HARVARD | BUSINESS | SCHOOL

9-915-004

REV: JUNE 1, 2017

BENJAMIN EDELMAN

THOMAS R. EISENMANN

Google Inc. in 2014

Google's mission is to organize the world's information and make it universally accessible and useful.

— Google's mission statement

A decade and a half into Google's notable ascent, the company's aspirations were increasingly unpredictable. Google Glass, in open beta, made mobile apps and the web accessible within a user's eyeglasses—previously the stuff of science fiction but, by 2014, available for immediate purchase in a customer's choice of color and design. Google's self-driving cars were equally remarkable, having driven half a million miles on highways and city streets without driver assistance. Was any concept too bold? Google had even planned a space elevator—a cheaper way to launch satellites and humans—though that product was shelved when available materials proved insufficiently strong.

Google enjoyed the privilege of exploring these opportunities because its core business continued to produce ample profit and free cash flow. Serving an overwhelming majority of searches in most developed countries, Google captured an even higher share of advertisers' budgets. Search engine advertising had proven an effective way to sell all manner of goods and services, and advertisers kept coming back for more.

Yet there were rumblings on the horizon. Most notably, the shift to mobile devices threatened to challenge Google's position: Rather than requesting information and purchases by searching at Google.com, users often chose a specialized app from a phone's home screen—potentially reducing the value Google could create through a suitable referral, as well as reducing advertising payments. Meanwhile, advertising prices on mobile devices were strikingly lower than on desktops, reflecting advertisers' limited willingness to pay to reach users who might not be serious buyers and who lacked physical keyboards to quickly enter credit card numbers and shipping addresses.

Google, based in Mountain View, California, had gross revenue of $59.8 billion and an operating income of $15.4 billion in 2013. As of Q2 2014, the company had 52,069 employees and cash and equivalents of more than $60 billion. (**Exhibit 1** shows Google financials from 1999 to 2013.) Founded in 1999, the company completed its initial public offering (IPO) in August 2004 at $85 per share. Google's share price exceeded $570 in August 2014, giving the company a $390 billion market value. Meanwhile, Google.com enjoyed a 67.6% share of all U.S. searches in June 2014; Microsoft's Bing.com,

---

Professor Thomas R. Eisenmann and Smita Bakshi, Sebastien Briens, and Shailendra Singh (MBA 2004) wrote the original version of this case, "Google Inc." 804-141. It was replaced by "Google Inc." 806-105, prepared by Professor Thomas R. Eisenmann and Senior Researcher Kerry Herman, Global Research Group, which was in turn replaced by 910-036 prepared by Professors Benjamin Edelman and Thomas R. Eisenmann, which is updated by this case. This case was developed from published sources. Funding for the development of this case was provided by Harvard Business School, and not by the company. HBS cases are developed solely as the basis for class discussion. Cases are not intended to serve as endorsements, sources of primary data, or illustrations of effective or ineffective management.

the closest rival, had just 19.2%.[1] (**Exhibit 2** outlines trends in search engine market share.) Outside the United States, Google's lead was even larger, exceeding a 90% share of search queries in numerous countries. (**Exhibit 3** reports market share by country.)

Since its IPO, Google had launched a flurry of products that expanded its domain beyond web search. These included Gmail, Google Maps, Google Books, Google Finance, Google Docs, Google Checkout, Google Fiber, and more. Acquisitions of YouTube and DoubleClick had expanded Google's presence in online video and display advertising. These initiatives fueled speculation about Google's strategic objectives. Products like Gmail and Finance, along with personalization features offered on Google's home page, moved the company toward portals like Yahoo! and Microsoft's MSN. Book Search, Maps, and Checkout suggested that Google was entering the traditional strongholds of e-commerce giants like eBay and Amazon. Google's ad-supported software, including e-mail, calendaring, and document-management systems, threatened Microsoft's Office and Windows offerings. Google Fiber provided ultra-high-speed Internet access to users in three cities (with nine more planned). Despite a late start, Google Android had become the dominant operating system on mobile phones and tablets almost everywhere, taking market share from Apple iPhone and iPad, and supplanting a prior generation of feature-phones. These many services and diverse competitors raised the question: What should Google do next?

Company History

The need for search services grew as the World Wide Web expanded. One of the earliest search services, Yahoo!, selected and organized sites into categories by human editors. As the web grew, directory classification became infeasible. AltaVista invented technology that automated search, relying on software "crawlers" that created a searchable index of page contents, along with algorithms that ranked page relevance based on keyword frequency. Yahoo! added AltaVista's algorithmic search engine, but in 1998 Yahoo! replaced AltaVista with Inktomi, which used parallel processing to offer faster processing and a larger index.

