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9B19M050

DUCKDUCKGO: REINVENTING THE INTERNET SEARCH

Nakul Parameswar, Jahnavi Maddipatla, and Sanjay Dhir wrote this case solely to provide material for class discussion. The authors do not intend to illustrate either effective or ineffective handling of a managerial situation. The authors may have disguised certain names and other identifying information to protect confidentiality.

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“To raise the standard of trust online”

– Mission Statement of DuckDuckGo

In 2008, in Paoli, Pennsylvania, United States, Gabriel Weinberg started the search engine DuckDuckGo with a vision of ensuring users’ online privacy by not tracking their Internet activity, removing spam, and providing instant answers to users’ search queries. Weinberg stated that DuckDuckGo was safe—even the government could not track users—because, by default, no user information was stored. This earned DuckDuckGo the reputation of being “the search engine that does not track you.”

On June 6, 2013, the *Guardian* reported that the US government had enabled the National Security Agency (NSA) to collect all business records on a daily basis from Verizon Wireless (Verizon) under the *Patriot Act*. In 2017, Google LLC was fined US$2.7 billion[[1]](#footnote-1) by the European Commission for antitrust violations.[[2]](#footnote-2) The Competition Commission of India also fined Google, concluding that Google searches were biased in demoting new entrants and competitors in the market.[[3]](#footnote-3) The Commission fined the company $20 million. These revelations made people cautious, and new privacy laws came into existence. Yet people were still apprehensive about being tracked anonymously by the government or by other Internet parties without their knowledge; thus, people were exploring safe Internet search alternatives.

Though a relatively new entrant in the search engine industry, DuckDuckGo, with its rapid growing user base, had become one of the top 10 search engines in the world.[[4]](#footnote-4) In March 2017, Weinberg was wondering if he should enhance the highly rated search engine by introducing new features, such as navigation and a media platform, to make the search engine more attractive for new users. This would, however, require tracking users on DuckDuckGo. The other alternative was to continue with the company’s existing features and the same policy of not tracking users. He worried whether DuckDuckGo could last in the competitive search engine industry without the addition of new features that necessitated tracking. Another challenge he faced was how, with the limited revenue the company generated compared to other search engines (who employed tracking), to reach the maximum number of people who were concerned about privacy yet unaware of the existence of DuckDuckGo.

DUCKDUCKGO

The Internet was booming in the early twenty-first century and at that time, Weinberg was fascinated by the concept of “search.” Weinberg recalled being intrigued with finding ideal answers to people’s queries by bringing together various Internet sites and the well-established Wikipedia. Weinberg’s intrigue became the genesis of a novel search engine. Observing a lot of spam in search results, Weinberg started out by removing any spam from his search engine and by adding instant answers, for which Wikipedia was given priority. He then added privacy to the search engine by excluding tracking features from the engine. Weinberg’s next step was to test his search engine and determine if people liked it.

The name for the search engine was the result of a flash insight one day while strolling in a park with his wife. Weinberg heard some ducks in the park and the name “DuckDuckGo,” like the children’s game “duck, duck, goose,” popped into his head. His wife liked the name, and Weinberg found it an appropriate fit for the new search engine; thus, DuckDuckGo became the name for Weinberg’s project.

DuckDuckGo first launched from the basement of Weinberg’s house on February 29, 2008. The search engine was written in Perl[[5]](#footnote-5) and could run on Linux, FreeBSD,[[6]](#footnote-6) and NGINX.[[7]](#footnote-7) TechCrunch identified DuckDuckGo as a “hybrid engine” because it displayed results from the application program interfaces of numerous vendors and produced its own content pages.[[8]](#footnote-8)

In September 2008, Weinberg announced the start of DuckDuckGo[[9]](#footnote-9) in the Reddit community and on the social news website Hacker News. In 2009, he added anonymous browsing to prevent user tracking. In 2010, Weinberg started a DuckDuckGo community platform to gather feedback, discuss the problems with Internet searches, and promote awareness of his search engine.

