products must be accessed via a Web browser.

Account management

Dashboard

Dashboard is an online tool that allows Google Account holders to view all their personal information Google is storing on their servers.

Advertising

Ad Planner

An online tool that allows users to view traffic estimates for popular web sites and create media plans.

Ad Manager

A hosted ad management solution

AdMob

Mobile advertising provider

AdSense

Advertisement program for Website owners. Adverts generate revenue on either a per-click or per-thousand-ads-displayed basis, and adverts shown are from AdWords users, depending on which adverts are relevant.

AdWords

Google's flagship advertising product, and main source of revenue. AdWords offers pay-per-click (PPC) advertising, and site-targeted advertising for both text and banner ads.

Google Advertising Professionals

Google's AdWords partner certification program, providing AdWords qualifications to agencies that pass exams and other criteria

AdWords Website Optimizer

Integrated AdWords tool for testing different website content, in order to gain to the most successful advertising campaigns.

Audio Ads

Radio advertising program for US businesses. Google began to roll this product out on 15 May 2007 through its existing AdWords interface, however has been discontinued.

Click-to-Call

Calling system so users can call advertisers for free at Google's expense from search results pages. This service was discontinued.

DoubleClick

Internet ad serving provider.

Grants

Scheme for non-profit organizations to benefit from free Cost-Per-Click advertising on the AdWords network.

TV Ads

CPM-driven television advertising scheme available on a trial basis, currently aimed towards professional advertisers, agencies and partners.

Communication and publishing

3D Warehouse

Google 3D Warehouse is an online service that hosts 3D models of existing objects, locations (including buildings) and vehicles created in Google SketchUp by the aforementioned application's users. The models can be downloaded into Google SketchUp by other users or Google Earth.

Apps

Custom domain and service integration service for businesses, enterprise and education, featuring Gmail and other Google products.

Blogger

Weblog publishing tool. Users can create custom, hosted blogs with features such as photo publishing, comments, group blogs, blogger profiles and mobile-based posting with little technical knowledge.

Buzz

Integrated with Gmail service allowing to share updates, photos, videos and more at once. It lets the users make conversations about the things they find interesting.

Calendar

Free online calendar. It includes a unique "quick add" function which allows users to insert events using natural language input. Other features include Gmail integration and calendar sharing. It is similar to those offered by Yahoo! and MSN.

Docs

Document, spreadsheet and presentation application, with document collaboration and publishing capabilities.

FeedBurner

News feed management services, including feed traffic analysis and advertising facilities.

Friend Connect

Friend Connect is an online service that empowers website and blog owners to add social features to their websites. It also allows users to connect with their friends on different websites that have implemented Google Friend Connect on their website.

Gadgets

Mini-applications designed to display information or provide a function in a succinct manner. Available in Universal or Desktop format.

Gmail (Also known as Google Mail)

Free Webmail IMAP and POP e-mail service provided by Google, known for its abundant storage and advanced interface. It was first released in an invitation-only form on April 1, 2004. Mobile access and Google Talk integration is also featured.

iGoogle (Previously Google Personalized Homepage)

Customizable homepage, which can contain Web feeds and Google Gadgets, launched in May 2005. It was renamed to iGoogle on April 30, 2007 (previously used internally by Google).

Jaiku

Jaiku is a social networking, micro-blogging and lifestreaming service comparable to Twitter.

Knol

Knol is a service that enables subject experts and other users to write authoritative articles related to various topics.

Boutiques^[3]

Boutiques is a personalized shopping experience that lets users find and discover fashion goods.

Marratech e-Meeting

Web conferencing software, used internally by Google's employees. Google acquired the software from creator Marratech on April 19, 2007. Google has not yet stated what it will do with the product.

Notebook (Unsupported by Google, replaced with Docs)

Web clipping application for saving online research. The tool permits users to clip text, images, and links from pages while browsing, save them online, access them from any computer, and share them with others. Google recently stopped development on Notebook and no longer accepts sign-ups. While old users can still access their notebooks, newcomers are offered to try other services such as Google Docs and Google Bookmarks^[4].

Orkut

Social networking service, where users can list their personal and professional information, create relationships amongst friends and join communities of mutual interest. In November 2006, Google opened Orkut registration to everyone, instead of being invitation only.

Panoramio

Photos of the world.

Picasa Web Albums

Online photo sharing, with integration with the main Picasa program.

Picnik

Online photo editing service.

Profiles

It is simply how you present yourself on Google products to other Google users. It allows you to control how you appear on Google and tell others a bit more about who you are.

Questions and Answers (Chinese / Russian / Thai / Arabic Only)

Community-driven knowledge market website. Launched on June 26, 2007 that allows users to ask and answer questions posed by other users.^[5]

Reader

Web-based news aggregator, capable of reading Atom and RSS feeds. It allows the user to search, import and subscribe to feeds. The service also embeds audio enclosures in the page. Major revisions to Google Reader were made in October 2006.

Google Sidewiki

Google Sidewiki is a browser sidebar that enables you to contribute and read helpful information alongside any web page. The service went online on Sep 23, 2009.

Sites (Previously Jotspot)

Website creation tool for private or public groups, for both personal and corporate use.

SMS Channels (Google India Only)

Launched September 2008, allows users to create and subscribe to channels over SMS. Channels can be based on RSS feeds.

Voice (United States Only)

Known as "GrandCentral" before 2009-03-11, this is a free voice communications product that includes a POTS telephone number. It includes a follow-me service that allows the user to forward their Google voice phone number to simultaneously ring up to 6 other phone numbers. It also features a unified voice mail service, SMS and free outgoing calls via Google's "click2call" and 3rd party dialers.

Wave (Unsupported by Google.)

Google Wave is a product that helps users communicate and collaborate on the web. A "wave" is equal parts conversation and document, where users can almost instantly communicate and work together with richly formatted text, photos, videos, maps, and more.

YouTube

Free video sharing Web site which lets users upload, view, and share video clips. In October 2006, Google, Inc., announced that it had reached a deal to acquire the company for \$1.65 billion USD in Google's stock. The deal closed on 13 November 2006.

Development**Android**

Open Source mobile phone platform developed by the Open Handset Alliance

App Engine

A tool that allows developers to write and run web applications.

Code

Google's site for developers interested in Google-related development. The site contains Open Source code and lists of their API services. Also provides project hosting for any free and open source software.

Mashup Editor

Web Mashup creation with publishing facilities, as well as syntax highlighting and debugging (Deprecated, since January 14, 2009).

OpenSocial

A set of common APIs for building social applications on many websites.

Subscribed Links

Allows developers to create custom search results that Google users can add to their search pages.

Webmaster Tools (Previously Google Sitemaps)

Sitemap submission and analysis for the Sitemaps protocol. Renamed from Google Sitemaps to cover broader features, including query statistics and robots.txt analysis.

Web Toolkit

An open source Java software development framework that allows web developers to create Ajax applications in Java.

Google Chrome OS

An Operating System utilizing the Linux kernel and a custom Window manager.

Google Go

A compiled, concurrent programming language developed by Google.

Google Closure Tools

Javascript tools used by Google products such as GMail, Google Docs and Google Maps

Mapping

City Tours

An overlay to Maps that shows interesting tours within a city

Maps

Mapping service that indexes streets and displays satellite and street-level imagery, providing driving directions and local business search.

Map Maker

Edit the map in more than a hundred countries and watch your edits go into Google Maps. Become a citizen cartographer and help map your world.

Building Maker

Web Based building and editing tool to create 3D buildings for Google Earth.

Mars

Imagery of Mars using the Google Maps interface. Elevation, visible imagery and infrared imagery can be shown. It was released on March 13, 2006, the anniversary of the birth of astronomer Percival Lowell.

Moon

NASA imagery of the moon through the Google Maps interface. It was launched on July 20, 2005, in honor of the first manned Moon landing on July 20, 1969.

Ride Finder

Taxi, limousine and shuttle search service, using real time position of vehicles in 14 US cities. Ride Finder uses the Google Maps interface and cooperates with any car service that wishes to participate (discontinued as of October 2009).

Sky Map

An Internet tool for viewing the stars and galaxies, you can now access this tool through a browser version of "Google Sky".

Transit

Public transport trip planning through the Google Maps interface. Google Transit was released on December 7, 2005, and is now fully integrated with Google Maps.

(For Google Earth, see "Standalone applications")

Search

Aardvark

Social search utility which allows people to ask and answer questions within their social networks. It uses people's claimed expertise to match askers with good answerers.

Accessible Search

Search engine for the blind and visually impaired. It prioritises usable and accessible web sites in the search results, so the user incurs minimal distractions when browsing.

Alerts

E-mail notification service, which sends alerts based on chosen search terms, whenever there are new results. Alerts include web results, Groups results news, and video.

Base

Google submission database, that enables content owners to submit content, have it hosted and make it searchable. Information within the database is organized using attributes.

Blog search

Weblog search engine, with a continuously-updated search index. Results include all blogs, not just those published through Blogger. Results can be viewed and filtered by date.

Book Search (Previously Google Print)

Search engine for the full text of printed books. Google scans and stores in its digital database. The content that is displayed depends on the arrangement with the publishers, ranging from short extracts to entire books.

Checkout

Online payment processing service provided by Google aimed at simplifying the process of paying for online purchases. Webmasters can choose to implement Google Checkout as a form of payment.

Code Search

Search engine for programming code found on the Internet.

Dictionary

Once part of Google Translate, it is now a standalone service that allows searching of words and phrases from over 22 languages.

Directory

Collection of links arranged into hierarchical subcategories. The links and their categorization are from the Open Directory Project, but are sorted using PageRank.

Directory (Google China)

Navigation directory, specifically for Chinese users.

Experimental Search

Options for testing new interfaces whilst searching with Google, including Timeline views and keyboard shortcuts.

Fast Flip

Online news aggregator that mimics the experience of flicking through a newspaper or magazine, allowing visual search of stories in manner similar to microfiche.

Finance

Searchable US business news, opinion, and financial data. Features include company-specific pages, blog search, interactive charts, executives information, discussion groups and a portfolio.

Groups

Web and e-mail discussion service and Usenet archive. Users can join a group, make a group, publish posts, track their favorite topics, write a set of group web pages updatable by members and share group files. In January, 2007, version 3 of Google Groups was released. New features include the ability to create customised pages and share files.

Google Hotpot

is a search that allows people to rate restaurants, hotels etc. and share them with friends.

Image Labeler

Game that induces participants to submit valid descriptions (labels) of images in the web, in order to later improve Image Search.

Image Search

Image search engine, with results based on the filename of the image, the link text pointing to the image and text adjacent to the image. When searching, a thumbnail of each matching image is displayed.

Language Tools

Collection of linguistic applications, including one that allows users to translate text or web pages from one language to another, and another that allows searching in web pages located in a specific country or written in a specific language.

Life Search (Google China)

Search engine tailored towards everyday needs, such as train times, recipes and housing.

Movies

A specialised search engine that obtains Film showing times near a user-entered location as well as providing reviews of films compiled from several different websites.

Music (Google China)

A site containing links to a large archive of Chinese pop music (principally Cantopop and Mandopop), including audio streaming over Google's own player, legal lyric downloads, and in most cases legal MP3 downloads. The archive is provided by Top100.cn (i.e. this service does not search the whole Internet) and is only available in mainland China. It is intended to rival the similar, but potentially illegal service provided by Baidu.

News

Automated news compilation service and search engine for news. There are versions of the aggregator for more than 20 languages. While the selection of news stories is fully automated, the sites included are selected by human editors.

News Archive Search

Feature within Google News, that allows users to browse articles from over 200 years ago.

Patent Search

Search engine to search through millions of patents, each result with its own page, including drawings, claims and citations.

Product Search (Previously Froogle)

Price engine that searches online stores, including auctions, for products.

Scholar

Search engine for the full text of scholarly literature across an array of publishing formats and scholarly fields. Today, the index includes virtually all peer-reviewed journals available online.

Sets

List of items generated when the user enters a few examples. For example, entering "Green, Purple, Red" produces the list "Green, Purple, Red, Blue, Black, White, Yellow, Orange, Brown."

SMS

Mobile phone short message service offered by Google in several countries, including the USA, Japan, Canada, India and China and formerly the UK, Germany and Spain. It allows search queries to be sent as a text message. The results are sent as a reply, with no premium charge for the service.

Squared

Creates tables of information about a subject from unstructured data

Suggest

Auto-completion in search results while typing to give popular searches.

University Search

Listings for search engines for university websites.

U.S. Government Search

Search engine and Personalized Homepage that exclusively draws from sites with a .gov TLD.

Video

Video search engine and online store for clips internally submitted by companies and the general public. Google's main video partnerships include agreements with CBS, NHL and the NBA. Also searches videos posted on YouTube, Metacafe, Daily Motion, and other popular video hosting sites.

Voice Local Search

Non-premium phone service for searching and contacting local businesses

Web History (Previously Google Search History / Personalized Search)

Web page tracking, which records Google searches, Web pages, images, videos, music and more. It also includes Bookmarks, search trends and item recommendations. Google released Search History in April 2005, when it began to record browsing history^[6], later expanding and renaming the service to Web History in April 2007.^[7]

Web Search

Web search engine, which is Google's core product. It was the company's first creation, coming out of beta on September 21, 1999, and remains their most popular and famous service. It receives 1 billion requests a day and is the most used search engine on the Internet.

Statistics

Analytics

Traffic statistics generator for defined websites, with strong AdWords integration. Webmasters can optimize their ad campaigns, based on the statistics that are given. Analytics is based on the Urchin software and the new version released in May 2007 integrates improvements based on Measure Map.

Gapminder

Data trend viewing platform to make nations' statistics accessible on the internet in an animated, interactive graph form.

Insights

Google Insights for Search is a service by Google similar to Google Trends, providing insights into the search terms people have been entering into the Google search engine.

Trends

Graph plotting application for Web Search statistics, showing the popularity of particular search terms over time. Multiple terms can be shown at once. Results can also be displayed by city, region or language. Related news stories are also shown.