As website developers exploited search algorithms by repeating keywords on their pages, searches increasingly returned irrelevant listings—"spam"—that frustrated users. In 1998, Sergey Brin and Larry Page tackled this problem as graduate students at Stanford. Their PageRank algorithm favored pages that were referenced ("linked to") by other pages. These links signaled that another page's designer thought the focal page deserved attention. The focal page's importance was determined by counting its inbound links, weighting links more heavily when they were cast by pages that Google had previously deemed to be important.

In June 1999, Brin and Page announced first-round funding for their start-up, Google, from elite venture capital firms Sequoia and Kleiner Perkins. A year later, Google's index of 1 billion web pages surpassed all rivals, and Google replaced Inktomi as Yahoo!'s search engine. At the time, Google was focused solely on algorithmic search; through December 1999, Google's revenues came solely from licensing its search technology to Yahoo! and other sites. Meanwhile, Google.com initially carried no advertising and—eschewing the comprehensiveness of some portals—offered only search results, without content or communication tools. In contrast, many portals offered numerous add-ons to encourage users to linger, yielding more page views and greater advertising revenue.

The Rise of Paid Listings

In the meantime, a robust new model emerged to monetize search: paid listings. Pioneered by Overture (which Yahoo! acquired in 2003), paid listings were concise text ads (then labeled

"Sponsored Links") that appeared either adjacent to or interspersed with search results. Advertisers bid for keywords, and bids determined the top-to-bottom ordering of ads on search-results pages. Paid listings were typically sold on a "per-click" basis: an advertiser paid only when a user actually clicked on the advertiser's listing.

Overture's success was built on several factors. First, from the perspective of marketers, search engine leads were often more effective than banner ads on other websites because search engine users were often researching products and services they planned to purchase soon. Analysts estimated that 70% of e-commerce transactions originated through web search, and 40% of web searches had a commercial motivation.[2]

Second, ordering paid listings according to "cost-per-click" (CPC) auctions yielded substantial revenues to Overture, while meeting many users' needs at the same time. For an advertiser, a high position on a search-results page would yield greater visibility, more clicks, and more sales. As a result, advertisers often competed vigorously for top positions, which meant high payments to Overture. Fundamental to CPC auctions was the idea that advertisers paid for each click whether or not a user ultimately made a purchase. Accordingly, the auction structure encouraged advertisers to focus their bidding on keywords that were closely related to their products so that their ads would be relevant to users' requests.

Overture supplied ads to the three largest portals (Yahoo!, MSN, and AOL), which drew thousands of advertisers to Overture's offering. On every resulting click, Overture paid a "revenue share" commission to the partner, keeping the rest for itself.

Paid Listings at Google

In December 1999, Google introduced its first paid listings, which it sold on a cost-per-impression basis. (That is, Google charged an advertiser a fixed amount each time a user viewed an ad, whether or not the user clicked the ad.) In February 2002, Google adopted a variant of Overture's cost-per-click model: Google weighted CPC bids by the ratio of an ad's *actual* click-through rate (CTR) to its *expected* CTR (based on Google's predictions). This weighting helped ensure that relevant ads received the most prominent positions; an ad with a low CTR would suffer a lower effective bid and would be shown less prominently, if at all. The method also maximized Google's revenue, because an ad with a high CPC bid but a low CTR offered low revenue.

Google soon emerged as a serious threat to Overture. By mid-2001, despite spending nothing on marketing, Google.com was the ninth-largest U.S. website, with 24.5 million unique monthly visitors.[3] In May 2002, AOL announced it would switch to Google for both algorithmic search results and paid listings. Google's market share surpassed Yahoo!'s in 2004, then continued to increase, reaching 58.4% by 2007 and 65.6% by 2009, while Yahoo!'s share decreased to 17.5%. (**Exhibit 2** illustrates changes in search engine market share over time.)

In March 2003, Google expanded beyond search advertising by launching "contextual" paid listings, a product that Google named AdSense. Contextual listings presented advertisements on web pages that featured primarily editorial content (e.g., news or blog postings) rather than pages that showed search results. For example, an iVillage.com page about allergies displayed a sponsored link offering a hypnosis program—"safe, fast, and guaranteed"—to end allergy symptoms. Google and other companies with web search technology had advantages in selling such advertising: they could use their index of web page content to map keywords to appropriate editorial pages, and sell contextual advertising placements to customers who primarily sought search ads.

Google also developed new services that displayed still more search advertisements. For example, in late 2002, Google launched Froogle, a product search service that identified merchants for specific products, along with their prices. At the start, Froogle was monetized through advertisements adjacent to search results; merchants did not pay to have their products appear in Froogle's search results, nor did they pay referral fees when users clicked through Froogle's results to the merchant's website. In February 2005, Google launched Google Maps, which offered faster scrolling and browsing than competitors at the time. Maps launched without ads, but Google soon added paid listings related to the areas that users browsed.