The world was introduced to DuckDuckGo’s existence through the bold move of posting a billboard near Google’s office in San Francisco that stated, “Google Tracks You, We Don’t.” DuckDuckGo gained extensive media coverage and was featured in *Time* magazine’s top 50 sites of 2011. Weinberg pursued angel investing in a bid to support other start-ups affiliated with DuckDuckGo—Gin, FreeBSD, The Tor Project, ClamWin Free Antivirus, Tahoe-LAFS, and OpenSSH.

On November 30, 2011, DuckDuckGo hired its first employee, Cain Tighe. In the following month, capital firm Union Square Ventures invested $3 million in DuckDuckGo with the belief that the engine could “change the basis of competition in search.”[[10]](#footnote-10) On December 1, 2011, DuckDuckGo moved from Weinberg’s basement to new headquarters in Paoli, Pennsylvania. Later, web browser Midori, operating system Trisquel GNU/Linux, and Linux Mint switched to DuckDuckGo as their default search engine.[[11]](#footnote-11) According to Weinberg, DuckDuckGo earned $115,000 in revenue in 2011.

A redesign of DuckDuckGo was performed on January 16, 2012, in a bid to attract more users. On February 11, DuckDuckGo reached the milestone of 100,000 searches a day. On March 7 of the same year, under the theme “open data/information,” DuckDuckGo made donations to the Wikimedia Foundation, The Tor Project, the social network Diaspora, unhosted.org, peer-to-peer platform Freenet, and social network Friendica. The *Washington Post* published a report in November featuring DuckDuckGo and the damage that Weinberg could inflict on Google and Bing. Amid rising accusations of tracking users, dominant player Google acknowledged DuckDuckGo as its competitor.[[12]](#footnote-12) Weinberg was elated by the acknowledgement.

In a bid to promote start-ups that upheld privacy, this time under the theme “fix tracking,” DuckDuckGo made donations on February 25, 2013, to JavaScript Blocker, OpenStreetMap, Riseup, F-Droid, the Electronic Frontier Foundation, and Cryptocat. On June 10, 2013, DuckDuckGo reached 200,000 searches a day, and just a week, reached 300,000 searches a day. On September 26, 2013, GNOME released a web browser, GNOME 3.10, with DuckDuckGo as the default search engine.

On March 12, 2014, DuckDuckGo made donations under the theme “secure communications” to the INvisible Project; Mailpile, a webmail server that emphasized privacy protection; Riseup, which provided an online communication tool aiding social change; Lavabit, an open source encrypted webmail provider; Noisetor, an agency that helped to gain funding for the Tor project to upgrade online privacy; and SecureDrop, which facilitated secure file sharing. On March 17, DuckDuckGo hired its 10th employee, Brian Stoner. The search engine was redesigned for smarter answers and a more appealing look on May 19, and new features such as images, weather, recipes, autosuggest, and local search were added. Apple Inc., in its keynote speech of September 2014, announced that DuckDuckGo was available as an option in Safari with the release of its updated operating systems, iOS8 and OS X Yosemite. On November 10, Mozilla added DuckDuckGo as an optional search engine for Firefox. Weinberg reported that the company became profitable in 2014.

In 2015, DuckDuckGo made donations totalling $125,000, distributed equally among Tails, a Linux-based system used for preserving anonymity; Girls Develop It, a group that supported the software development capabilities in women; GPG Tools, which facilitated secure communication; SecureDrop; and Privacy Badger, an open source browser. On June 22, 2015, DuckDuckGo reached 10 million searches a day. On May 3, 2016, DuckDuckGo distributed $225,000 in equal portions to GPG Tools, SecureDrop, Freenet, CrypTech, the Tor Project, Fight for the Future, Open BSD Foundation, Vera Crypt, and LEAP. DuckDuckGo officially announced that it was extending its partnership with Yahoo! Inc., which brought additional features to the search engine, such as new site links and filtering results by date. DuckDuckGo concluded 2016 with an aggregate total of 10 billion searches.

DuckDuckGo distributed donations worth a total of $400,000, distributed equally to 16 projects on February 10, 2017. On November 23, 2017, DuckDuckGo reached 20 million searches a day. Mobile apps for iOS and Android were available that used HTTPS, an Internet protocol that websites could use to restrict interaction on a website to just the user and the server, preventing eavesdropping and tampering by third parties, and blocking trackers.