Zeitgeist

Collection of lists of the most frequent search queries. There used to be weekly, monthly and yearly lists, as well as topic and country specific lists. Closed 22 May 2007 and replaced by "Hot Trends, a dynamic feature in Google Trends". An annual Zeitgeist summary for the US and other countries is still produced.

Other

Health

Puts you in charge of your health information. It claims to be safe, secure, and free. Organize your health information all in one place.

Labs

A website demonstrating and testing new **Google** projects.

Hardware products

Google Search Appliance

Hardware device that can be hooked to corporate intranets for indexing/searching of company files.

Google Mini

Reduced capacity and less expensive version of the Google Search Appliance.

Nexus One

Smartphone that runs the Android open source mobile operating system

Services

GOOG-411

Google's directory assistance service, which can be used free of charge from any telephone in the US and Canada. This service has been discontinued as of November 12, 2010.

Google Public DNS

A publicly accessible DNS server run by Google.

Previous products

Applications that have been discontinued by Google, either because of integration with other Google products, or through lack of support.

Answers

Question and answer service, allowing users to pay researchers to answer questions. Google announced the closing of service on November 28, 2006. All past discussions have been publicly archived.

Browser Sync

Saved browser settings for backup and use on other installations of Mozilla Firefox.

Co-op

Search can be defined to specified web sites or areas of a site. Free to set up Google Co-op renamed Google Custom Search.

Deskbar

Bar on your desktop with a minibrowser built into it. It was discontinued when a very similar feature was added to Google desktop. Some people preferred Google deskbar for its ability to add custom searching and the mini-browser so you wouldn't have to open an actual window. The last release, version 5.95, had a .NET plugin.

Free Search

Free code to embed either web search or site search into another website. Discontinued in favour of Google Co-op Custom Search Engine.

Hello

Allowed users to send images across the Internet and publish them to blogs.

Joga Bonito

Soccer community site, similar to services such as MySpace, in that each member had a profile, and could join groups based on shared interests. The service allowed a user to meet other fans, create games and clubs, access athletes from Nike, and watch and upload video clips and photos.

Lively (Windows XP/Vista)

3D animated chat program launched on July 9, 2008 and closed December 31, 2008.^[8]

Local

Local listings service, before it was integrated with mapping. The merged service was then called Google Local, which was further renamed to Google Maps due to popular demand. Google Local still exist, but only for Google Mobile Search.

Google MK-14

A 4U rack mounted server for Google Radio Automation system. Google Inc. has sold its Google Radio Automation business to WideOrbit Inc.^[9]

Music Trends

Music ranking of the songs played with iTunes, Winamp, Windows Media Player and Yahoo Music. Trends were generated by Google Talk's "share your music status" feature.

Page Creator

Webpage-publishing program, which can be used to create pages and to host them on Google's servers. However, to focus on another Google Webpage-publishing service called Google Sites, new sign-ups are no longer accepted since 2008. And all existing content on Page Creator has been transferred to Google Sites in 2009.

Personalized Search

Search results personalization, now fully merged with Google Accounts and Web History.

Public Service Search

Non-commercial organization service, which included free SiteSearch, traffic reports and unlimited search queries. Discontinued in February 2007 and re-directed to Google Co-op.

Rebang (Google China)

Google China's search trend site, similar to Google Zeitgeist. Currently part of Google Labs.^[10] ^[11]

Related Links

Script that places units for related Web content, including pages, searches and videos, on the owner's Website, through embedded code. Discontinued in July 2007.

SearchMash

Search engine that means to "test innovative user interfaces." Among its features are the ability to display image results on the same page as web results, feedback about features, and continuous scrolling results. Aside from its privacy policy and terms of service, there is no Google branding on the site. Discontinued November 2008.

Shared Stuff

Web page sharing system, incorporating a Share bookmarklet to share pages, as well as a page for viewing the most popular shared items. Pages can also be shared through third party applications, such as del.icio.us or Facebook. It was discontinued on March 30, 2009.

Spreadsheets

Spreadsheet management application, before it was integrated with Writely to form Google Docs & Spreadsheets. It was announced on 6 June 2006.

Video Player (Mac OS X/Windows 2000/XP)

Standalone desktop application that allowed you to view videos from Google Video.

Voice Search

Automated voice system for searching the Web using the telephone. Now called Google Voice Local Search, it is currently integrated on the Google Mobile web site.

Web Accelerator (Windows 2000 SP3+/XP/Vista)

Uses various caching technologies to increase load speed of web pages. (Accelerator is no longer available for download.)

Writely

Web-based word processor created by software company Upstartle, who were acquired by Google on March 9, 2006. On October 10, 2006, Writely was merged into Google Docs & Spreadsheets.

Google X

Re-designed Google search homepage, using a Mac OS style interface. It appeared in Google Labs, but was removed the following day for undisclosed reasons.

Dodgeball

Social networking site built specifically for use on mobile phones. Users text their location to the service, which then notifies them of crushes, friends, friends' friends and interesting venues nearby. (Discontinued January 2009). Google Latitude now provides most of Dodgeball's functionality integrated into the Google Maps service.

Catalogs

Search engine for over 6,600 print catalogs, which are acquired through Optical character recognition. (Discontinued January 2009)

Google Notebook

View and add notes to your Google Notebook. (Discontinued January 2009)

See also

- List of Google acquisitions
- Google Pack

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(http://www.google.com.hk/ggblog/googlechinablog/2010/07/google_20.html)

External links

- Google Homepage (<http://www.google.com>)
 - Official Google Blog (<http://googleblog.blogspot.com>)
 - Official History of Google Products (<http://www.google.com/corporate/history.html>)
 - About.com reviews of Google products (<http://google.about.com/od/googlereviews/>)
 - An exhaustive Google product list (http://spreadsheets.google.com/pub?key=ty_BGDs9hnuBMRvj3AFeB2g&output=html)
-

Blogger (service)



Blogger.com

URL	www.blogger.com ^[1]
Commercial?	Yes
Type of site	Blog Host
Registration	Optional, Free
Available language(s)	Arabic, Bengali, Bulgarian, Catalan, Chinese (Simplified), Chinese (Traditional), Croatian, Czech, Danish, Dutch, English, Filipino, Finnish, French, German, Greek, Gujarati, Hebrew, Hindi, Hungarian, Indonesian, Italian, Japanese, Kannada, Korean, Latvian, Lithuanian, Malay, Malayalam, Marathi, Norwegian, Oriya, Persian, Polish, Portuguese (Brazil), Portuguese (Portugal), Romanian, Russian, Serbian, Slovak, Slovenian, Spanish, Swedish, Tamil, Telugu, Thai, Turkish, Ukrainian, Vietnamese
Owner	Google Inc.
Created by	Pyra Labs
Launched	August 23, 1999 ^[2]
Alexa rank	8 ^[3]
Current status	Active

Blogger is a blog publishing service that allows private or multi-user blogs with time-stamped entries. It was created by Pyra Labs, which was bought by Google in 2003. Generally, the blogs are hosted by Google at subdomains of blogspot.com. Up until May 1, 2010 Blogger allowed users to publish blogs on other hosts, via FTP. All such blogs had (or still have) to be moved to Google's own servers, with domains other than blogspot.com allowed via Custom URLs.^[4]

History

On August 23, 1999, Blogger was launched by Pyra Labs. As one of the earliest dedicated blog-publishing tools, it is credited for helping popularize the format. In February 2003, Pyra Labs was acquired by Google under undisclosed terms. The acquisition allowed premium features (for which Pyra had charged) to become free. About a year later, Pyra Labs' co-founder, Evan Williams, left Google. In 2004, Google purchased Picasa; it integrated Picasa and its photo sharing utility Hello into Blogger, allowing users to post photos to their blogs.

On May 9, 2004, Blogger introduced a major redesign, adding features such as web standards-compliant templates, individual archive pages for posts, comments, and posting by email. On August 14, 2006, Blogger launched its latest version in beta, codenamed "Invader", alongside the gold release. This migrated users to Google servers and included some new features. In December 2006, this new version of Blogger was taken out of beta. By May 2007, Blogger had completely moved over to Google operated servers. Blogger was ranked 16 on the list of top 50 domains in terms of number of unique visitors in 2007.^[5]

Redesign

As part of the Blogger redesign in 2006, all blogs associated with a user's Google Account were migrated to Google servers. Blogger claims that the service is now more reliable because of the quality of the servers.^[6]

Along with the migration to Google servers, several new features were introduced, including label organization, a drag-and-drop template editing interface, reading permissions (to create private blogs) and new Web feed options. Furthermore, blogs are updated dynamically, as opposed to rewriting HTML files.

In a version of the service called Blogger in Draft,^[7] new features are tested before being released to all users. New features are discussed in the service's official blog^[8].

In September 2009, Google introduced new features into Blogger as part of its tenth anniversary celebration. The features included a new interface for post editing, improved image handling, Raw HTML Conversion, and other Google Docs-based implementations, including:

- Adding location to posts via geotagging.
- Post time-stamping at publication, not at original creation.
- Vertical re-sizing of the post editor. The size is saved in a per-user, per-blog preference.
- Link editing in Compose mode.
- Full Safari 3 support and fidelity on both Windows and Mac OS.
- New Preview dialog that shows posts in a width and font size approximating what is seen in the published view.
- Placeholder image for tags so that embeds are movable in Compose mode.
- New toolbar with Google aesthetics, faster loading time, and "undo" and "redo" buttons. Also added was the full justification button, a strike-through button, and an expanded color palette.

The new post editor was criticized for being less reliable than its predecessor.^[9]

Integration

- The Google Toolbar has a feature called "BlogThis!" which allows toolbar users with Blogger accounts to post links directly to their blogs.
- "Blogger for Word" is an add-in for Microsoft Word which allows users to save a Microsoft Word Document directly to a Blogger blog, as well as edit their posts both on- and offline. As of January 2007, Google says "Blogger for Word is not currently compatible with the new version of Blogger", and they state no decision has been made about supporting it with the new Blogger.^[10] However, Microsoft Office 2007 adds native support for a variety of blogging systems, including Blogger.
- Blogger supports Google's AdSense service as a way of generating revenue from running a blog.
- Blogger offers multiple author support, making it possible to establish group blogs.
- Blogger offers a template editing feature, which allows users to customize the Blogger template.
- Google Docs has direct publishing integration to Blogger.
- Windows Live Writer, a standalone app of the Windows Live suite, publishes directly to Blogger.

Blocking

Blogger has been blocked for periods of time in the following countries:

- Fiji
- People's Republic of China
- Iran
- Pakistan^[11]
- Syrian Arab Republic
- Myanmar
- Kazakhstan
- Turkey (four days in October 2008)^[12]
- Cuba

Limitations

Blogger has imposed the following limitations on content storage and bandwidth, per user account^[13]:

- **Number of blogs** = Unlimited
- **Size of pages** = Individual pages (the main page of a blog or archive pages) are limited to 1 MB
- **Number of labels** = 5,000 unique labels per blog, 20 unique labels per post
- **Number of pictures** (hyperlinked from user's Picasa Web Album) = Up to 1 GB of total storage
- **Size of pictures** = If posted via Blogger Mobile, limited 250 KB per picture; posted pictures are scaled to 800px
- **Team members** (those that can write to a blog) = 100

On February 18, 2010,^[14] Blogger introduced "auto-pagination", which limited the number of posts that could be displayed on each page, often causing the number of posts on the main page to be less than that specified by the user and leading to a hostile response from some users.^{[15] [16]}

See also

- List of Google products
- Niche blogging
- Evan Williams

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- [7] <http://draft.blogger.com/>
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2008."

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Retrieved 21 December 2009.

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[15] " Problem Rollup: Auto Pagination for blogs with Classic templates (<http://www.google.com/support/forum/p/blogger/thread?tid=211d87eb120a771a&hl=en>)", *Blogger Help Forum* (retrieved March 1, 2010).

[16] " Problem Rollup: Auto Pagination for blogs with Layouts templates (<http://www.google.com/support/forum/p/blogger/thread?tid=33d7b281c3f27ad0&hl=en>)", *Blogger Help Forum* (retrieved March 1, 2010).

External links

- Official website (<http://https://www.blogger.com>)
- Blogger (service) (http://www.dmoz.org/Computers/Internet/On_the_Web/Weblogs/Tools/Publishers/Blogger/) at the Open Directory Project

Google Earth

	
Original author(s)	Keyhole, Inc.
Developer(s)	Google
Initial release	June 28, 2005 (as Google Earth) circa 2001 (as EarthViewer 3D)
Stable release	5.2.1.1588 ^[1] (September 3, 2010) _[+/-] ^[1]
Preview release	6.0.0.1735 ^[2] (November 30, 2010) _[+/-] ^[2]
Operating system	Android, Windows 2000, XP, Vista, 7, Mac OS X, Blackberry Storm, iOS and Linux
Size	Windows - 12.5 MiB iOS - 8.9 MiB Android - 5.72 MiB Linux - 24 MiB Mac OS X - 35 MiB
Available in	41 languages, see the full list
Type	Virtual globe
License	Freeware/Proprietary
Website	earth.google.com ^[3]

Google Earth is a virtual globe, map and geographical information program that was originally called EarthViewer 3D, and was created by Keyhole, Inc, a company acquired by Google in 2004. It maps the Earth by the superimposition of images obtained from satellite imagery, aerial photography and GIS 3D globe. It was available under three different licenses, 2 currently: Google Earth, a free version with limited functionality; Google Earth Plus (discontinued),^[4] ^[5] which included additional features; and Google Earth Pro (\$399 per year), which is intended for commercial use.^[6]

The product, re-released as Google Earth in 2005, is currently available for use on personal computers running Windows 2000 and above, Mac OS X 10.3.9 and above, Linux kernel: 2.6 or later (released on June 12, 2006), and FreeBSD. Google Earth is also available as a browser plugin which was released on May 28, 2008.^[7] It was also made available for mobile viewers on the iPhone OS on October 28, 2008, as a free download from the App Store, and is available to Android users as a free app on the Android Market. In addition to releasing an updated Keyhole based client, Google also added the imagery from the Earth database to their web-based mapping software, Google Maps. The release of Google Earth in June 2005 to the public caused a more than tenfold increase in media coverage on virtual globes between 2004 and 2005,^[8] driving public interest in geospatial technologies and applications.