In competing to buy placements on partner sites, Google prevailed in a series of key deals. Best known was a 2005 bidding war with Microsoft for the right to show Google's ads on AOL search results. Google's offer included buying a 5% stake in AOL (for $1 billion) and providing AOL with $300 million of credit toward AOL's purchase of ads at Google.[4]

Factors Affecting Paid Listings Revenues

A paid-listing provider's revenue depended on four factors: its coverage rate, click-through rate, average cost per click, and revenue split.

- *Coverage rates* referred to the share of queries for which at least one paid listing was sold. Coverage was jointly determined by the type of user searches (commercial versus non-commercial terms) and by the number of advertisers using the paid-listing provider.
- *Click-through rates* tended to increase over time as advertisers improved their keyword targeting techniques.
- *Average CPC* increased with the size of the paid-listing provider's advertiser base; additional bidders drove up keyword prices. In late 2003, Overture's average CPC was estimated to be $0.40, whereas Google's average was $0.30.[2]
- Finally, *revenue splits*—the percentage of ad revenue that listing providers paid to network affiliates—were determined by the parties' relative bargaining strengths and by the intensity of the rivalry among listing providers. For a hard-fought deal such as AOL, the partner might get as much as 90% of revenue, though estimates suggested that ordinary partners received a 60%–70% revenue share.[5]

Advertisers set their paid search bids based on their assessment of the value of each click. Some advertisers measured user behavior after users reached their sites, then set bids based on typical conversion rates. For example, a merchant might be willing to spend $5 on advertising to sell one unit of a given product. From experience, a merchant might know that 10% of users who click an ad will, in turn, buy the product. Then the advertiser might be willing to pay $0.50 per click. Other advertisers struggled to measure sales: consider advertisers selling in retail shops, through distributors, or with long sales cycles. Nonetheless, on the whole, advertisers believed Google's advertising was effective. While many online publishers struggled to charge even $2 per thousand banner ads shown ("$2 CPM"), Google could often charge that amount for a single click.

Improving Search and Advertising

In the early era of searches, at least half of users' requests failed to deliver useful results.[6] To improve performance, Google's engineers constantly fine-tuned search algorithms. For example, in January 2004, Google launched Personalized Search, which ordered results by analyzing a user's prior searches and clicks. Personalized Search also included Search History, which showed an archive of a user's past searches with links to results they had accessed. Other initiatives included local search and vertical search.

In addition, Google expanded efforts to attract more advertisers, especially local advertisers. With more than a dozen U.S. sales offices and 50 international offices, Google sought to reach small and midsized businesses almost everywhere. Although most of these businesses focused on local sales, Google's geographic targeting systems could focus their ads on the right regions. The opportunity was large: U.S. small and midsized businesses spent $89 billion on advertising each year.[7]

Google improved its advertiser features by offering advertisers free software to optimize paid-listing campaigns. For example, with Google Analytics, advertisers could track which advertising keywords were most likely to yield sales—and then increase their spending on those keywords and reduce others. These and other refinements helped Google earn significantly more than competitors. By late 2005, Google and its partners earned 60% of U.S. paid-listing revenue from 52% of U.S. search queries, which meant that Google earned 38% more revenue per search than Yahoo! As of December 2005, Google searches yielded paid-listing click-throughs twice as often as Yahoo! searches did (21% versus 11%).[8]

Observers cited two reasons for Google's superior performance: First, Google improved on Overture's policy of ranking paid listings solely according to bids; Google also considered listing relevance. Second, by late 2005, Google's paid-listings network had attracted two to three times as many advertisers as Overture's.[9] Advertisers were drawn to Google because its network offered more search traffic and allowed lower minimum bids (1¢ versus Overture's 5¢).

In 2007, Google's $3.1 billion acquisition of DoubleClick positioned Google for increasing strength in placing display ("banner") advertisements, which were DoubleClick's focus. Google expanded AdSense to show display advertisements as well as text ads. In September 2009, Google announced plans to build an ad exchange to expand its role in placing display ads.[10] By 2014, Google's DoubleClick ad exchange had grown to be a top marketplace for display advertising, widely believed to be the largest online display advertising marketplace worldwide.[11]

Google's Organization

As Google grew, Brin and Page, with guidance from their venture capitalists, sought a seasoned senior executive to help lead the company. In March 2001, Eric Schmidt, formerly Chief Technology Officer of Sun Microsystems and CEO of Novell, joined Google as CEO. Brin and Page took the titles of President of Technology and President of Products, respectively.

At first, Google's management resisted a public offering,[12] but pressure mounted to provide liquidity for investors and employees holding options. In April 2004, the company announced plans for an IPO. In the prospectus, Page offered unusual remarks: "Google is not a conventional company. We do not intend to become one."[13] The letter explained several distinctive aspects of Google's organization, including its governance structure and corporate values. (See **Exhibit 4** for excerpts.)

Governance

Google's IPO prospectus announced dual-class equity, giving 10 votes per share to holders of Class B stock versus one vote per Class A share. Assuming that Brin, Page, and Schmidt retained their Class B shares while venture capitalists (VCs) and other Class B shareholders (e.g., other Google managers with stock options) eventually sold theirs, Google's top management trio would own roughly one-third of the shares but control over 80% of the votes.[14] This immunized Brin, Page, and Schmidt from replacement by investors second-guessing the company's strategy.