PIONEER OF TRACTION

After Weinberg created DuckDuckGo, he first posted about it on a niche tech site called Hacker News, in a post titled, “What Do You Think of My New Search Engine?” He later also posted on Reddit. Some people commented that Weinberg was foolish to compete with tech giant Google. Others were genuinely impressed and curious about DuckDuckGo and what motivated Weinberg. Weinberg considered the curiosity DuckDuckGo generated as a competitor of Google as the first traction and pointed to that traction as a sign that something was working.

Weinberg’s initial growth plan for DuckDuckGo relied on two channels—search engine optimization (SEO) and viral marketing. He wanted to use relevant terms for DuckDuckGo so that when people searched those keywords, DuckDuckGo would rank high in the searches. He initiated viral marketing with the hope that customers would recommend DuckDuckGo to their family and friends based on personal experiences and use.

Weinberg used SEO as the main channel because he found viral marketing to be difficult for search engines. In SEO, the search term “search engine” was difficult to use because numerous search engine companies had existed for more than a decade, and thus held sway with that search term. The term “new search engine” seemed more viable for DuckDuckGo. Another common SEO strategy—writing about DuckDuckGo in blogs and on social media—hit saturation and did not bring any new users. Weinberg then tried building a karma widget, which displayed links to social media profiles and showed the number of followers on each site. People embedded the widget at the bottom of their sites with links to DuckDuckGo, which gained Weinberg some users. However, it did not take long for Weinberg to realize that he was not going anywhere with the SEO strategy; he had gained only 50 users a day—not nearly as many as he had hoped. Weinberg considered himself lucky that, because of self-funding, his mistakes did not doom his project to bankruptcy as other start-ups had been.

After realizing the failure of the SEO strategy in 2009, Weinberg began angel investing in other start-ups that promoted the privacy of users. He partnered with Justin Mares, another start-up owner, to help find the right traction. Together they interviewed more than 40 founders, studied more companies, and singled out the common successful channels, which let to the “Bullseye” framework. Bullseye helped Weinberg identify appropriate channels for DuckDuckGo, which included the use of publicity, social media and display ads, content marketing, and business development. He realized that what might work initially might not work later, so each of DuckDuckGo’s growth stages would require figuring out how to get the appropriate traction. With guidance from Bullseye, Weinberg chose a critical path for DuckDuckGo to achieve traction goals in a few steps because the company was competing against companies with massive resources. Weinberg said that this critical path helped him decide what not to do and be efficient in the use of resources.

This critical path prompted Weinberg to devise new and unconventional ways to reach consumers. In January 2011, he leased a billboard in Google’s backyard for $7,000 a month. The billboard declared, “Google Tracks You, We Don’t.” This brought national coverage for DuckDuckGo in *USA Today*, *Wired*, and other media outlets. That month alone, DuckDuckGo doubled its user base.

Twitter provided Weinberg with an opportunity when he interacted with a reporter from *Time* magazine, leading to DuckDuckGo being featured in the magazine’s top 50 sites of 2011. Weinberg wrote several blog posts and received a positive response. He started interacting with people online on social networking sites, and it became clear that the topic of DuckDuckGo reverberated among people. He built a microsite—donttrack.us—that emphasized the harm inflicted by Google tracking. The microsite enabled Weinberg to reach a broader audience. DuckDuckGo leveraged the NSA leaks of 2013 to reinforce its core ideology (“a search engine that doesn’t track you”), and the search engine gained new popularity. Motivated, DuckDuckGo started several microsites. Weinberg cheerfully mentioned that people did not have to worry about their privacy with DuckDuckGo because the search engine did not even store any user information that it could give to the government.

The initial goal was to replace existing search engines with DuckDuckGo as people’s primary search engine. After undertaking the critical path, the priorities of the goals were redefined. DuckDuckGo then set a traction goal of 100 million searches a month. To achieve this milestone, the DuckDuckGo team believed they would require a faster site, broadcast television coverage, and development of a mobile search application to get 1 per cent of the search market, a traction goal for which they realized that new features such as images and autosuggest would be required. These were later introduced in the 2014 redesign of DuckDuckGo.