Overview

Google Earth displays satellite images of varying resolution of the Earth's surface, allowing users to see things like cities and houses looking perpendicularly down or at an oblique angle (see also bird's eye view). The degree of resolution available is based somewhat on the points of interest and popularity, but most land (except for some islands) is covered in at least 15 meters of resolution.^[9] Melbourne, Victoria, Australia; Las Vegas, Nevada; and Cambridge, Cambridgeshire include examples of the highest resolution, at 15 cm (6 inches). Google Earth allows users to search for addresses for some countries, enter coordinates, or simply use the mouse to browse to a location.

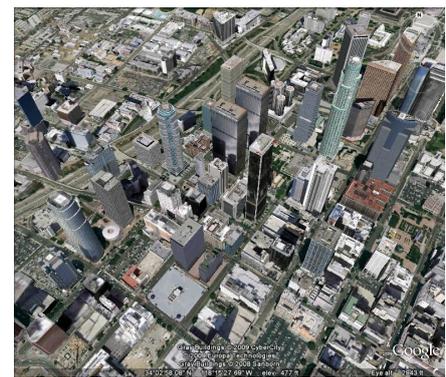
For large parts of the surface of the Earth only 2D images are available, from almost vertical photography. Viewing this from an oblique angle, there is perspective in the sense that objects which are horizontally far away are seen smaller, but of course it is like viewing a large photograph, not quite like a 3D view.

For other parts of the surface of the Earth 3D images of terrain and buildings are available. Google Earth uses digital elevation model (DEM) data collected by NASA's Shuttle Radar Topography Mission (SRTM).^[10] This means one can view the Grand Canyon or Mount Everest in three dimensions, instead of 2D like other areas. Since November 2006, the 3D views of many mountains, including Mount Everest, have been improved by the use of supplementary DEM data to fill the gaps in SRTM coverage.^[11]

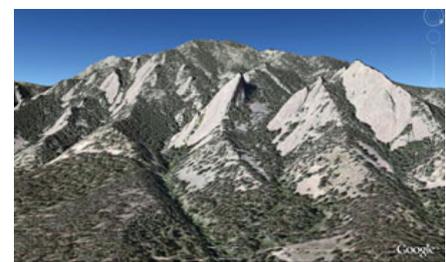
Many people use the applications to add their own data, making them available through various sources, such as the Bulletin Board Systems (BBS) or blogs mentioned in the link section below. Google Earth is able to show all kinds of images overlaid on the surface of the earth and is also a Web Map Service client. Google Earth supports managing three-dimensional Geospatial data through Keyhole Markup Language (KML). Google Earth is simply based on 3D maps, it has the capability to show 3D buildings and structures (such as bridges), which consist of users' submissions using SketchUp, a 3D modeling program software. In prior versions of Google Earth (before Version 4), 3D buildings were limited to a few cities, and had poorer rendering with no textures. Many buildings and structures from around the world now have detailed 3D structures; including (but not limited to) those in the United States, Canada, Australia, Ireland, India, Japan, United Kingdom,^[12] Germany, Pakistan and the cities, Amsterdam and Alexandria.^[13] In August 2007, Hamburg became the first city entirely shown in 3D, including textures such as façades. The Irish town of Westport was added to Google Earth in 3D on January 16, 2008. The 'Westport3D' model was created by 3D imaging firm AM3TD using long-distance laser scanning technology and digital photography and is the first such model of an Irish town to be created. As it was developed initially to aid Local Government in carrying out their town planning functions it includes the highest resolution photo-realistic textures to be found anywhere in Google Earth. Three-dimensional renderings are available for certain buildings and structures around the world via Google's 3D Warehouse^[14] and other websites.

Recently, Google added a feature that allows users to monitor traffic speeds at loops located every 200 yards in real-time. In version 4.3 released on April 15, 2008, Google Street View was fully integrated into the program allowing the program to provide an on the street level view in many locations.

On January 16, 2010, the entirety of Google Earth's ocean floor imagery was updated to new images by SIO, NOAA, US Navy, NGA, and GEBCO. The new images have caused smaller islands, such as some atolls in the Maldives, to



A high resolution of Downtown Los Angeles as viewed in Google Earth in 3D buildings layer



A rendering of the Flatirons in Boulder, Colorado by Google Earth

be rendered invisible despite their shores being completely outlined.^[15]

Languages

Since version 5.0 Google Earth has been available in 37 languages:

- Arabic
- Bulgarian
- Bangla
- Catalan
- Chinese (Traditional)
- Chinese (Simplified)
- Croatian
- Czech
- Danish
- Dutch
- English (American)
- English (British)
- Filipino
- Finnish
- French
- German
- Greek
- Hebrew
- Hindi
- Hungarian
- Indonesian
- Italian
- Japanese
- Korean
- Latvian
- Lithuanian
- Norwegian
- Polish
- Portuguese (Portugal)
- Portuguese (Brazil)
- Romanian
- Russian
- Serbian
- Slovak
- Slovene
- Spanish (Spain)
- Spanish (Latin America)
- Swedish
- Thai
- Turkish
- Ukrainian
- Vietnamese

Uses

In addition to obvious uses, Google Earth is useful for many day-to-day and other purposes.

- Google Earth can be used to view areas subjected to widespread disasters if Google supplies up-to-date images. For example after the January 12 2010 Haiti earthquake images of Haiti were made available on January 17.
- With Google's push for the inclusion of Google Earth in the Classroom,^[16] teachers are adopting Google Earth in the classroom for lesson planning, such as teaching students geographical themes (location, culture, characteristics, human interaction, and movement)^[17] to creating mashups with other web applications such as Wikipedia.^{[16] [17]}
- You can explore and place placemarks on the moon, and Mars.

Features

Wikipedia and Panoramio integration

In December 2006, Google Earth added a new layer called "Geographic Web" that includes integration with Wikipedia and Panoramio. In Wikipedia, entries are scraped for coordinates via the Coord templates^[18]. There is also a community-layer from the project Wikipedia-World. More coordinates are used, different types are in the display and different languages are supported than the built-in Wikipedia layer.^[19] Google announced on May 30, 2007 that it is acquiring Panoramio.^[20] In March 2010, Google removed the "Geographic Web" layer. The "Panoramio" layer became part of the main layers and the "Wikipedia" layer was placed in the "More" layer.

Flight simulator

In Google Earth v4.2 a flight simulator was included as a hidden feature. Starting with v4.3 it is no longer hidden. Initially the F-16 Fighting Falcon and the Cirrus SR-22 were the only aircraft available, and they could be used with only a few airports. In addition to keyboard control, the simulator can be controlled with a mouse or joystick. Google Earth v5.1 and higher crashes when starting flight simulator with Saitek and other joysticks.

If a user maneuvers carefully, the user can also fly underwater. To fly underwater, the user needs to hit the ocean or sea at a very low angle, so that the user can be almost parallel with the water. Controls are the same underwater, but the altitude meter will be in the negatives. Just like above ground, the user needs to look out for mountains and continental shelves, rises, and slopes. If a user hits the ocean at about more than about 15 degrees, the user will crash and have to start over.



Downtown Toronto, as seen from a F16 Fighting Falcon during a simulated flight.

Featured planes

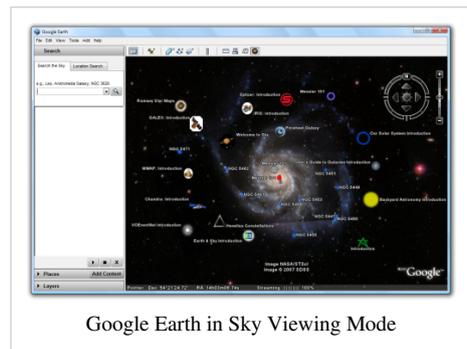
- F-16 Fighting Falcon – A much higher speed and maximum altitude than the Cirrus SR-22, it has the ability to fly at a maximum speed of Mach 2. The take-off speed is 280 knots, the landing speed is 170~290 knots.
- Cirrus SR-22 – Although slower and with a lower maximum altitude, the SR-22 is much easier to handle and is preferred for up-close viewing of Google Earth's imagery. The take-off speed is 75 knots, the landing speed is 150 knots^[21]

The flight simulator can be commanded with the keyboard, mouse or plugged-in joystick. Broadband connection and a high speed computer provides a very realistic experience.^[22] The simulator also runs with animation, allowing objects (for example: planes^[23]) to animate while on the simulator. Image overlays^[24] can also be added to make it look like the cockpit of a plane.

Sky mode

Google Sky is a feature that was introduced in Google Earth 4.2 on August 22, 2007, and allows users to view stars and other celestial bodies.^[25] It was produced by Google through a partnership with the Space Telescope Science Institute (STScI) in Baltimore, the science operations center for the Hubble Space Telescope. Dr. Alberto Conti and his co-developer Dr. Carol Christian of STScI plan to add the public images from 2007,^[26] as well as color images of all of the archived data from Hubble's Advanced Camera for Surveys. Newly released Hubble pictures will be added to the Google Sky program as soon as they are issued. New features such as multi-wavelength data, positions of major satellites and their orbits as well as educational resources will be provided to the Google Earth community and also through Christian and Conti's website for Sky^[27]. Also visible on Sky mode are constellations, stars, galaxies and animations depicting the planets in their orbits. A real-time Google Sky mashup of recent astronomical transients, using the VOEvent protocol, is being provided by the VOEventNet^[28] collaboration. Google's Earth maps are being updated each 5 minutes.

Google Sky faces competition^[29] from Microsoft WorldWide Telescope (which runs only under the Microsoft Windows operating systems) and from Stellarium, a free open source planetarium that runs under Microsoft Windows, Mac OS X, and Linux.



Google Earth in Sky Viewing Mode

On March 13, 2008, Google made a web-based version of Google Sky available at <http://www.google.com/sky/>.

Street View

On April 15, 2008 with version 4.3, Google fully integrated its Street View into Google Earth.

Google Street View provides 360° panoramic street-level views and allows users to view parts of selected cities and their surrounding metropolitan areas at ground level. When it was launched on May 25, 2007 for Google Maps, only five cities were included. It has since expanded to more than 40 U.S. cities, and includes the suburbs of many, and in some cases, other nearby cities. Recent updates have now implemented Street View in most of the major cities of Australia and New Zealand as well as parts of Canada, parts of South Africa, Denmark, Mexico, Japan, Norway, Spain, Sweden, France, the UK, Republic of Ireland, the Netherlands, Italy, Switzerland, Portugal, Taiwan, and Singapore.

Google Street View, when operated, displays photos that were previously taken by a camera mounted on an automobile, and can be navigated by using the mouse to click on photograph icons displayed on the screen in your direction of travel. Using these devices, the photos can be viewed in different sizes, from any direction, and from a variety of angles.

Water and ocean

Introduced in version 5.0 (February 2009), the *Google Ocean* feature allows users to zoom below the surface of the ocean and view the 3D bathymetry beneath the waves. Supporting over 20 content layers, it contains information from leading scientists and oceanographers.^[30] On April 14, 2009, Google added underwater terrain data for the Great Lakes.^[31]

Historical Imagery

Introduced in version 5.0, Historical Imagery allows users to traverse back in time and study earlier stages of any place. This feature is very useful for research purposes that require analysis of past records of various places.^[32]

Mars

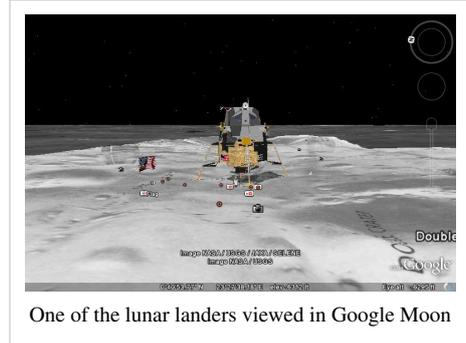
Google Earth 5 includes a separate globe of the planet Mars, that can be viewed and analysed for research purposes. The maps are of a much higher resolution than those on the browser version of Google Mars and it also includes 3D renderings of the Martian terrain. There are also some extremely high resolution images from the Mars Reconnaissance Orbiter's HiRISE camera that are of a similar resolution to those of the cities on Earth. Finally, there are many high resolution panoramic images from various Mars landers, such as the Mars Exploration Rovers, Spirit and Opportunity, that can be viewed in a similar way to Google Street View. Interestingly enough, layers on Google Earth (such as World Population Density) can also be applied to Mars. Layers of Mars can also be applied onto Earth. Mars also has a small application found near the face on Mars. It is called Meliza, and features a chat between you and an automatic robot speaker. It is useful for research on Mars, but is not recommended for normal conversations.



A side-by-side comparison of The Ziggurat and Raley Field in West Sacramento, California from 1993 on the left and 2009 on the right. As shown in the 1993 side both the Ziggurat and Raley Field do not exist.

Moon

On July 20, 2009, the 40th anniversary of the Apollo 11 mission, Google introduced the Google Earth version of Google Moon,^[33] which allows users to view satellite images of the Moon. It was announced and demonstrated to a group of invited guests by Google along with Buzz Aldrin at the Newseum in Washington, D.C..^[34] ^[35]



One of the lunar landers viewed in Google Moon

Influences

Google Earth can be traced directly back to a small company named Autometric, now a part of Boeing. Autometric created a visualization product named Edge Whole Earth and demonstrated this to Michael T. Jones, Chris Tanner, and others at SGI in 1996. Several other visualization products using imagery existed at the time, including Performer-based ones, but Michael T. Jones stated emphatically that he had "never thought of the complexities of rendering an entire globe..." The catch phrase "from outer space to in your face" was coined by Autometric President Dan Gordon, and used to explain his concept for personnel/local/global range. Edge blazed a trail as well in broadcasting, being used in 1997 on CBS News with Dan Rather, in print for rendering large images draped over terrain for National Geographic, and used for special effects in the feature film *Shadow Conspiracy* in 1997. In 2000, Edge Viewer was made available through the National Geospatial-Intelligence Agency for free.