Some observers argued that the dual-class equity structure would encourage strategic risk-taking, but others were concerned that it would dilute their influence over the company's direction.[14] Page defended dual-class stock in his IPO letter:

> We are creating a corporate structure that is designed for stability over long time horizons. By investing in Google, you are placing an unusual long-term bet on the team, especially Sergey and me, and on our innovative approach. We want Google to become an important and significant institution. That takes time, stability and independence. We bridge the media and technology industries, both of which have experienced considerable consolidation and attempted hostile takeovers.
>
> While this structure is unusual for technology companies, it is common in the media business and has had a profound importance there [letting] these companies . . . concentrate on their core, long-term interest in serious news coverage, despite fluctuations in quarterly results.[13]

Corporate Values

Early in Google's history, Page and Brin instilled strong and distinctive corporate values. **Exhibit 4** presents excerpts from Google's statement of philosophy, including (1) don't be evil; (2) technology matters; and (3) we make our own rules. The cofounders also stamped Google with a unique personality. John Battelle, author of a book about Google's approach, explained: "The company's founders are . . . strikingly similar to the persona that Google projected during [its] early years—aloof, supersmart, dismissive of unsolicited advice. They are . . . first and foremost engineers. And engineers are not the best communicators, nor do they make the best diplomats or business development executives."[12]

Don't be evil. A central tenet of "don't be evil" was Google's refusal to compromise the integrity of search results. Its statement of philosophy clarified: "We never manipulate rankings to put our [advertising or content] partners higher in our search results. No one can buy [a] better PageRank. Our users trust Google's objectivity and no short-term gain could ever justify breaching that trust."

Brin acknowledged that it could be difficult to translate ethical standards into decisions about paid listings: "For example, we don't accept ads for hard liquor, but we accept ads for wine. It's just a personal preference. We don't allow gun ads, and the gun lobby got upset about that. We don't try to put our sense of ethics into the search results, but we do when it comes to advertising."[15]

Schmidt commented on how "don't be evil" became relevant in company debates about policy:

> When I showed up, I said, "You've got to be kidding." Then one day, very early on, I was in a meeting where an engineer said, "That would be evil." . . . The whole

> conversation stopped, but then people challenged his assumptions. This had to do with how we would link our advertising system into search. We ultimately decided not to do what was proposed, because it *was* evil. That kind of conversation is repeated every hour now with thousands of people.[16]

Technology matters. Google invested heavily in the infrastructure that supported lightning-fast returns on search queries. Google's custom-designed, low-cost, Linux-based server architecture was modular and scaled readily. By late 2007, analysts estimated that Google ran roughly 1 million servers,[17] using custom hardware installed directly in shipping containers to reduce costs.

We make our own rules. Google's founders had a penchant for unconventional management practices. Their "Owner's Manual" highlighted several examples, including their refusal to provide earnings guidance to Wall Street analysts or to "smooth" earnings to create the appearance of steady growth. Likewise, Google auctioned IPO shares rather than allocating shares at the discretion of underwriters.

Google's management was secretive with outsiders. Page justified the company's stance in his letter: "As a public company, we will of course provide you with all information required by law, and we will also do our best to explain our actions. But we will not unnecessarily disclose all of our strengths, strategies and intentions."[13]

Managing Innovation

In addition to its distinctive governance structure and corporate values, Google adopted unconventional approaches for managing innovation. (See **Exhibit 5** for Google's rules for management.)

One widely discussed Google policy encouraged engineers to spend 20% of their time working on projects of their own choosing. This flexibility had spawned many initiatives, including Gmail and Google News. (That said, in 2012, a Google engineer reported policy changes that sharply limited this flexibility, including requiring manager approval to start a new project of this type.[18])

To encourage rapid execution, Google engineers typically worked in teams of three to five people. Schmidt explained: "We try to keep it small. You just don't get productivity out of large groups. . . . We try to have as little middle management as possible."[19] Google's leaders intended this approach to create a flexible organization with small teams pursuing hundreds of projects.[12]

With so many projects underway, setting priorities was a challenge. Management reported a 70/20/10 rule for allocating engineering efforts. Seventy percent of engineering time was spent on the core business—that is, web search and paid listings. Twenty percent was spent on projects that extended the core, such as Gmail. Ten percent was spent on fundamentally new businesses.[16]

Google touted its willingness to invest in promising long shots. In the company's "Owner's Manual," Page wrote: "We will not shy away from high-risk, high-reward projects because of short-term earnings pressure. . . . For example, we would fund projects that have a 10% chance of earning a billion dollars over the long term. Do not be surprised if we place smaller bets in areas that seem very speculative or even strange."[13]

Pressure on the Core Business

As Google grew, it faced a series of complaints from advertisers, online publishers, and users, as described below.