SOURCEs OF REVENUE

Weinberg said that since DuckDuckGo did not track or store user information, it was not possible for third-party vendors to track or display ads. DuckDuckGo generated revenue in two ways. The first was through advertising, which was not done through tracking but based on user keywords. If a user typed the word “car,” for instance, then advertisements related to the word “car” appeared. The user had the option to turn off the advertisements.

The second source of revenue was through affiliate services with Amazon.com and eBay. If a user used DuckDuckGo to purchase from Amazon.com or eBay, a proportion of the earned revenue was paid to DuckDuckGo. DuckDuckGo also used “ibangs,” which enabled users to easily search specific third-party websites. If a user wanted to purchase shoes from Amazon.com, he or she just had to type “!amazon shoes” or “!a shoes” and they were taken directly to the Amazon.com page listing shoes for sale. There were approximately 10,000 bangs as of 2017 for various Internet sites, and the users themselves had the option of adding new bangs.

WORKPLACE CULTURE

DuckDuckGo’s work culture revolved around the philosophy of building trust. Transparency at all levels of organization, autonomy, and project empowerment were part of the culture. DuckDuckGo consisted of an international community working together to build the world’s most trusted search engine. Diverse perspectives and a passionate commitment to a shared vision were encouraged. Everyone working at DuckDuckGo was a member of the community before being hired. This meant that they were already aligned with the company’s mission. A flexible work schedule, generous vacation and hack days, health benefits, team meet-ups, a comprehensive family leave policy, and open participation in the company’s strategy-making process were added benefits. People were encouraged to question assumptions and to be creative. Freedom to indulge in the creative thought process was encouraged. A humorous comment, that Weinberg took a generous five weeks of vacation, was posted on DuckDuckGo’s blog. As of March 2017, DuckDuckGo had 40 employees scattered across the world, working on the shared mission to incorporate trust online.

COMPETITORS

DuckDuckGo’s policy stated that the search engine neither collected nor shared users’ personal information. This policy highlighted DuckDuckGo’s competitive position. DuckDuckGo provided users with encryption with the statement “HTTPS everywhere,” but the user had the option of choosing between HTTP[[13]](#footnote-13) and HTTPS.[[14]](#footnote-14) DuckDuckGo, regarded as a recent entrant, had managed to create ripples in the search engine market with its unique offering, which resonated well with users and suited its forward-looking mission statement. Its competitors were mostly global giants who had been established years before DuckDuckGo.

Google

American multinational Google was established by two PhD students, Larry Page and Sergey Bin, from Stanford University in 1998.[[15]](#footnote-15) Google grew rapidly after it pursued acquisitions, a chain of products, and partnerships beyond its core ideology of search engine. It expanded into the services of software, hardware, search engine, cloud computing, and online advertisements. Diverse services and apps were designed for various domains. Gmail, YouTube, Google Maps, Google Sheets, Google Docs, Google Slides, Google Drive, Picassa, Google Earth, Google Photos, Google Allo, Google Keep, Google Translate, Google+, Google Chrome and Chrome OS, Google Calendar, and various other services were offered. Google remained the dominant leader as the site most visited by people all over the world. Google had an employee base of 57,000 and estimated revenue of $31 billion as of 2017.[[16]](#footnote-16) The tech giant had a presence all over the world, except in 25 countries where it was blocked or partially blocked. Google China was used as a subsidiary of Google to capture China’s market. Google was DuckDuckGo’s main competitor.

Microsoft Corporation

Bing was a web search engine developed by Microsoft Corporation (Microsoft) in 2009, with its roots tracing back to its predecessors, MSN Search and Live Search. Bing offered various services such as web search and image, video, and map searches. In 2009, Microsoft made a 10-year deal with Yahoo! by which the Yahoo search engine would be powered by Bing under the Yahoo interface. Bing gained new users who had transitioned from Yahoo Search in 2012. Microsoft launched an $80-million advertising campaign for Bing and over the years incorporated many features in it, including design features, rivalling Google. With an estimated revenue of $90 billion and 130,000 employees, Microsoft supported Bing. It was the third most popular search engine in the world as of 2017, after Chinese search engine Baidu, Inc. (Baidu). [[17]](#footnote-17)

Yahoo!