Mr. Gordon was a huge fan of the 'Earth' program described in Neal Stephenson's sci-fi classic *Snow Crash*. Indeed, a Google Earth co-founder claimed that Google Earth was modeled after *Snow Crash*,^[36] while another co-founder said it was inspired by the short science education film *Powers of Ten*.^[37] In fact Google Earth was at least partly inspired by a Silicon Graphics demo called "From Outer Space to in Your Face" which zoomed from space into the Swiss Alps then into the Matterhorn.^[38] This launch demo was hosted by an Onyx 3000 with InfiniteReality4^[39] graphics, which supported Clip Mapping and was inspired by the hardware texture paging capability (although it did not use the Clip Mapping) and "Powers of Ten". The first Google Earth implementation called Earth Viewer emerged from Intrinsic Graphics as a demonstration of Chris Tanner's software based implementation of a Clip Mapping texture paging system and was spun off as Keyhole Inc. Earth Viewer was the inevitable ultimate realization of the capabilities of a seamless texture paging system and many of the individuals working on Earth Viewer were Silicon Graphics alumni.

Technical specifications

Detailed release notes/history/changelog are made available by Google.^[40]

Imagery and coordination

- Coordinate System and Projection
 - The internal coordinate system of Google Earth is geographic coordinates (latitude/longitude) on the World Geodetic System of 1984 (WGS84) datum.
 - Google Earth shows the earth as it looks from an elevated platform such as an airplane or orbiting satellite. The projection used to achieve this effect is called the General Perspective. This is similar to the Orthographic projection, except that the point of perspective is a finite (near earth) distance rather than an infinite (deep space) distance.
- Baseline resolutions
 - Czech Republic: 0.1 - 0.5 m (by Eurosense / Geodis Brno)
 - Slovakia: 0.5 m (by Eurosense / Geodis Slovakia)

- Hungary: 2.5 m SPOT Images. Budapest approx. 0,3 m.
- Germany, Switzerland, Netherlands, Denmark, U.K., Andorra, Luxembourg, Liechtenstein, San Marino, Vatican City: 1 m or better
- Balkans: 2.5 m (medium resolution)
- U.S.: 1 m (excludes Alaska & Hawaii)
- Global: Generally 15 m (some areas, such as Antarctica, are in extremely low resolution), but this depends on the quality of the satellite/aerial photograph uploaded.
- Typical high resolutions
 - Europe: 0.3 m, 0.15 m (e.g. Berlin, Zürich, Hamburg), 0.1 m Prague
 - U.S.: 1 m, 0.6 m, 0.3 m, 0.15 m (extremely rare; e.g. Cambridge and Google Campus, or Glendale)
- Altitude resolution:
 - Surface: varies by country
 - Seabed: Not previously applicable, but since the introduction of "Ocean", elevation data has been introduced (a colorscale approximating sea floor depth is "printed" on the spherical surface at views from high altitudes).
- Age: Images dates vary. The image data can be seen from squares made when DigitalGlobe Coverage is enabled. The date next to the copyright information is not the correct image date. Zooming in or out could change the date of the pictures. Most of the international urban image dates are from 2004 and have not been updated. However, most US images are kept current. Google announces imagery updates on their LatLong Blog^[41] in form of a quiz, with hints of the updated locations. The answers are posted some days later in the same blog.

Hardware and software

Google Earth is unlikely to operate on older hardware configurations. The most recent system requirements update^[42] document these minimum configurations:

- Pentium 3, 500MHz
- 256 Megabytes of RAM
- 400 MB free disk space
- Network speed: 128 kbit/s
- 16MB 3D-capable graphics card
- Resolution of 1024x768, 16-bit High Color
- Windows XP, Windows 2000, Windows Vista, Windows 7, Linux or Mac OS X

The most likely cause of failure is insufficient video RAM: the software is designed to warn the user if their graphics card is not able to support Earth (this often occurs due to insufficient Video RAM or buggy graphics card drivers). The next most likely mode of failure is Internet access speed. Fast broadband Internet (Cable, DSL, T1, etc.) is required.

Linux specifications

Minimum System Requirements

[43]

- Kernel: 2.4 or later
- CPU: Pentium III, 500 MHz
- System Memory (RAM): 128 MB
- Hard Disk: 400 MB free space
- Network Speed: 128 kbit/s
- Screen: 1024x768, 16 bit color
- Tested and works on the following distributions:

- Ubuntu 5.10 or later
- SUSE 10.1 or later
- Fedora Core 4 or later
- Linspire 5.1
- Gentoo 2006.0
- Debian 3.1/4
- Red Hat 9
- Slackware 11.0
- FreeBSD 6.1/7.0 with Linux Emulation
- Arch Linux 0.7.2 Duke
- Xandros 3.0.3 Business Edition
- Mandriva 2007
- Sabayon Linux 3.26
- PCLinuxOS 5.0
- PC/OS 7.10

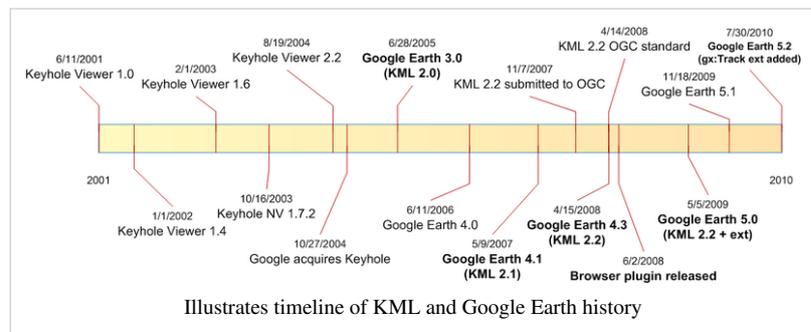
Web browsing

As of Google Earth 5, the contents of description balloons, which are created in KML using JavaScript and iFrames, are rendered with an embedded WebKit engine.^[44]

Versions and variations

Release timeline

- Keyhole Earthviewer 1.0 - June 11, 2001
- Keyhole Earthviewer 1.4 - January 1, 2002
- Keyhole Earthviewer 1.6 - February 2003
- Keyhole LT 1.7.1 - August 26, 2003
- Keyhole NV 1.7.2 - October 16, 2003
- Keyhole 2.2 - August 19, 2004
- Google Earth 3.0 - June 28, 2005
- Google Earth 4.0 - June 11, 2006
- Google Earth 4.1 - May 9, 2007
- Google Earth 4.2 - August 23, 2007
- Google Earth 4.3 - April 15, 2008
- Google Earth 5.0 - May 5, 2009
- Google Earth 5.1 - November 18, 2009
- Google Earth 5.2 - July 30, 2010
- Google Earth 6.0 - November 29, 2010



Mac version

A version for Mac OS X was released on January 10, 2006, and is available for download from the Google Earth website. With a few exceptions noted below, the Mac version appears to be stable and complete, with virtually all the same functionality as the original Windows version.

Screenshots and an actual binary of the Mac version had been leaked to the Internet on December 8, 2005. The leaked version was significantly incomplete. Among other things, neither the Help menu nor its "Display License" feature worked, indicating that this version was intended for Google's internal use only. Google released no statement regarding the leak.

The Mac version runs only under Mac OS X version 10.4 or later. There is no embedded browser, no direct interface to Gmail and no full screen option. As of January 2009 there are a few bugs concerning the menu bar when

switching between applications and a few bugs concerning annotation balloons and printing.

From version 4.1.7076.4558 (released on May 9, 2007) onward Mac OS X users can, among other new features, upgrade to the "Plus" version via an option in the Google Earth menu.^[45] Some users reported difficulties with Google Earth crashing in the then current version when zooming in.^[46]

Linux version

Starting with the version 4 beta Google Earth functions under Linux, as a native port using the Qt-toolkit. It is proprietary software specifically in order to impose Digital Rights Management; the Free Software Foundation consider the development of a free compatible client for Google Earth to be a High Priority Free Software Project.^[47]

Android version

An Android version was released on Monday, February 22, 2010.^[48]

iOS version

A version for the iOS, which runs on the iPhone, iPod Touch and the iPad, was released for free on the App Store on October 27, 2008.^[49] ^[50] It makes use of the multi-touch interface to move on the globe, zoom or rotate the view, and allow to select the current location using the iPhone integrated Assisted GPS. This version, however, does not feature layers like computer versions do. Like Google Maps, it only integrates the Wikipedia and Panoramio layers.^[51]

Google Earth Plus

Discontinued in December 2008, Google Earth Plus was an individual-oriented paid subscription upgrade to Google Earth that provided customers with the following features, most of which are now available in the free Google Earth:

- **GPS integration:** read tracks and waypoints from a GPS device. A variety of third party applications have been created which provide this functionality using the basic version of Google Earth by generating KML or KMZ files based on user-specified or user-recorded waypoints. However, Google Earth Plus provides direct support for the Magellan and Garmin product lines, which together hold a large share of the GPS market.
The Linux version of the Google Earth Plus application does not include any GPS functionality.
- Higher resolution printing.
- Customer support via email.
- **Data importer:** read address points from CSV files; limited to 100 points/addresses. A feature allowing path and polygon annotations, which can be exported to KML, was formerly only available to Plus users, but was made free in version 4.0.2416.
- Higher data download speeds

Google Earth Pro

For a \$399 annual subscription fee, Google Earth Pro is a business-oriented upgrade to Google Earth that has more features than the Plus version. The Pro version includes add-on software such as:

- Movie making.
- GIS data importer.
- Advanced printing modules.
- Radius and area measurements

Originally, these features cost extra in addition to the \$399 fee, but more recently have been included in the package.

Unlike the free version of Google Earth, the professional version does not work on Linux.

Google Earth Enterprise

Google Earth Enterprise is a version of Google Earth designed for use by organizations whose businesses could take advantage of the program's capabilities.^[52]

Automotive version

An automotive version of Google Earth will be available in 2010 in the new Audi A8.^[53]

Google Earth Plug-in

The Google Earth API is a free beta service, available for any web site that is free to consumers. The Plug-in and its JavaScript API allows users to place a version of Google Earth into web pages. The API does not have all the features of the full Google Earth Application but enables sophisticated 3D map applications to be built.

The Google Earth Plug-in is currently available for the following web browsers and operating systems:

Microsoft Windows (2000, XP, Vista, and 7)

- Google Chrome 1.0+
- Internet Explorer 6.0+
- Firefox 2.0+
- Flock 1.0+

Apple Mac OS X 10.4 and higher (Intel and PowerPC)

- Safari 3.1+
- Firefox 3.0+

To date the plug-in supports the following layers:

- Terrain
- Roads
- Buildings
- Borders
- 3-D Buildings

It also supports 'Sky Mode', 'Photo Overlays', and provides much of the same controls and information bar as the full application.

- Google Earth Plug-in ^[54]
 - Google Earth API ^[55]
-

Resolution and accuracy

Most land areas are covered in satellite imagery with a resolution of about 15 m per pixel. This base imagery is 30m multispectral Landsat which is pancharpened with the 15m [panchromatic] Landsat imagery. However, Google is actively replacing this base imagery with 2.5m SPOTImage imagery and several higher resolution datasets mentioned below. Some population centers are also covered by aircraft imagery (orthophotography) with several pixels per meter. Oceans are covered at a much lower resolution, as are a number of islands; notably, the Isles of Scilly off southwest United Kingdom, were at a resolution of about 500 m or less, however this has now been addressed.

Google has resolved many inaccuracies in the vector mapping since the original public release of the software, without requiring an update to the program itself. An example of this was the absence from Google Earth's map boundaries of the Nunavut territory in Canada, a territory that had been created on April 1, 1999; this mistake was corrected by one of the data updates in early 2006. Recent updates have also increased the coverage of detailed aerial photography, particularly in certain areas of western and central Europe.

The images are not all taken at the same time, but are generally current to within three years. However with the release of Google Earth 5.0, it has historical images dating back to the 1940s in some spots. Image sets are sometimes not correctly stitched together. Updates to the photographic database can occasionally be noticed when drastic changes take place in the appearance of the landscape, for example Google Earth's incomplete updates of New Orleans following Hurricane Katrina, or when placemarks appear to shift unexpectedly across the Earth's surface. Though the placemarks have not in fact moved, the imagery is composed and stitched differently. Such an update to London's photography in early 2006 created shifts of 15–20 metres in many areas, noticeable because the resolution is so high.

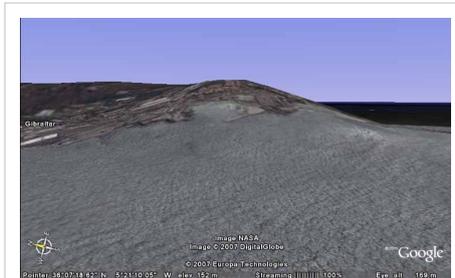
Place name and road detail vary greatly from place to place. They are most accurate in North America, Europe and Australia, but regular mapping updates are improving coverage elsewhere.

Errors sometimes occur due to the technology used to measure the height of terrain; for example, tall buildings in Adelaide, Australia cause one part of the city to be rendered as a small mountain, when it is in fact flat. Also, in Downtown Los Angeles, there is a large hill in the approximate location of Bunker Hill, where many of the skyscrapers are located. The height of the Eiffel Tower creates a similar effect in the rendering of Paris. Also, prior to the release of version 5.0 in February 2009, elevations below sea level were presented as sea level, for example: Salton City, California; Death Valley; and the Dead Sea were all listed as 0 m when Salton City is –38 m; Death Valley is –86 m; and the Dead Sea is –420 m.