Advertisers Google advertisers sometimes complained about charges they viewed as improper. Advertisers worried about facing charges for clicks that either didn't occur at all or lacked appropriate user interest. One company could click a competitor's ads, seeking to deplete the latter's budget. Or a hacker could hijack third-party PCs ("zombies") and cause them to repeatedly click ads on the hacker's site, yielding payment to the hacker as a supposed distributor of Google ad placements. Estimates of click fraud varied widely; one source suggested that between 10% and 50% of all paid-listing click-throughs were fraudulent.[20] Advertisers also complained that their ads were appearing on sites they did not approve, such as typosquatting (misspelled domain names) or domain parking sites that were mere placeholders, not the "high-quality" placements that Google had promised.

Some companies challenged Google's sale of advertising triggered by searches for trademarks. For example, in 2004, insurance company Geico sued Google for showing competitors' ads when users searched for "Geico." Google claimed that this practice was a permissible "fair use" of the Geico trademark, and in any event, Google said that its on-screen labels prevented consumer confusion. Google and Geico ultimately settled the dispute, although similar cases were brought by other trademark holders, including American Airlines. Disputes in the U.S. had yielded mixed rulings on Google's liability and often ended in confidential settlements, though when a case proceeded to a judicial decision, Google usually prevailed. However, French courts typically ruled in favor of trademark holders, and similar litigation had also occurred in Austria, Brazil, China, Germany, Israel, and Italy.

Online publishers Online publishers repeatedly complained that Google used their content impermissibly. News sites often raised concerns about Google News, which indexed articles from numerous sites, then referred users to specific articles of interest. Some news publishers sought payment for this use of their articles. In response, Google argued that it offered publishers access to users without charge, suggesting that publishers should be grateful for free links from Google. Google also noted its willingness to remove links to any publisher that declined to participate.

Review sites and other online aggregators similarly criticized Google's use of their materials in new Google services such as Google Places. Sites like TripAdvisor and Yelp saw users' reviews as their key asset—acquired through years of grooming top reviewers. But Google pointed out that these sites freely provided reviews to anyone interested, and indeed the sites affirmatively wanted traffic from Google Search. Initially Google required the sites to allow their content to be used in Google Places if they wanted to remain in Google Search, though Google ended that requirement under regulatory scrutiny.[21]

Users Google collected users' full search histories, including all the details of user searches and, in many instances, the search results that users clicked. This search and browsing history was sensitive, potentially revealing all manner of user interests. Speaking for Google, CEO Schmidt addressed privacy in an interview with CNBC: "If you have something that you don't want anyone to know, maybe you shouldn't be doing it in the first place. But if you really need that kind of privacy, the reality is that search engines, including Google, do retain this information for some time. And . . . we're all subject, in the U.S., to the Patriot Act, and it is possible that that information could

be made available to the authorities."[22] Google stated that it retained full search logs for 18 months and took steps to make logs anonymous after that.

Some Google advertisements linked to sites that attempted to defraud users—for example, promising "free" ringtones that actually carried a charge. In 2008 litigation, a victim of such overcharges attempted to hold Google responsible for her losses, but Google successfully defended the case—arguing that it was not responsible for ads that came from independent advertisers—and continued running the ads.[23]

Users also questioned the portion of Google's search results page allocated to advertising.[24] Google had launched with no advertising at all, but by 2014 Google could show as many as three text ads at the top of the page, eight on the side, and potentially more below. In addition, Google dedicated more of the screen to its own ancillary services, which themselves often consisted largely of advertising. For example, Google Shopping in 2013 began to show only paid listings, and Google's growing links for hotel bookings, flights, and similar services were typically also shown only on a paid basis. In one set of widely-discussed search result pages, Google's core algorithmic results received just 13% of visible screen space on standard-sized laptops and sometimes none at all on mobile phones.[24]

New Businesses

Google's subsequent expansions took the company well beyond web search into content hosting, communications applications, productivity applications, and more.

Hosting: Video and Books

Google's content hosting efforts began with its $1.65 billion acquisition of YouTube in 2006. Whereas Google's principal search business indexed materials that resided on other companies' sites, its YouTube acquisition placed Google in the role of *content host*—storing materials on Google-owned servers. Hosting presented new legal questions, and a series of lawsuits alleged that Google infringed copyrights when unauthorized videos were posted to Google servers without permission from the rights-holders. Yet YouTube continued to grow in popularity, reaching 5.9 billion video views in December 2008 alone, singlehandedly serving 41% of all online video.[25] Industry analysis credited Google's decision to withhold advertisements from most YouTube videos pending confirmation of Google's right to show that material, suggesting that this approach shielded Google from copyright liability.[26] Initially the approach appeared to entail large and growing losses: Credit Suisse estimated that YouTube was losing $470 million in 2009 alone, a combination of high bandwidth costs plus low advertising revenue.[27] But by 2012, successful litigation outcomes left Google free to show ads on most videos, including "preroll" before a video began as well as sliders appearing during a video. By 2013, eMarketer estimated that YouTube revenue had reached $5 billion, making the service a solid contributor to profits.[28]