Yahoo Search, owned by Yahoo!, was one of the oldest search engines. Originally, the searches were not powered by Yahoo but rather by Inktomi Corporation, which Yahoo! eventually acquired in 2002. Search engines AlltheWeb and AltaVista were incorporated into Yahoo when the company purchased Overture Services, Inc. In 2007, Yahoo Search was redesigned, and the new features of Search Assist were added. In 2008, Yahoo Search BOSS was launched, enabling new developers to build their own search engines by indexing through Yahoo. After the deal with Microsoft in 2009, Yahoo Search was powered by Bing. In 2014, Yahoo! made a deal with Yelp similar to the deal it had made with Bing and then with Mozilla in the same year to make Yahoo the default search engine in the United States. In 2015, Yahoo! made an agreement with Google for powering Yahoo Search until 2018. Yahoo! offered its services in multiple languages and had a presence in more than 38 countries. As of 2017, Yahoo Search ranked fourth in total search engine market share. [[18]](#footnote-18)

Ask.com

Ask.com, headquartered in California, was founded in 1996 by Garrett Greuner and David Warthen as mainly an e-business focused on questions and answers. It later evolved as a web search engine. In 2007. Ask.com released a new feature called AskEraser, which enabled users to opt out of tracking features. The company stated that although the feature was not set, data would be erased every 18 months. Owing to heavy competition from other popular search engines, Ask.com shut its web search engine in 2010 and reverted to its original service of questions and answers. Ask.com had, on average, 104 million subscribers every month and 2 million downloads for its mobile application.[[19]](#footnote-19) Owned by IAC (InterActiveCorp), the estimated valuation was $3 billion as of 2011.[[20]](#footnote-20)

AOL Inc.

One of the early pioneers of the Internet world as an online service provider and web portal was AOL Inc., launched in 1983 and headquartered in New York. AOL, which stood for America Online, originally provided Americans with dial-up services, email services, instant messaging, a web portal, and a web browser. In 2000, it acquired Time Warner Inc. in the largest merger in US history at that time. With the decline of dial-up broadband, AOL experienced a steep decline and was spun off from Time Warner Inc. in 2009. Eventually, AOL was acquired by Verizon Communications Inc. for $4.4 billion in 2015. After that, AOL was marketed by Verizon’s subsidiary Oath Inc.[[21]](#footnote-21)

Other Competitors

Baidu and Yandex were the top search engines in China and Russia in their respective languages. Both had a significant share of the global search engine market and could pose a threat to DuckDuckGo. QQ.com, another Chinese search engine, had also started gaining popularity. Naver, a popular search engine developed in South Korea, had a significant market share as well. Dogpile, a web search engine that displayed results from other search engines, posed indirect competition to DuckDuckGo (see Exhibit 1).

DUCKDUCKGO, march 2017

Internationally, concerns of privacy resonated among people, and this acted as a main growth factor for DuckDuckGo. Policies such as “Digital India” and “Net Neutrality” in emerging economies and increased privacy concerns in developed countries acted as catalysts in increasing the user base of DuckDuckGo.

DuckDuckGo had completed almost a decade in the search engine market. Weinberg was more determined than ever and said that taking on Google would not be insane, as people had first suggested. DuckDuckGo offered smart instant answers from 450+ different sources and was in the process of increasing that number of sources. DuckDuckGo Internet traffic had increased by 600 per cent since the 2013 NSA scandal because the company did not employ the concept of a filter bubble. DuckDuckGo was further leveraged when tech giants like Apple Inc. increasingly stressed user privacy. DuckDuckGo issued an official statement saying it had received a total of 5,915,745,384 direct queries as of 2017 (see Exhibit 2). Alexa Internet, Inc. ranked DuckDuckGo 329th for global Internet traffic and 241st in the United States (see Exhibits 3, 4, and 5).