Where no 3 arc second digital elevation data was available, the three dimensional images covering some areas of high relief are not at all accurate, but most mountain areas are now well mapped. The underlying digital elevation



The Isles of Scilly, showing the very low resolution of some islands. The islands (green area) are about 10 km across. (This is now improved.) 49°56'10.81"N 6°19'22.88"W



The west side of Gibraltar (UK), tilted view showing the sea rising up the Rock of Gibraltar - claimed altitude of the sea just off the beach at Elliott's Memorial, 252 m. This is now fixed. 36°6'59.6"N 5°21'5.2"W



Mount Tamalpais, detail of parcel-scale 40cm-gridded terrain in good registration with 30cm-pixel aerial photo. 37°57'22"N 122°34'06"W

model has been placed 3 arc seconds too far north and up to 3 arc seconds too far west. This means that some steep mountain ridges incorrectly appear to have shadows extending over onto their south facing sides. Some high resolution images have also been misplaced, an example is the image covering Annapurna, which is misplaced by about 12 arc seconds. Elevation data was recently updated to 10-meter (1/3-arc-second) resolution for much of the United States from the previous 30-meter (1-arc-second) resolution.

In some areas, local government jurisdictions have submitted more finely gridded terrain models through the Map Content Partners program.^[56] In March 2010, the County of Marin, just north of the Golden Gate Bridge by San Francisco, California, published a 40 cm gridded terrain surface of 1425 square km through the program.

The "Measure" function shows that the length of equator is about 40,030.24 km, giving an error of -0.112% compared with the actual value of 40,075.02 km Earth; for the meridional circumference, it shows a length of about 39,963.13 km, also giving an error of -0.112% compared with the actual value of 40,007.86 km.

On December 16, 2007, most of Antarctica was updated to a 15 m resolution using imagery from the Landsat Image Mosaic of Antarctica; (1m resolution images of some parts of Antarctica were added in June 2007); however, the Arctic polar ice cap is completely absent from the current version of Google Earth, as are waves in the oceans. The geographic North Pole is found hovering over the Arctic Ocean and the tiling system produces artifacts near the poles as the tiles become 'infinitely' small and rounding errors accumulate.

Cloud cover and shadows can make it difficult or impossible to see details in some land areas, including the shadow side of mountains.

Controversy and criticism

The software has been criticized by a number of special interest groups, including national officials, as being an invasion of privacy and even posing a threat to national security. The typical argument is that the software provides information about military or other critical installations that could be used by terrorists. The following is a selection of such concerns:

- Former Indian president APJ Abdul Kalam expressed concern over the availability of high-resolution pictures of sensitive locations in India.^[57] Google subsequently agreed to censor such sites.^[58]
- The Indian Space Research Organisation said Google Earth poses a security threat to India, and seeks dialogue with Google officials.^[59]
- The South Korean government expressed concern that the software offers images of the presidential palace and various military installations that could possibly be used by their hostile neighbor North Korea.^[60]
- In 2006, one user spotted a large topographical replica in a remote region of China. The model is a small-scale (1/500) version of the Karakoram Mountain Range, currently under the control of China but claimed by India. When later confirmed as a replica of this region, spectators began entertaining military implications.^{[61] [62]}
- Operators of the Lucas Heights nuclear reactor in Sydney, New South Wales, Australia asked Google to censor high resolution pictures of the facility.^[63] However, they later withdrew the request.^[64]
- In July 2007, it was reported that a new Chinese navy Jin-class nuclear ballistic missile submarine was photographed at the Xiaopingdao Submarine Base south of Dalian.^[65]
- Hamas and the al-Aqsa Martyrs' Brigades have reportedly used Google Earth to plan Qassam rocket attacks on Israel from Gaza (See: List of Qassam rocket attacks.)^{[66] [67]}
- The lone surviving gunman involved in the 2008 Mumbai attacks admitted to using Google Earth to familiarise themselves with the locations of buildings used in the attacks.^[68]
- Michael Finton used Google Earth in planning his attempted September 24, 2009, bombing of the Paul Findley Federal Building and the adjacent offices of Congressman Aaron Schock in Springfield, Illinois.^[69]
- In 2009, Google superimposed old woodblock prints of maps from 18th and 19th century Japan over Japan today. These maps marked areas inhabited by the **burakumin** caste, who were considered "non-humans" for their "dirty" occupations, including leather tanning and butchery. Descendants of members of the burakumin caste still

face discrimination today and many Japanese people feared that some would use these areas, labeled **etamura** (穢多村, *translation: "village of the filthy masses"*), to target current inhabitants of them. These maps are still visible on Google Earth, but with the label removed where necessary.^[70]

Countries where Google Earth is Blocked:

Country	By Whom	Reason	Since When	Source
Bahrain	Bahrain government	Unknown	2006	[71]
Turkey	TIB(Telecommunication communication office)	Unknown	2010	[72]
Iran	Google	US government export restrictions	2007	[73]
Morocco	Maroc Telecom, the most popular service provider	Unknown	2006	[74]
Sudan	Google	US government export restrictions	2007	[75]

Some citizens may express concerns over aerial information depicting their properties and residences being disseminated freely. As relatively few jurisdictions actually guarantee the individual's right to privacy, as opposed to the state's right to secrecy, this is an evolving, but minor, point. Perhaps aware of these critiques,^[76] for a time, Google had Area 51 (which is highly visible and easy to find) in Nevada as a default placemark when Google Earth is first installed.

As a result of pressure from the United States government, the residence of the Vice President at Number One Observatory Circle was obscured through pixelization in Google Earth and Google Maps, but has since been lifted. The usefulness of this downgrade is questionable, as high-resolution photos and aerial surveys of the property are readily available on the Internet elsewhere.^[77] Capitol Hill used to also be pixelized in this way, but this was lifted. The Royal Stables in The Hague, Netherlands used to be pixelized as well, but was partially lifted. If one zooms in too close to the Stables, it is still pixelized.



Blurred out image of the Royal Stables in The Hague, Netherlands. This has since been partially lifted.

Critics have expressed concern over the willingness of Google to cripple their dataset to cater to special interests, believing that intentionally obscuring any land goes against its stated goal of letting the user "point and zoom to any place on the planet that you want to explore".^[78]

In the United Kingdom, critics have also argued that Google Earth has lead the vandalism of private property, highlighting the graffiti of a penis being drawn on the roof of a house near Hungerford,^[79] on the roof of Yarm School at Stockton on Tees^[80] and on the playing fields of a school in Southampton^[81] as examples of this.

In Hazleton, Pennsylvania, media attention and critics focused on Google Earth once more because of the defacing of the Hazleton Area Highschool Football field. Grass was removed to create the image of a penis approximately 35 yards long and 20 yards wide.^[82]

Recent versions of Google Earth require a software component running in the background that will automatically download and install updates. Several users expressed concerns that there is not an easy way to disable this updater, as it currently runs without the permission of the user.^[83]

Copyright

Currently, every image created from Google Earth using satellite data provided by Google Earth is a copyrighted map. Any derivative from Google Earth is made from copyrighted data which, under United States Copyright Law, may not be used except under the licenses Google provides. Google allows non-commercial personal use of the images (e.g. on a personal website or blog) as long as copyrights and attributions are preserved.^[84] By contrast, images created with NASA's globe software World Wind use the Blue Marble, Landsat or USGS layer, each of which is a terrain layer in the public domain. Works created by an agency of the United States government are public domain at the moment of creation. This means that those images can be freely modified, redistributed and used for commercial purposes.

Layers

Google Earth also features many layers as a source for information on businesses and points of interest, as well as showcasing the contents of many communities, such as Wikipedia, Panoramio and YouTube. Google updates with new layers often. Many Google Earth layers, such as Panoramio and Google Earth Community layers, are updated daily with entries from the respective websites.

Borders and labels

Contains borders for countries/provinces and shows placemarks for cities and towns.

- *Borders: Marks international borders with a thick yellow line, 1st level administrative borders (generally provinces and states) with a lavender line, and 2nd level administrative borders (counties) with a cyan line. Coastlines appear as a thin yellow line. Displays names of countries, 1st level administrative areas, and islands.*
- *Labels: Displays labels for large bodies of water, such as oceans, seas, and bays, and populated places.*

Places of interest

A collection of business listings provided by many local services.

Panoramio

Shows many of the most relevant pictures uploaded onto Panoramio's website

Roads

Displays available road networks. The colors and signs displayed vary depending on the type of roadway.

- Limited-access freeways and tollways that are part of widespread networks such as the International E-road network, United States Interstate Highways and many other national road networks are represented by orange lines.
- Other freeways are marked with pale orange lines.
- Some roads in Japan are indigo.
- Other important roads, generally those most travelled, highest capacity, or bearing a road number, are labeled with yellow lines.
- All other roads are labeled white.
- Some pedestrian walkways and private roads are signified by transparent white lines, especially when greatly resembling a road intended for public automotive traffic.

Buildings in 3D

Shows many 3D computer building models in many cities, in these styles:

- Photorealistic: *Shows many buildings in a realistic style, with more complex polygons and surface images.*
- Gray: *Low-detail models of city buildings designed for computers that may not have the capability of showing the photorealistic models.*

In 2009, in a unique collaboration between Google and the Museo del Prado in Madrid, the museum selected 14 of its most important paintings to be photographed and displayed at the ultrahigh resolution of 14,000 megapixels inside the 3D version of the Prado in Google Earth and Google Maps.^[85] ^[86]

Google Street View

Shows placemarks with 360 degree panoramic views of streets of many cities in Australia, France, the United Kingdom, Republic of Ireland, Italy, Japan, New Zealand, Spain, the United States, and recently Portugal, the Netherlands, Taiwan, Switzerland, Canada, Mexico, Sweden, Norway, South Africa and Finland.

Weather

- Clouds - *Displays cloud cover based on data from both geostationary and low Earth-orbiting satellites. The clouds appear at their calculated elevation, determined by measuring the cloud top temperature relative to surface temperature.*^[87]
- Radar - *Displays weather radar data provided by weather.com and Weather Services International, updating every 5–6 minutes.*^[87]
- Conditions and Forecast - *Displays local temperatures and weather conditions. Clicking on an indicator displays a full local forecast provided by weather.com.*^[87]
- Information - *Clicking Information allows users to further read up on where Google Earth gets weather information.*^[87]

Gallery

- Ancient Rome: *Launched by Google on November 12, 2008.*
- Discovery Networks: *Shows geographical information from the Discovery Channel.*
- European Space Agency: *Shows many satellite images taken of Earth.*
- Gigapan Photos: *Images from Google's Gigapan project.*
- Gigapxl Photos: *Photographs taken using Gigapxl.*
- Google Book Search: *An application of the Google Book search in Google Earth.*
- Google Earth Community: *User developed content hosted on Google's official Google Earth Community Forum.*
- Google News: *Shows news stories from many worldwide news sources.*
- NASA: *A showcase of many satellite images, overlays and features from NASA.*
- National Geographic Magazine: *Shows many features from the National Geographic Magazine.*
- New York Times: *A collection of news stories from the popular New York City newspaper.*
- Rumsey Historical Maps: *Shows a collection of historic maps, dating back to the 1600s.*
- Travel and Tourism
 - 100% Pure New Zealand
 - Egypt Tourism
 - Japan Tourism
 - Korea Tourism
 - Kyoto Tourism
 - South Africa Tourism
 - Turn Here: City Video Guides

- Walt Disney World Resort
- Trimble Outdoor Trips: *A collection of hiking trails with recordings.*
- Volcanoes
- Webcams.travel: *A collection of webcams around the world*
- YouTube: *A collection of popular videos on YouTube.*

Global awareness

A collection of services spreading global awareness. The layer was provided by Google Earth Outreach.

- Appalachian Mountaintop removal
- ARKive: Endangered species
- Earthwatch Expeditions
- Fair Trade Certified
- Global Heritage Fund
- Greenpeace
- Jane Goodall's Gombe Chimpanzee Blog
- The Earth from Above with Goodplanet
- The Elders: Every Human Has Rights
- UNDP: Millennium Development Goals Monitor
- UNEP: Atlas of our Changing Environment
- Unicef: Water and Sanitation
- USHMM: World is Witness
- USHMM: Crisis in Darfur
- WaterAid
- WWF Conservation Projects

Ocean

- Explore the Ocean
 - National Geographic
 - Magazine Quiz
 - Ocean Atlas
 - BBC Earth
 - Cousteau Ocean World
 - Ocean Sports
 - Surf Spots
 - Dive Spots
 - Kite Surfing Spots
 - Shipwrecks
 - Ocean Expeditions
 - Marine Protected Area [88]
 - ARKive: Endangered Ocean Species
 - State of the Ocean
 - Animal Tracking
 - Census of Marine Life
 - Marie Tharp Historical Map
 - Underwater Features
-

Sky layers

Layers for Google Sky.

- **Welcome to Sky:** An introduction to the Sky mode.
- **Current Sky Events**
 - **Earth & Sky Podcasts**
 - **Hubblecast**
 - **StarDate** by the University of Texas
 - **VOEventNET**
- **Our Solar System:** Shows locations, orbits and information of the Solar System.
- **Backyard Astronomy:** Shows information about constellations and other space sights visible from a backyard telescope.
- **Featured Observatories**
 - **Hubble Showcase**
 - **Spitzer Infrared Showcase**
 - **GALEX Ultraviolet Showcase**
 - **Chandra X-Ray Showcase**
 - **WMAP Microwave Showcase**
 - **IRAS Infrared Sky**
- **Education Center**
 - **Celestron SkyScout Audio**
 - **Virtual Tourism**
 - **User's Guide to Galaxies**
 - **Life of a Star**
- **Historical Sky Maps**
 - **Rumsey Star Maps**
 - **Hevelius Constellations**
- **Sky Community:** Posted KML files in the Sky forum in the Google Earth Community.