Google also began hosting and searching digital versions of thousands of books. By 2010, Google Books presented more than 1 million books that users could search and, in some instances, browse or even download. Some books arrived through the Google Books Partner Program: Publishers and authors authorized Google to present their books—anticipating greater visibility and, ultimately, greater sales. Google obtained other books through its Library Project, which placed automatic book scanners in partner libraries. Google argued that its scanning was "fair use," not copyright infringement, both because it would make books easier to find and buy, and because Google showed only brief excerpts of in-copyright books (not full pages). But dissatisfied authors claimed that

scanning in-copyright books was copyright infringement, and class-action litigation ensued. After a settlement was rejected by the presiding judge, a further ruling found Google's scanning to be fair use because, the court found, it did not harm the copyright owners.[29] As of 2014, an appeal was ongoing, as were claims in other countries.

Communications Applications

Google's Gmail was launched in 2004 with the offer of more than 1 gigabyte (GB) of storage space, while competing free e-mail providers Yahoo! Mail and Hotmail then offered just 2 megabytes (MB) to 4 MB (less than 1/200 as much) at the time. Gmail also offered advances in user-interface design, using an approach called Asynchronous JavaScript and XML (AJAX) to receive user instructions and show new content without the web browser stopping to load new pages from a server. Competitors largely matched Google's capacity and design, but Gmail's reputation for leadership prevailed.

However, Gmail faced criticism for its advertising. Gmail systems chose advertisements based on the words of users' e-mails, raising questions of privacy. Google's Brin said that privacy concerns were a surprise; he explained, "It's automated. No one is looking."[15] Meanwhile, Gmail's ads contravened the expectations of some e-mail senders and advertisers. If one company sent a user an e-mail (perhaps an order confirmation or occasional newsletter), Gmail might complement that e-mail with an ad for a direct competitor.

Google also expanded into real-time and voice communications. Google's Gchat offered instant messaging within the Gmail interface. Google Voice grafted web management onto the traditional phone system, including transcriptions of voicemails into e-mails or text messages, easy conference calls, and a single number that rang all of a user's phones.

Mobile Phones and Tablets

Drawing on the 2005 acquisition of a small firm called Android Inc., Google in 2007 launched the Open Handset Alliance, a consortium of mobile-phone makers and carriers seeking to compete with Apple's newly launched iPhone. The core operating system was open source, available to anyone (though subject to a license agreement), and included basic apps preinstalled. Google certified certain phones as compatible, hence earning an Android logo. It also offered a comprehensive suite of software, including Google Maps, YouTube, Gmail, and more, as well as access to an app store where users could obtain other apps from Google and independent developers.

With competition among phone manufactures, Android quickly lowered device costs and delivered smartphones to users who would have found iPhones unduly expensive. While Apple remained the largest smartphone maker in the U.S., more American users used Android phones taken as a whole. Worldwide, Android's market share exceeded 75%, driven in large part by strong usage in Europe as well as in developing countries.

Although Android phones could display most web pages, users often preferred apps that could add rich features not supported by the web (such as access to cameras, GPS, and various sensors) as well as offline operation and greater reliability when networks were slow. Most developers built apps for both iPhone and Android, given the millions of users on each platform. But a sizable minority developed for iPhone only, apparently anticipating freer spending by wealthier iPhone users. Meanwhile, a user switching from one mobile operating system (OS) to another would forfeit any purchased apps; even if an app was available on both platforms, it would need to be repurchased.

Google repeatedly adjusted its strategy for manufacturing Android hardware. Initially, Google provided software but left others to build and sell the phones. In 2010, Google announced Nexus One, built by HTC to Google's specifications and marketed by Google on its own site. Sales and support complications exceeded Google's expectations, leading the company to withdraw from commissioning and marketing phones by late 2010. Yet Google's 2011 acquisition of Motorola Mobility put the company back in the smartphone business, until a January 2014 announcement of divestiture to Lenovo. Phone manufacturers reported discomfort with direct competition from their key OS supplier. For a time, Samsung was reported to be building its own operating system to reduce dependence on Google. As of late 2014, Google no longer made or sold its own phones, though it continued to sell select mobile products directly to consumers, most notably Google Glass head-mounted displays. Integrating Android with watches and television raised similar questions of how much Google should do itself versus how much it should leave to partners.