DuckDuckGo had privacy as its core principle. However, when people wanted to access videos, DuckDuckGo had to turn to YouTube, owned and powered by Google, where people could be tracked. Users would be warned beforehand when they might be tracked. Weinberg further considered ways to refine DuckDuckGo to provide better smart instant answers.

the WAY FORWARD

It was clear as of March 2017 that DuckDuckGo was unique among search engines. It had offered privacy long before the NSA scandal broke, which acted as a leverage and made DuckDuckGo famous as “the search engine that doesn’t track you.” Weinberg contemplated whether new features that included tracking were necessary for DuckDuckGo to gain new users, or if he should continue with the engine’s existing features, highlighting the core ideology of online privacy. He also wondered what strategy he could further implement—with the limited revenue he generated on DuckDuckGo compared to his competitors—to reach the maximum number of users.

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EXHIBIT 1: search engine GLOBAL MARKET SHARES AS OF 2017

|  |  |
| --- | --- |
| **Search Engine** | **Market Share (%)** |
| Google | 73.10 |
| Baidu | 12.37 |
| Bing | 7.73 |
| Yahoo! | 5.02 |
| Yandex | 0.92 |
| Ask | 0.31 |
| DuckDuckGo | 0.24 |
| Naver | 0.13 |
| Dogpile | 0.05 |
| AOL | 0.04 |

Source: “Browser Market Share,” Net Marketshare, 2017 accessed April 23, 2018, http://go.ivey.ca/5zwb.

EXHIBIT 2: DUCKDUCKGO internet traffic

Source: “DuckDuckGo Traffic,”DuckDuckGo, accessed February 20, 2018, https://duckduckgo.com/traffic.

EXHIBIT 3: USERS ON DUCKDUCKGO by LOCATION AS OF 2017

|  |  |
| --- | --- |
| **Country** | **Users (%)** |
| United States | 50 |
| Europe | 45 |
| Asia Pacific | 5 |

Source: ET Bureau, “Search Engines Don’t Need to Track People to Make Money: DuckDuckGo CEO Gabriel Weinberg,” *Economic Times*,September 16, 2018, accessed April 23, 2018, https://economictimes.indiatimes.com/opinion/interviews/search-engines-dont-need-to-track-people-to-make-money-duckduckgo-ceo-gabriel-weinberg/articleshow/48979983.cms.

EXHIBIT 4: duckduckgo VISITORS AS OF 2017

|  |  |  |
| --- | --- | --- |
| **Country** | **Percentage of Visitors** | **Rank** |
| United States | 26.0 | 241 |
| Germany | 7.3 | 162 |
| France | 6.1 | 178 |
| United Kingdom | 5.9 | 165 |
| China | 4.9 | 678 |

Source: “duckduckgo.com Traffic Statistics: Audience Geography,” Alexa, accessed March 10, 2018, www.alexa.com/siteinfo/duckduckgo.com.

EXHIBIT 5: KEYWORDS THAT DIRECT PEOPLE TO DUCKDUCKGO

|  |  |
| --- | --- |
| **Keyword** | **Percentage of Search Traffic** |
| DuckDuckGo | 49.91 |
| Duck duck go | 15.28 |
| Search Engines | 2.50 |
| Search Engine | 1.16 |
| DuckDuckGo Search Engine | 1.05 |

Source: “duckduckgo.com Traffic Statistics: Top Keywords from Search Engines,” Alexa,accessed March 10, 2018, www.alexa.com/siteinfo/duckduckgo.com.