Mars layers

- Featured Satellite Images
- Place Names
- Global Maps
- Spacecraft Imagery
- Mars Gallery
 - Rovers and Landers
 - A Traveler's Guide to Mars

See also

- NASA World Wind
- Bhuvan
- Bing Maps for Enterprise (previously Microsoft Virtual Earth)
- Marble (KDE)
- Geoweb
- Monster Milktruck, a game played using Google Earth technology
- Oracle Spatial
- Orthophotomap
- *Planet Google*, a book by Randall Stross about Google and its products, including Earth.
- Web mapping

Image providers

- CNES
- DigitalGlobe — the provider of high resolution imagery to Google Earth
- EarthSat
- First Base Solutions
- GeoEye-1 (ORBVIEW-3's successor)
- GlobeXplorer
- IKONOS (ORBVIEW-2 is successor)
- Pictometry
- Spot Image
- TerraLook

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External links

Official and related sites

- Official website (<http://http://earth.google.com/>)
- Google LatLong (<http://google-latlong.blogspot.com>) - News and notes by the Google Earth and Maps team

Unofficial guides and tips

- Google Earth Germany (<http://www.globezoom.info/wbb2/hmportal.php/>): Germany's Google Earth Portal
- Google's Earth (<http://www.googlesearth.com/>): Tips and Insight for Google Earth users, currently placed under the responsibility of a court-appointed receiver by the United States District Court for the Southern District of Florida.
- Google Earth Blog (<http://www.gearthblog.com/>): Google Earth news and updates
- Google Sightseeing (<http://googlesightseeing.com/>) - Guide to interesting and unusual sights
- Ogle Earth (<http://www.ogleearth.com/>) - Google Earth news site charting innovative uses and political implications of Google Earth
- Google Earth in Education (<http://www.jogtheweb.com/play/vWtFwfVndYCs>) - A guided tour by a teacher for teachers, students and all.
- Google Earth 2 Mapsource (<http://googleearth2mapsource.wikispaces.com/>) Edit GPS tracks in Mapsource and Google Earth.

Placemarks and overlays

- North Korea Uncovered (<http://www.nkeconwatch.com/north-korea-uncovered-google-earth/>) - An extensive mapping of North Korea's economic, cultural, political, and military infrastructures, featured in the Wall Street Journal (<http://online.wsj.com/article/SB124295017403345489.html/>).
- Google Earth Hacks (<http://www.gearthhacks.com/>) - A collection of over 25,000 files for use with Google Earth
- King's College London's Collection of KML databases (<http://www.kcl.ac.uk/geodata>)
- STScI's community contributions to Sky website (http://hubblesite.org/explore_astronomy/gsky/)
- Google Earth Anomalies (<http://www.googleearthanomalies.com/>)- Satellite imagery of documented, scientific anomaly sites including mound sites and unexplained circular features via Google Earth

Tools

- GeoServer (<http://docs.codehaus.org/display/GEOSDOC/Google+Earth>) - Server to generate KML from Shapefiles, ArcSDE, Oracle, PostGIS, MySQL, GeoTiff, ArcGrid, with support for Network links, superoverlays, time and custom pop-ups.
- GPSVisualizer (<http://www.gpsvisualizer.com/map?form=googleearth>) - Will convert GPS data for use in Google Earth.
- GoogleEarthToolbox (<http://googleearthtoolbox.googlecode.com>) - Matlab & Octave functions that output KML.
- PlaceSurf (<http://placesurf.com>) - Dynamic KML file generator

YouTube

	
Type	Subsidiary, limited liability company
Founded	February 2005
Founder	Steve Chen Chad Hurley Jawed Karim
Headquarters	901 Cherry Ave, San Bruno, California, United States
Area served	Worldwide
Key people	Salar Kamangar, CEO Chad Hurley, Advisor
Owner	YouTube LLC (2005–06) Google Inc. (2006–present)
Slogan	Broadcast Yourself
Website	[youtube.com youtube.com] (see list of localized domain names)
Alexa rank	 3 (July 2010) ^[1]
Type of site	video hosting service
Advertising	Google AdSense
Registration	Optional
Available in	34 languages available through user interface ^[2]
Launched	February 14, 2005
Current status	Active

YouTube is a video-sharing website on which users can upload, share, and view videos. Three former PayPal employees created YouTube in February 2005.^[3]

The company is based in San Bruno, California, and uses Adobe Flash Video technology to display a wide variety of user-generated video content, including movie clips, TV clips, and music videos, as well as amateur content such as video blogging and short original videos. Most of the content on YouTube has been uploaded by individuals, although media corporations including CBS, BBC, Vevo and other organizations offer some of their material via the site, as part of the YouTube partnership program.^[4]

Unregistered users may watch videos, and registered users may upload an unlimited number of videos. Videos that are considered to contain potentially offensive content are available only to registered users 18 and older. In November 2006, YouTube, LLC was bought by Google Inc. for \$1.65 billion, and now operates as a subsidiary of Google.

Company history

YouTube was founded by Chad Hurley, Steve Chen, and Jawed Karim, who were all early employees of PayPal.^[5] Hurley had studied design at Indiana University of Pennsylvania, while Chen and Karim studied computer science together at the University of Illinois at Urbana-Champaign.^[6]



From left to right: Chad Hurley, Steve Chen, and Jawed Karim

According to a story that has often been repeated in the media, Hurley and Chen developed the idea for YouTube during the early months of 2005, after they had experienced difficulty sharing videos that had been shot at a dinner party at Chen's apartment in San Francisco. Karim did not attend the party and denied that it had occurred, while Hurley commented that the idea that YouTube was founded after a dinner party "was probably very strengthened by marketing ideas around creating a story that was very digestible."^[7]

YouTube began as a venture-funded technology startup, primarily from a US\$11.5 million investment by Sequoia Capital between November 2005 and April 2006.^[8] YouTube's early headquarters were situated above a pizzeria and Japanese restaurant in San Mateo, California.^[9] The domain name www.youtube.com was activated on February 14, 2005, and the website was developed over the subsequent months.^[10]

The first YouTube video was entitled *Me at the zoo*, and shows founder Karim at the San Diego Zoo.^[11] The video was uploaded on April 23, 2005, and can still be viewed on the site.^[12]

YouTube offered the public a beta test of the site in May 2005, six months before the official launch in November 2005. The site grew rapidly, and in July 2006 the company announced that more than 65,000 new videos were being uploaded every day, and that the site was receiving 100 million video views per day.^[13] According to data published by market research company comScore, YouTube is the dominant provider of online video in the United States, with a market share of around 43 percent and more than 14 billion videos viewed in May 2010.^[14] YouTube says that 35 hours of new videos are uploaded to the site every minute, and that around three quarters of the material comes from outside the US.^[15] ^[16] It is estimated that in 2007 YouTube consumed as much bandwidth as the entire Internet in 2000.^[17] Alexa ranks YouTube as the third most visited website on the Internet, behind Google and Facebook.^[18]

The choice of the name www.youtube.com led to problems for a similarly named website, www.utube.com. The owner of the site, Universal Tube & Rollform Equipment, filed a lawsuit against YouTube in November 2006 after being overloaded on a regular basis by people looking for YouTube. Universal Tube has since changed the name of its website to www.utubeonline.com.^[19] ^[20] In October 2006, Google Inc. announced that it had acquired YouTube for \$1.65 billion in Google stock, and the deal was finalized on November 13, 2006.^[21] Google does not provide detailed figures for YouTube's running costs, and YouTube's revenues in 2007 were noted as "not material" in a regulatory filing.^[22] In June 2008, a *Forbes* magazine article projected the 2008 revenue at \$200 million, noting progress in advertising sales.^[23]

In November 2008, YouTube reached an agreement with MGM, Lions Gate Entertainment, and CBS, allowing the companies to post full-length films and television episodes on the site, accompanied by advertisements in a section for US viewers called "Shows". The move was intended to create competition with websites such as Hulu, which features material from NBC, Fox, and Disney.^[24] ^[25] In November 2009, YouTube launched a version of "Shows" available to UK viewers, offering around 4,000 full-length shows from more than 60 partners.^[26] In January 2010, YouTube introduced an online film rentals service,^[27] which is currently available only to users in the US.^[28] ^[29]



YouTube's current headquarters in San Bruno, California

In March 2010, YouTube began free streaming of certain content, including 60 cricket matches of the Indian Premier League. According to YouTube, this was the first worldwide free online broadcast of a major sporting event.^[30]

On March 31, 2010, the YouTube website launched a new design, with the aim of simplifying the interface and increasing the time users spend on the site. Google product manager Shiva Rajaraman commented: "We really felt like we needed to step back and remove the clutter."^[31]

In May 2010, it was reported that YouTube was serving more than two billion videos a day, which it described as "nearly double the prime-time audience of all three major US television networks

combined."^[32] In October 2010, Google published its third quarter financial results for the year, which stated that YouTube was serving two billion videos a week accompanied by advertising.^[33]

In October 2010, Hurley announced that he would be stepping down as chief executive officer of YouTube to take an advisory role, and that Salar Kamangar would take over as head of the company.^[34]

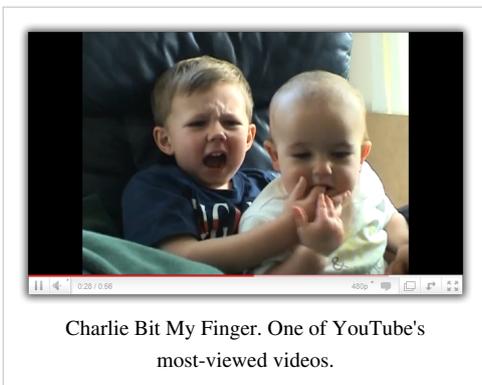
Social impact

Before the launch of YouTube in 2005, there were few easy methods available for ordinary computer users who wanted to post videos online. With its simple interface, YouTube made it possible for anyone with an Internet connection to post a video that a worldwide audience could watch within a few minutes. The wide range of topics covered by YouTube has turned video sharing into one of the most important parts of Internet culture.

An early example of the social impact of YouTube was the success of The Bus Uncle video in 2006. It shows a heated conversation between a youth and an older man on a bus in Hong Kong, and was discussed widely in the mainstream media.^[35] Another YouTube video to receive extensive coverage is *guitar*,^[36] which features a performance of Pachelbel's Canon on an electric guitar. The name of the performer is not given in the video. After it received millions of views *The New York Times* revealed the identity of the guitarist as Lim Jeong-hyun, a 23-year-old from South Korea who had recorded the track in his bedroom.^[37]



Jawed Karim in the first YouTube video, *Me at the zoo*



Charlie Bit My Finger. One of YouTube's most-viewed videos.

Charlie Bit My Finger is a viral video famous for formerly being the most viewed YouTube video of all time. It had over 245 million hits as of November 2010.^{[38] [39] [40]} The clip features the younger of two English brothers, Charlie (aged one) biting the finger of his older brother Harry, aged three.^[41] In their list of YouTube's 50 greatest viral videos of all time, *Time* ranked "Charlie Bit My Finger" at number one.^[42]

YouTube was awarded a 2008 Peabody Award and cited for being "a 'Speakers' Corner' that both embodies and promotes democracy."^{[43] [44]}

Entertainment Weekly put it on its end-of-the-decade "best-of" list. It said: "Providing a safe home for piano-playing cats, celeb goof-ups, and overzealous lip-synchers since 2005."^[45]

Criticism

Copyrighted material

YouTube has been criticized for failing to ensure that uploaded videos comply with copyright law. At the time of uploading a video, YouTube users are shown a screen with the message "Do not upload any TV shows, music videos, music concerts or advertisements without permission, unless they consist entirely of content that you created yourself".^[46] Despite this advice, there are still many unauthorized clips of copyrighted material on YouTube. YouTube does not view videos before they are posted online, and it is left to copyright holders to issue a takedown notice pursuant to the terms of the Digital Millennium Copyright Act.

Organizations including Viacom, Mediaset, and the English Premier League have filed lawsuits against YouTube, claiming that it has done too little to prevent the uploading of copyrighted material.^{[47] [48] [49]} Viacom, demanding \$1 billion in damages, said that it had found more than 150,000 unauthorized clips of its material on YouTube that had been viewed "an astounding 1.5 billion times". YouTube responded by stating that it "goes far beyond its legal obligations in assisting content owners to protect their works". Since Viacom filed its lawsuit, YouTube has introduced a system called Video ID, which checks uploaded videos against a database of copyrighted content with the aim of reducing violations.^{[50] [51]} In June 2010, Viacom's lawsuit against Google was rejected in a summary judgment, with U.S. federal Judge Louis L. Stanton stating that Google was protected by provisions of the Digital Millennium Copyright Act. Viacom announced its intention to appeal the ruling.^[52]

In August 2008, a U.S. court ruled in *Lenz v. Universal Music Corp.* that copyright holders cannot order the removal of an online file without first determining whether the posting reflected fair use of the material. The case involved Stephanie Lenz from Gallitzin, Pennsylvania, who had made a home video of her 13-month-old son dancing to Prince's song "Let's Go Crazy", and posted the 29-second video on YouTube.^[53]

Privacy

In July 2008, Viacom won a court ruling requiring YouTube to hand over data detailing the viewing habits of every user who has watched videos on the site. The move led to concerns that the viewing habits of individual users could be identified through a combination of their IP addresses and log in names. The decision was criticized by the Electronic Frontier Foundation, which called the court ruling "a set-back to privacy rights".^[54] U.S. District Court Judge Louis L. Stanton dismissed the privacy concerns as "speculative", and ordered YouTube to hand over documents totaling around 12 terabytes of data. Judge Stanton rejected Viacom's request that YouTube hand over the source code of its search engine, saying that it was a "trade secret."^{[55] [56]}

Controversial content

YouTube has also faced criticism over the offensive content in some of its videos. The uploading of videos containing defamation, pornography, and material encouraging criminal conduct is prohibited by YouTube's terms of service.^[57] Controversial areas for videos have included conspiracy theories, religion, Holocaust denial, and the Hillsborough Disaster, in which 96 football fans from Liverpool were crushed to death in 1989.^{[58] [59]}