Android's openness allowed phone makers to customize most aspects of device interface as they saw fit, including adjusting format and preinstalling additional apps. Users sometimes complained of "bloatware," unwanted preinstalled apps (particularly when app makers paid phone manufacturers to preinstall apps of limited value). Users also flagged confusing user-interface modifications that made it hard to use one Android phone despite familiarity with another. Google's Nexus One promised a "pure" Android experience, and in an August 2014 addition, the Google Now Launcher app could conceal many phone manufacturer customizations to put Google apps front and center. In removing or hiding unwanted apps, Google was widely seen as acting for users' benefit, though Google's platform control decisions were sometimes controversial. For example, mobile geolocation service Skyhook filed an unfair competition claim against Google, arguing that Google required Motorola and Skyhook to remove its technology from their phones, or lose their license to preinstall Android. A judge ultimately rejected Skyhook's claims, finding that Google's contracts with device manufacturers gave Google the right to limit licenses to advance its business interests.

Google's rapid growth in mobile also raised some strategic tensions. Google's primary mobile operating system was Android, used on most phones and tablets. But Google also offered a second operating system, Chrome OS, originally designed for low-priced laptops and limited-function desktops. Some sectors had become quite attached to Chrome OS; for example, certain schools reported Chrome OS laptops to be more reliable than Windows, albeit with reduced functionality (primarily because Chrome OS was not compatible with the myriad apps users tended to install on Windows). Could Google maintain two separate mobile operating systems indefinitely?

Productivity Applications

Google's enormous server base supported "cloud" applications, which were either stand-alone software clients or browser-based programs that obtained both program code and data over the Internet.[30] Cloud-based applications allowed for easy upgrades: a service provider could deliver fresh data, features, or advertising without users pausing to install an upgrade. Cloud applications also easily supported a user's many devices: a cloud application was typically just as usable at home, at work, on a public or shared computer, or on a mobile phone or tablet, without users needing to copy files back and forth. Yet cloud applications brought new challenges. For one, they required fast and reliable Internet connections, because most cloud applications were usable only while a user was connected to the Internet. Cloud applications also made privacy issues more salient: users' data resided on remote servers where it could be analyzed or even redistributed by an unscrupulous service provider.

Many users were already familiar with cloud applications from web-based e-mail (Gmail and others), but Google used the cloud to offer all manner of other applications. For one, the features on Google's Reader and iGoogle personalized home page (both discontinued in 2013) directed users to their personal favorite sites, with user-designated "really simple syndication" (RSS) feeds bringing in headlines from news sites and blogs. Google+ Photos and Picasa stored user images on Google servers, making it particularly easy to share photos with friends or the general public. Google Calendar hosted users' schedule obligations with collaboration, invitations, and RSVPs as well as full mobile integration.

Google's cloud-based productivity applications competed with the Microsoft Windows platform. For example, a user hosting photos with Google would have less need for a Windows PC with a robust photo-album tool. With key applications running in the cloud and accessed through a web browser, users could forgo the wide choice of applications that ran on Windows, instead finding it satisfactory to run an alternative operating system with far fewer applications.

Through 2009, Google's cloud applications served primarily communications and ancillary productivity functions such as calendaring and photo-sharing. But Google Docs threatened to take share from Microsoft's Office mainstay products. In particular, Google Docs provided web-based documents, spreadsheets, and presentations, directly competing with Microsoft Word, Excel, and PowerPoint. Google Docs omitted many of Microsoft's advanced features, but some users felt Docs could satisfy their requirements. Running in the cloud, Docs also streamlined collaboration: multiple editors could revise a Docs file at the same time, whereas an Office file could ordinarily be edited by only one person at a time. Furthermore, Google Docs files could be referenced by hyperlink, whereas Microsoft Office materials typically needed e-mail attachments, which risked confusion as to which version was most recent. In a widely watched competitive procurement, Google Docs obtained a contract in 2009 to serve 34,000 employees of the City of Los Angeles, to the exclusion of Microsoft and others. Microsoft launched cloud-based versions of its Office suite in 2011, but by then Google Docs had made significant gains in the market for office productivity software.

Other New Products

In September 2008, Google launched the first beta of its Chrome web browser, which by April 2014 had grown to represent more than 17% of users, achieving second place among web browsers (behind Windows Internet Explorer but ahead of Mozilla Firefox).[31] Chrome's "omni bar" let users request a website by address (e.g., nytimes.com) or by name ("New York Times"). If Google's systems found the name unambiguous, Chrome would take users directly to the desired site; otherwise, the user would receive Google listings.

Google Checkout, launched in 2006, allowed users to pay participating merchants. Google brokered the transaction, claiming to protect users from rogue merchants. For example, merchants received Checkout payments without learning a user's credit card number, preventing future unauthorized charges. And Google offered users the option to withhold their e-mail addresses from merchants, preventing unwanted further e-mails.