1. All currency amounts are in USD unless otherwise specified. [↑](#footnote-ref-1)
2. Glenn Greenwald, “NSA Collecting Phone Records of Millions of Verizon Customers Daily,” *The Guardian*, June 6, 2013, accessed June 17, 2019, www.theguardian.com/world/2013/jun/06/nsa-phone-records-verizon-court-order; Mark Scott, “Google Fined Record $2.7 Billion in E.U. Antitrust Ruling,” *New York Times*,June 27, 2017, accessed April 23, 2018, www.nytimes.com/2017/06/27/technology/eu-google-fine.html. [↑](#footnote-ref-2)
3. ET Bureau, “Google Told to Pay Rs 135.86 Crore Fine for Abusing Its Power in India,” *Economic Times*, February 9, 2018, accessed April 23, 2018, https://economictimes.indiatimes.com/tech/internet/cci-issues-order-against-google-for-search-bias/articleshow/62838992.cms. [↑](#footnote-ref-3)
4. Alex Chris, “Top 10 Search Engines in the World,” ReliableSoft.net, December 15, 2016, accessed August 8, 2018, www.reliablesoft.net/top-10-search-engines-in-the-world. [↑](#footnote-ref-4)
5. Perl stood for “Practical Extraction and Report Language.” It was originally a programming language optimized for scanning arbitrary [text files](https://www.computerhope.com/jargon/t/textfile.htm), extracting information from those text files, and printing reports based on that information. [↑](#footnote-ref-5)
6. FreeBSD was an operating system used to power modern servers, desktops, and embedded platforms. [↑](#footnote-ref-6)
7. NGINX was a web server that could also be used as a reverse proxy, load balancer, mail proxy, and HTTP cache. The software was created by Igor Sysoev and released to the public in 2004. [↑](#footnote-ref-7)
8. Dan Kimerling, “Elevator Pitch Friday: DuckDuckGo, The Hybrid Search Engine,” TechCruch, December 13, 2008, accessed April 23, 2018, https://techcrunch.com/2008/12/12/elevator-pitch-friday-duck-duck-go-the-hybrid-search-engine. [↑](#footnote-ref-8)
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10. “DuckDuckGo Raises Money from Union Square Ventures,” Search Engine Watch, October 20, 2011, accessed April 23, 2018, https://searchenginewatch.com/sew/news/2118842/duckduckgo-raises-money-union-square-ventures. [↑](#footnote-ref-10)
11. Linux Mint, Trisquel GNU/Linux, Midori, and others could offer better programming and better privacy with DuckDuckGo. [↑](#footnote-ref-11)
12. Michael Rosenwald, “Ducking Google in Search Engines,” *Washington Post*, November 9, 2012, accessed March 19, 2013, https://www.washingtonpost.com/business/ducking-google-in-search-engines/2012/11/09/6cf3af10-2842-11e2-bab2-eda299503684\_story.html?utm\_term=.9d8b7f32ba20. [↑](#footnote-ref-12)
13. HTTP, “Hypertext Transfer Protocol,” was the basic underlying protocol of communication over the Internet. [↑](#footnote-ref-13)
14. HTTPS stood for “Hypertext Transfer Protocol Secure.” Communication over HTTPS protocol was encrypted whereas communication over HTTP was not. [↑](#footnote-ref-14)
15. David Vise, “The Google Story,” *Strategic Direction* 23, no. 10 (2007), accessed March 7, 2017, https://doi.org/10.1108/sd.2007.05623jae.001. [↑](#footnote-ref-15)
16. Mathew Lynley, “Google Beats Expectation Again with $31.15B in Revenue,” TechCrunch, April 2018, accessed April 23, 2018, https://techcrunch.com/2018/04/23/google-beats-expectations-again-with-31-15b-in-revenue. [↑](#footnote-ref-16)
17. “About Bing,” Optimus Online Thinking, January 2013, accessed March 10, 2018, https://www.optimus01.co.za/about-bing. [↑](#footnote-ref-17)
18. Aaron Wall, “History of Search Engines: From 1945 to Google Today,” Search Engine History, 2017, accessed March 10, 2018, www.searchenginehistory.com. [↑](#footnote-ref-18)
19. Ibid. [↑](#footnote-ref-19)
20. Jefferson Graham, “Ask.com Has Found the Answer to a Strong Comeback,” *USA Today*,January 16, 2013, accessed March 10, 2018, www.usatoday.com/story/tech/columnist/talkingtech/2013/01/16/askcom-profits-from-questions/1834013. [↑](#footnote-ref-20)
21. Laurie Kulikowski, “A Short Story of AOL, From ‘You’ve Got Mail’ to Verizon,” TheStreet,May 12, 2015, accessed March 10, 2018, www.thestreet.com/story/13148737/1/a-short-history-of-aol-from-youve-got-mail-to-verizon.html. [↑](#footnote-ref-21)