YouTube relies on its users to flag the content of videos as inappropriate, and a YouTube employee will view a flagged video to determine whether it violates the site's terms of service.^[57] However, this procedure has been criticized by the United Kingdom government. In July 2008, the Culture and Media Committee of the House of Commons of the United Kingdom stated that it was "unimpressed" with YouTube's system for policing its videos, and argued that "Proactive review of content should be standard practice for sites hosting user-generated content." YouTube responded by stating:

We have strict rules on what's allowed, and a system that enables anyone who sees inappropriate content to report it to our 24/7 review team and have it dealt with promptly. We educate our community on the rules and include a direct link from every YouTube page to make this process as easy as possible for our

users. Given the volume of content uploaded on our site, we think this is by far the most effective way to make sure that the tiny minority of videos that break the rules come down quickly.^[60]

In October 2010, U.S. Congressman Anthony Weiner urged YouTube to take down from its website videos of imam Anwar al-Awlaki, tied to the accused Fort Hood shooter, Christmas Day bomber, and attempted Times Square bomber, and on the U.S. targeted killing list, saying that by hosting al-Awlaki's messages, "We are facilitating the recruitment of homegrown terror."^[61] British security minister Pauline Neville-Jones commented: "These Web sites would categorically not be allowed in the U.K. They incite cold-blooded murder, and as such are surely contrary to the public good." In November 2010, YouTube removed from its site some of the hundreds of videos featuring al-Awlaki's calls to *jihad* . It stated that it had removed videos that violated the site's guidelines prohibiting "dangerous or illegal activities such as bomb-making, hate speech and incitement to commit violent acts," or came from accounts "registered by a member of a designated foreign terrorist organization."^[62]

User comments

Most videos enable users to leave comments, and these have attracted attention for the negative aspects of both their form and content. When *Time* in 2006 praised Web 2.0 for enabling "community and collaboration on a scale never seen before", it added that YouTube "harnesses the stupidity of crowds as well as its wisdom. Some of the comments on YouTube make you weep for the future of humanity just for the spelling alone, never mind the obscenity and the naked hatred".^[63] *The Guardian* in 2009 described users' comments on YouTube as follows:

Juvenile, aggressive, misspelled, sexist, homophobic, swinging from raging at the contents of a video to providing a pointlessly detailed description followed by a LOL, YouTube comments are a hotbed of infantile debate and unashamed ignorance – with the occasional burst of wit shining through.^[64]

In September 2008, *The Daily Telegraph* commented that YouTube was "notorious" for "some of the most confrontational and ill-formed comment exchanges on the internet", and reported on YouTube Comment Snob, "a new piece of software that blocks rude and illiterate posts".^[65]

Blocking

Several countries have blocked access to YouTube:

- As of October 2010, YouTube is blocked in the People's Republic of China.^{[66] [67]}
- Morocco shut down access to YouTube in 2008.^[68]
- Thailand blocked YouTube between 2006 and 2007 due to offensive videos relating to King Bhumibol Adulyadej.^{[69] [70]}
- Turkey blocked access to YouTube between 2008 and 2010 after controversy over videos deemed insulting to Mustafa Kemal Atatürk.^{[71] [72] [73]} The block was lifted briefly but reimposed in November 2010.^[74]
- On December 3, 2006, Iran temporarily blocked access to YouTube, along with several other sites, after declaring them as violating social and moral codes of conduct. The YouTube block came after a video was posted online that appeared to show an Iranian soap opera star having sex.^[75] The block was later lifted and then reinstated after Iran's 2009 presidential election.^[76]
- On February 23, 2008, Pakistan blocked YouTube because of "offensive material" towards the Islamic faith, including display of the Danish cartoons of the prophet Muhammad.^[77] This led to a near global blackout of the YouTube site for around two hours, as the Pakistani block was inadvertently transferred to other countries. Pakistan lifted its block on February 26, 2008.^[78] Many Pakistanis circumvented the three-day block by using virtual private network software.^[79] In May 2010, following the Everybody Draw Mohammed Day, Pakistan again blocked access to YouTube, citing "growing sacrilegious content".^[80]
- On January 24, 2010, Libya blocked access to YouTube after it featured videos of demonstrations in the Libyan city of Benghazi by families of detainees who were killed in Abu Salim prison in 1996, and videos of family members of Libyan leader Muammar al-Gaddafi at parties. The blocking was criticized by Human Rights

Watch.^[81]

Some schools have blocked access to YouTube, citing the inability to determine what sort of video material might be accessed by students.^[82]

Features

Video technology

Playback

Viewing YouTube videos on a personal computer requires the Adobe Flash Player plug-in to be installed in the browser. The Adobe Flash Player plug-in is one of the most common pieces of software installed on personal computers and accounts for almost 75% of online video material.^[83]

In January 2010, YouTube launched an experimental version of the site that uses the built-in multimedia capabilities of web browsers supporting the HTML5 standard. This allows videos to be viewed without requiring Adobe Flash Player or any other plug-in to be installed.^{[84] [85]} The YouTube site has a page that allows supported browsers to opt in to the HTML5 trial. Only browsers that support HTML5 Video using the H.264 or WebM formats can play the videos, and not all videos on the site are available.^{[86] [87]}

Uploading

Videos uploaded to YouTube by standard account holders are limited to 15 minutes in duration. When YouTube was launched in 2005, it was possible to upload longer videos, but a ten-minute limit was introduced in March 2006 after YouTube found that the majority of videos exceeding this length were unauthorized uploads of television shows and films.^{[88] [89]} The 10-minute limit was increased to 15 minutes in July 2010.^[90] Partner accounts are permitted to upload longer videos, subject to acceptance by YouTube.^[91] File size is limited to 2 GB for uploads from YouTube web page, and to 20 GB if Java-based Advanced Uploader is used.

YouTube accepts videos uploaded in most container formats, including .AVI, .MKV, .MOV, .MP4, DivX, .FLV, and .ogg and .ogv. These include video formats such as MPEG-4, MPEG, and .WMV. It also supports 3GP, allowing videos to be uploaded from legacy mobile phones.^[92] Videos with progressive scanning or interlaced scanning can be uploaded, but for the best video quality, YouTube prefers interlaced videos to be deinterlaced prior to uploading. All the video formats on YouTube use progressive scanning.^[93]

Quality and codecs

YouTube originally offered videos at only one quality level, displayed at a resolution of 320x240 pixels using the H.263 Sorenson Spark codec, with mono MP3 audio.^[94] In June 2007, YouTube added an option to watch videos in 3GP format on mobile phones.^[95] In March 2008, a high quality mode was added, which increased the resolution to 480x360 pixels.^[96] In November 2008 720p HD support was added so the YouTube player was changed from a 4:3 aspect ratio to a widescreen 16:9. ^[97] With this new feature, YouTube began a switchover to H.264/MPEG-4 AVC as its default video codec. In November 2009, 1080p HD support was added. In July 2010, YouTube announced that it had launched a range of videos in 4k format, which allows a resolution of up to 4096x3072 pixels.^{[98] [99]}

YouTube videos are available in a range of quality levels. The former names of standard quality (SQ), high quality (HQ) and high definition (HD) have been replaced by numerical values representing the vertical resolution of the video. The default video stream is encoded in H.264/MPEG-4 AVC format, with stereo AAC audio.^[100]

Comparison of YouTube media encoding options

fmt value ^[1]		5	34	35	18	22	37	38	43	45	17
Default container		FLV			MP4				WebM ^[101]		3GP
Video	Encoding	H.263	MPEG-4 AVC (H.264)						VP8		MPEG-4 Visual
	Max width (pixels)	400	640	854	480	1280	1920	4096	854	1280	176
	Max height (pixels)	240	360	480	360	720	1080	3072	480	720	144
	Bitrate ^[2] (Mbit/s)	0.25	0.5	0.8 - 1	0.5	2	3.5 - 5	–	–	–	–
Audio	Encoding	MP3	AAC					Vorbis		AAC	
	Channels	1–2	2 (stereo)								
	Sampling rate (Hz)	22050	44100				48000		44100		
	Bitrate, kbit/s ^[2]	–	–	–	–	–	–	–	96	128	–

1 *fmt* is an undocumented URL parameter that allows selecting YouTube quality mode without using player user interface.

2 Approximate values based on statistical data; actual bitrate can be higher or lower due to variable encoding rate.^{[102] [103] [104] [105]}

3D videos

In a video posted on July 21, 2009,^[106] YouTube software engineer Peter Bradshaw announced that YouTube users can now upload 3D videos. The videos can be viewed in several different ways, including the common anaglyph (cyan/red lens) method which utilizes glasses worn by the viewer to achieve the 3D effect.^{[107] [108] [109]}

Content accessibility

One of the key features of YouTube is the ability of users to view its videos on web pages outside the site. Each YouTube video is accompanied by a piece of HTML, which can be used to embed it on a page outside the YouTube website. This functionality is often used to embed YouTube videos in social networking pages and blogs.^[110] Embedding, as well as ranking and commenting, can be disabled by the video owner.

YouTube does not usually offer a download link for its videos, and intends for them to be viewed through its website interface.^[111] A small number of videos, such as the weekly addresses by President Barack Obama, can be downloaded as MP4 files.^[112] Numerous third-party web sites, applications and browser plug-ins allow users to download YouTube videos.^[113] In February 2009, YouTube announced a test service, allowing some partners to offer video downloads for free or for a fee paid through Google Checkout.^[114]

Platforms

Some smartphones are capable of accessing YouTube videos, dependent on the provider and the data plan. YouTube Mobile was launched in June 2007, and uses RTSP streaming for the video.^[115] Not all of YouTube's videos are available on the mobile version of the site.^[116]

Since June 2007, YouTube's videos have been available for viewing on a range of Apple products. This required YouTube's content to be transcoded into Apple's preferred video standard, H.264, a process that took several months. YouTube videos can be viewed on devices including Apple TV, iPod Touch and the iPhone.^[117] A TiVo service update in July 2008 allowed the system to search and play YouTube videos.^[118] In January 2009, YouTube launched "YouTube for TV", a version of the website tailored for set-top boxes and other TV-based media devices with web browsers, initially allowing its videos to be viewed on the PlayStation 3 and Wii video game consoles.^{[119] [120]} In June 2009, YouTube XL was introduced, which has a simplified interface designed for viewing on a standard television screen.^[121]

Localization

On June 19, 2007, Google CEO Eric Schmidt was in Paris to launch the new localization system.^[122] The interface of the website is available with localized versions in 24 countries and a worldwide version.^[123] ^[124]

Country	Language	Launch date
 Argentina	Spanish	September 8, 2010 ^[123]
 Australia	English (Australia)	October 22, 2007 ^[125]
 Brazil	Portuguese (Brazil)	June 19, 2007 ^[122]
 Canada	English (Canada) and French (Canada)	November 6, 2007 ^[126]
 Czech Republic	Czech	October 9, 2008 ^[127]
 France	French	June 19, 2007 ^[122]
 Germany	German	November 8, 2007 ^[128]
 Hong Kong	English and Chinese (Traditional)	October 17, 2007 ^[129]
 Israel	Hebrew	September 16, 2008
 India	English (India) and Hindi	May 7, 2008 ^[130]
 Ireland	English (Ireland)	June 19, 2007 ^[122]
 Italy	Italian	June 19, 2007 ^[122]
 Japan	Japanese	June 19, 2007 ^[122]
 Korea	Korean	January 23, 2008
 Mexico	Spanish (Mexico)	October 11, 2007 ^[131]
 Netherlands	Dutch	June 19, 2007 ^[122]
 New Zealand	English (New Zealand)	October 22, 2007 ^[125]
 Poland	Polish	June 19, 2007 ^[122]
 Russia	Russian	November 13, 2007
 Spain	Spanish	June 19, 2007 ^[122]
 South Africa	English (South African)	May 17, 2010 ^[122]
 Sweden	Swedish	October 22, 2008
 Republic of China (Taiwan)	Chinese (Traditional)	October 18, 2007 ^[129]
 United Kingdom	English (United Kingdom)	June 19, 2007 ^[122]

The YouTube interface suggests which local version should be chosen on the basis of the IP address of the user. In some cases, the message "This video is not available in your country" may appear because of copyright restrictions or inappropriate content.^[132]

The interface of the YouTube website is available in 29 different languages, including Danish, Finnish, Greek, Hungarian, Slovene and Norwegian, which do not have local channel versions.^[2]

Plans for YouTube to create a local version in Turkey have run into problems, since the Turkish authorities asked YouTube to set up an office in Turkey, which would be subject to Turkish law. YouTube says that it has no intention

of doing this, and that its videos are not subject to Turkish law. Turkish authorities have expressed concerns that YouTube has been used to post videos insulting to Mustafa Kemal Atatürk and some material offensive to Muslims.^[133] ^[134]

In March 2009, a dispute between YouTube and the British royalty collection agency PRS for Music led to premium music videos being blocked for YouTube users in the United Kingdom. The removal of videos posted by the major record companies occurred after failure to reach agreement on a licensing deal. The dispute was resolved in September 2009.^[135] In April 2009, a similar dispute led to the removal of premium music videos for users in Germany.^[136]

April Fools

YouTube has featured an April Fools prank on the site on April 1 of every year since 2008:

- **2008:** All the links to the videos on the main page were redirected to Rick Astley's music video "Never Gonna Give You Up", a prank known as "Rickrolling".^[137] ^[138]
- **2009:** When clicking on a video on the main page, the whole page turned upside down. YouTube claimed that this was a new layout.^[139]
- **2010:** YouTube temporarily released a "TEXTp" mode, which translated the colors in the videos to random upper case letters. YouTube claimed in a message that this was done in order to reduce bandwidth costs by \$1 per second.^[140]

See also

- Alternative media
- CNN-YouTube presidential debates
- Comparison of video services
- Dailymotion Similar video sharing site located in Paris, France
- List of Internet phenomena
- List of YouTube personalities
- Motion picture rating system#YouTube YouTube ratings
- Viacom International Inc. v. YouTube, Inc.
- Viral video
- YouTube Awards
- YouTube Live
- YouTube Instant

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External links

- Official website (<http://http://www.youtube.com>)

pfl:YouTube

Web search engine

A **web search engine** is designed to search for information on the World Wide Web and FTP servers. The search results are generally presented in a list of results and are often called *hits*. The information may consist of web pages, images, information and other types of files. Some search engines also mine data available in databases or open directories. Unlike Web directories, which are maintained by human editors, search engines operate algorithmically or are a mixture of algorithmic and human input.

History

Timeline (full list)		
Year	Engine	Event
1993	W3Catalog	Launch
	Aliweb	Launch
	JumpStation	Launch
1994	WebCrawler	Launch
	Infoseek	Launch
	Lycos	Launch
1995	AltaVista	Launch
	Daum	Founded
	Open Text Web Index	Launch ^[1]
	Magellan	Launch
	Excite	Launch
	SAPO	Launch
	Yahoo!	Launch
1996	Dogpile	Launch
	Inktomi	Founded
	HotBot	Founded
	Ask Jeeves	Founded
1997	Northern Light	Launch
	Yandex	Launch
1998	Google	Launch
1999	AlltheWeb	Launch
	GenieKnows	Founded
	Naver	Launch
	Teoma	Founded
	Vivisimo	Founded
2000	Baidu	Founded
	Exalead	Founded
2003	Info.com	Launch

2004	Yahoo! Search	Final launch
	A9.com	Launch
	Sogou	Launch
2005	MSN Search	Final launch
	Ask.com	Launch
	GoodSearch	Launch
	SearchMe	Founded
2006	wikiseek	Founded
	Quaero	Founded
	Ask.com	Launch
	Live Search	Launch
	ChaCha	Beta Launch
	Guruji.com	Beta Launch
2007	wikiseek	Launched
	Sproose	Launched
	Wikia Search	Launched
	Blackle.com	Launched
2008	Powerset	Launched
	Picollator	Launched
	Viewzi	Launched
	Bluready.com	Launched
	Cuil	Launched
	Boogami	Launched
	LeapFish	Beta Launch
	Forestle	Launched
	VADLO	Launched
Duck Duck Go	Launched	
2009	Bing	Launched
	Yebol	Beta Launch
	Mugurdy	Closed due to a lack of funding
	Goby	Launched
2010	Yandex global (English)	Launched
	Cuil	Closed
	Blekko	Beta Launch

During the early development of the web, there was a list of webserver editors by Tim Berners-Lee and hosted on the CERN webserver. One historical snapshot from 1992 remains.^[2] As more webserver editors went online the central list could not keep up. On the NCSA site new servers were announced under the title "What's New!"^[3]

The very first tool used for searching on the Internet was Archie.^[4] The name stands for "archive" without the "v." It was created in 1990 by Alan Emtage, Bill Heelan and J. Peter Deutsch, computer science students at McGill University in Montreal. The program downloaded the directory listings of all the files located on public anonymous

FTP (File Transfer Protocol) sites, creating a searchable database of file names; however, Archie did not index the contents of these sites since the amount of data was so limited it could be readily searched manually.

The rise of Gopher (created in 1991 by Mark McCahill at the University of Minnesota) led to two new search programs, Veronica and Jughead. Like Archie, they searched the file names and titles stored in Gopher index systems. Veronica (*Very Easy Rodent-Oriented Net-wide Index to Computerized Archives*) provided a keyword search of most Gopher menu titles in the entire Gopher listings. Jughead (*Jonzy's Universal Gopher Hierarchy Excavation And Display*) was a tool for obtaining menu information from specific Gopher servers. While the name of the search engine "Archie" was not a reference to the Archie comic book series, "Veronica" and "Jughead" are characters in the series, thus referencing their predecessor.

In the summer of 1993, no search engine existed yet for the web, though numerous specialized catalogues were maintained by hand. Oscar Nierstrasz at the University of Geneva wrote a series of Perl scripts that would periodically mirror these pages and rewrite them into a standard format which formed the basis for W3Catalog, the web's first primitive search engine, released on September 2, 1993.^[5]

In June 1993, Matthew Gray, then at MIT, produced what was probably the first web robot, the Perl-based World Wide Web Wanderer, and used it to generate an index called 'Wandex'. The purpose of the Wanderer was to measure the size of the World Wide Web, which it did until late 1995. The web's second search engine Aliweb appeared in November 1993. Aliweb did not use a web robot, but instead depended on being notified by website administrators of the existence at each site of an index file in a particular format.

JumpStation (released in December 1993^[6]) used a web robot to find web pages and to build its index, and used a web form as the interface to its query program. It was thus the first WWW resource-discovery tool to combine the three essential features of a web search engine (crawling, indexing, and searching) as described below. Because of the limited resources available on the platform on which it ran, its indexing and hence searching were limited to the titles and headings found in the web pages the crawler encountered.

One of the first "full text" crawler-based search engines was WebCrawler, which came out in 1994. Unlike its predecessors, it let users search for any word in any webpage, which has become the standard for all major search engines since. It was also the first one to be widely known by the public. Also in 1994, Lycos (which started at Carnegie Mellon University) was launched and became a major commercial endeavor.

Soon after, many search engines appeared and vied for popularity. These included Magellan, Excite, Infoseek, Inktomi, Northern Light, and AltaVista. Yahoo! was among the most popular ways for people to find web pages of interest, but its search function operated on its web directory, rather than full-text copies of web pages. Information seekers could also browse the directory instead of doing a keyword-based search.

In 1996, Netscape was looking to give a single search engine an exclusive deal to be their featured search engine. There was so much interest that instead a deal was struck with Netscape by five of the major search engines, where for \$5Million per year each search engine would be in a rotation on the Netscape search engine page. The five engines were Yahoo!, Magellan, Lycos, Infoseek, and Excite.^[7]^[8]

Search engines were also known as some of the brightest stars in the Internet investing frenzy that occurred in the late 1990s.^[9] Several companies entered the market spectacularly, receiving record gains during their initial public offerings. Some have taken down their public search engine, and are marketing enterprise-only editions, such as Northern Light. Many search engine companies were caught up in the dot-com bubble, a speculation-driven market boom that peaked in 1999 and ended in 2001.

Around 2000, the Google search engine rose to prominence. The company achieved better results for many searches with an innovation called PageRank. This iterative algorithm ranks web pages based on the number and PageRank of other web sites and pages that link there, on the premise that good or desirable pages are linked to more than others. Google also maintained a minimalist interface to its search engine. In contrast, many of its competitors embedded a search engine in a web portal.

By 2000, Yahoo was providing search services based on Inktomi's search engine. Yahoo! acquired Inktomi in 2002, and Overture (which owned AlltheWeb and AltaVista) in 2003. Yahoo! switched to Google's search engine until 2004, when it launched its own search engine based on the combined technologies of its acquisitions.

Microsoft first launched MSN Search in the fall of 1998 using search results from Inktomi. In early 1999 the site began to display listings from Looksmart blended with results from Inktomi except for a short time in 1999 when results from AltaVista were used instead. In 2004, Microsoft began a transition to its own search technology, powered by its own web crawler (called msnbot).

Microsoft's rebranded search engine, Bing, was launched on June 1, 2009. On July 29, 2009, Yahoo! and Microsoft finalized a deal in which Yahoo! Search would be powered by Microsoft Bing technology.

How web search engines work

A search engine operates, in the following order

1. Web crawling
2. Indexing
3. Searching

Web search engines work by storing information about many web pages, which they retrieve from the html itself. These pages are retrieved by a Web crawler (sometimes also known as a spider) — an automated Web browser which follows every link on the site. Exclusions can be made by the use of robots.txt. The contents of each page are then analyzed to determine how it should be indexed (for example, words are extracted from the titles, headings, or special fields called meta tags). Data about web pages are stored in an index database for use in later queries. A query can be a single word. The purpose of an index is to allow information to be found as quickly as possible. Some search engines, such as Google, store all or part of the source page (referred to as a cache) as well as information about the web pages, whereas others, such as AltaVista, store every word of every page they find. This cached page always holds the actual search text since it is the one that was actually indexed, so it can be very useful when the content of the current page has been updated and the search terms are no longer in it. This problem might be considered to be a mild form of linkrot, and Google's handling of it increases usability by satisfying user expectations that the search terms will be on the returned webpage. This satisfies the principle of least astonishment since the user normally expects the search terms to be on the returned pages. Increased search relevance makes these cached pages very useful, even beyond the fact that they may contain data that may no longer be available elsewhere.

When a user enters a query into a search engine (typically by using key words), the engine examines its index and provides a listing of best-matching web pages according to its criteria, usually with a short summary containing the document's title and sometimes parts of the text. The index is built from the information stored with the data and the method by which the information is indexed. Unfortunately, there are currently no known public search engines that allow documents to be searched by date. Most search engines support the use of the boolean operators AND, OR and NOT to further specify the search query. Boolean operators are for literal searches that allow the user to refine and extend the terms of the search. The engine looks for the words or phrases exactly as entered. Some search engines provide an advanced feature called proximity search which allows users to define the distance between keywords. There is also concept-based searching where the research involves using statistical analysis on pages containing the words or phrases you search for. As well, natural language queries allow the user to type a question in the same form one would ask it to a human. A site like this would be ask.com.

The usefulness of a search engine depends on the relevance of the **result set** it gives back. While there may be millions of web pages that include a particular word or phrase, some pages may be more relevant, popular, or authoritative than others. Most search engines employ methods to rank the results to provide the "best" results first. How a search engine decides which pages are the best matches, and what order the results should be shown in, varies widely from one engine to another. The methods also change over time as Internet usage changes and new techniques evolve. There are two main types of search engine that have evolved: one is a system of predefined and

hierarchically ordered keywords that humans have programmed extensively. The other is a system that generates an "inverted index" by analyzing texts it locates. This second form relies much more heavily on the computer itself to do the bulk of the work.

Most Web search engines are commercial ventures supported by advertising revenue and, as a result, some employ the practice of allowing advertisers to pay money to have their listings ranked higher in search results. Those search engines which do not accept money for their search engine results make money by running search related ads alongside the regular search engine results. The search engines make money every time someone clicks on one of these ads.

Market share and wars

According to Hitbox,^[10] Google's worldwide popularity peaked at 82.7% in December, 2008. July 2009 rankings showed Google (78.4%) losing traffic to Baidu (8.87%), and Bing (3.17%). The market share of Yahoo! Search (7.16%) and AOL (0.6%) were also declining.

In the United States, Google held a 63.2% market share in May 2009, according to Nielsen NetRatings.^[11] In the People's Republic of China, Baidu held a 61.6% market share for web search in July 2009.^[12]

Search engine bias

Although search engines are programmed to rank websites based on their popularity and relevancy, empirical studies indicate various political, economic, and social biases in the information they provide.^[13] These biases could be a direct result of economic and commercial processes (e.g., companies that advertise with a search engine can become also more popular in its organic search results), and political processes (e.g., the removal of search results in order to comply with local laws).^[14] Google Bombing is one example of an attempt to manipulate search results for political, social or commercial reasons.

See also

- List of search engines
- Answer engine (question answering)
 - True Knowledge
 - Wolfram Alpha
- Collaborative search engine
- Enterprise search
- Internet
- Internet Search Engines and Libraries
- Metasearch engine
- Natural language search engine
- OpenSearch
- Search directory
- Search engine marketing
- Search engine optimization
- Search oriented architecture
- Selection-based search
- Semantic Web
- Social engine
- Social search
- Spell checker

- Web indexing
- Web search query
- Website Parse Template

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Further reading

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- *Information Retrieval: Implementing and Evaluating Search Engines* (<http://www.ir.uwaterloo.ca/book/>). MIT Press. 2010.

External links

- Search Engines (http://www.dmoz.org/Computers/Internet/Searching/Search_Engines/) at the Open Directory Project
- History of Search Engines (<http://www.searchenginehistory.com/>)
- Search Engines in every country in the world (<http://www.searchenginesindex.com/>)
- How Stuff Works explanation of Search Engines (<http://www.howstuffworks.com/search-engine.htm>)

User:Moonglum/ITEC30011

ITEC30011 is the official module code for a third year optional module offered at Nottingham Trent University^[1] (NTU). `__NOINDEX__` The module also has the official title of "The Internet, Computers & Society".

Students study a range of topics related to the Internet and digital technology. Sample topics would include Computer Mediated Communication (CMC), e-commerce, e-learning, e-government, economics, the impact of technology on various industries including the communication, music, movie (aka film), news gathering and the impact of so called Web 2.0 sites. Students are encouraged to focus on particular examples of the topics as found in the real world including; eBay, Facebook, Google, Tesco, Wikipedia, and YouTube.

The module is delivered via a mix of traditional face to face teaching and e-learning activities leading to a blended learning approach. The module makes use of the institutional Virtual Learning Environment (VLE), as well as a range of Web 2.0 services including a module blog based on the Blogger blogging service and YouTube as the host for videos that are embedded into the blog. The ITEC30011 module blog^[2] has undergone a number of revisions but currently (November 2010) includes feeds from the social bookmarking service Delicious and the social media site Twitter. Module staff also use a range of other technology services to enhance the learning and teaching experience; including Audioboo, BubbleTweet (third party video service for Twitter) and the photo sharing service Flickr. Many of these are used in an experimental or sporadic manner as the best way to leverage their pedagogic benefits are evaluated. This was recognised with the presentation of a national (UK) e-learning award to the module leader from the Economics Network^[3] based in Bristol, which is the Higher Education Academy^[4] (HEA) Subject Centre for Economics.

[1] <http://www.ntu.ac.uk>

[2] <http://phil-wane-ics.blogspot.com>

[3] <http://www.economicsnetwork.ac.uk/>

[4] <http://www.heacademy.ac.uk/>

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