Public Policy and Competition

In 2008, Google opened a Washington office with the intention of keeping watch over public policy questions of concern to Google. The office head explained: "Washington and its policy debates are important. We can't ignore them."[32]

Google favored government policies that assured users could access Google services. In particular, Google endorsed network neutrality rules that would prevent Internet service providers (ISPs) from levying surcharges on certain content providers (e.g., charging a company to make its site load more quickly).[33] Furthermore, during filings with the Federal Communications Commission (FCC) in 2007, Google urged that consumers be permitted to use the newly available wireless spectrum with whatever devices, services, and applications they chose—in sharp contrast to the limited flexibility possible with most mobile-phone carriers.[34]

Google's market share continued to grow; in 2009, its share exceeded 90% of search queries in France, Germany, Spain, Switzerland, and the UK,[35] and passed 65% in the U.S.[36] But Google argued that "competition is one click away," noting that consumers could switch to other search engines if they so chose.[37] Critics disagreed. For example, pundit Scott Cleland pointed out that Google's advertising customers could not leave Google, for lack of an equivalent way to reach users on search engines.[38] Consumer Watchdog, a California consumer advocacy organization, obtained Google's competition remarks to various regulators and annotated Google's slides with dozens of pages of stinging critique.[39]

The year 2008 brought a new focus on Google's competitive position. After Microsoft's unsuccessful $44.6 billion bid to acquire Yahoo! in February 2008, Google sought to place its advertisements with Yahoo!'s search results. The U.S. Department of Justice informed Google and Yahoo! that it would file an antitrust lawsuit to block such placements, and the parties abandoned the transaction.[40] But concerns remained. For example, Christine Varney, Assistant Attorney General for Antitrust at the Department of Justice, had repeatedly remarked about Google's "monopoly in Internet online advertising" and its "gathering market power."[41]

As of 2014, regulatory intervention had been limited. The U.S. Federal Trade Commission (FTC) had investigated Google at length but ultimately did not file a comprehensive competition case against Google. (The FTC ended its investigation after Google agreed to license certain patents to other firms, to give online advertisers more flexibility to manage campaigns on AdWords and rival ad platforms, and to refrain from misappropriating online content from sites against their will.[21]) A multiyear European Commission investigation seemed poised to require somewhat larger changes, including that Google provide competitors with a designated portion of certain search results pages.[42] The details of the agreement had proven controversial: competitors questioned the fees Google would charge for these placements, and various companies and politicians questioned whether the settlement would assure competition.[43]

Selected Competitors

Microsoft

Microsoft's search offering was repeatedly renamed—from MSN to Live Search to Bing. Bing was launched in May 2009 to favorable reviews, which praised, in particular, its integrated presentation of detailed data such as airfares and restaurant reviews. Calling itself a "decision engine," Bing offered shortcuts to help users refine their searches as well as "hover" previews to let users see a portion of a page before loading it in full. From 2008 to 2013, Bing also offered a cash-back feature that paid users refunds as large as 20% if they browsed Bing, clicked an advertiser's link, and made a purchase. Microsoft launched Bing with an $80 million advertising campaign that included banner, television, and radio ads.

Advertisers bought placements on Bing through Microsoft's AdCenter. Beyond standard keyword targeting, AdCenter added demographic targeting, which let advertisers increase their bids for users who matched desired demographic profiles.

Microsoft also continued to operate sites that were branded as MSN, featuring portal-style news, entertainment, weather, and more.

Microsoft's unsuccessful bid in 2008 to acquire Yahoo! triggered Google's unsuccessful attempt to place Google ads on Yahoo! result pages. After regulatory opposition to that deal, Microsoft and Yahoo! began an extended negotiation that culminated in a July 2009 announcement of a partnership that would place Microsoft ads on Yahoo!'s result pages. As a result, when an advertiser bought placements through either Microsoft or Yahoo!, its offerings immediately appeared within both companies' search engines—an approach the companies said would give them scale to attract advertisers that might not take the time to advertise with either company individually.

Microsoft's vision of cloud computing repeatedly changed both in name and conception but, by 2010, plans were increasingly firm. Windows Azure let developers run applications on Microsoft-hosted platforms, while Microsoft Office added web apps accessible through a web browser and, beginning in March 2014, on the Apple iPad. Whereas most cloud-based applications were run on public clouds (e.g., on Google servers), Microsoft promised to let companies install certain web apps on their own servers, potentially improving privacy and security.

Yahoo!

Yahoo! in 1997 famously turned down an offer to acquire Google for only $1 million. As time passed, Yahoo!'s early "Directory" taxonomy of web pages became less relevant, and some questioned whether Yahoo!'s technology team could keep up with ascendant Google. For example, Yahoo!'s "Panama" upgrade to its search advertising infrastructure was repeatedly delayed before its 2006 deployment, undermining advertiser confidence.

Despite various setbacks, as of 2014, Yahoo! continued to compete head-to-head with Google in search and paid listings (albeit with implementation partnered to Microsoft) as well as local search, finance, e-mail, maps, photo sharing, and myriad other categories. Yahoo! also had offerings in categories where Google was notably absent, including job search, dating, and movies. On the whole, Yahoo!'s approach remained more curated—for example, staff editors writing or acquiring travel articles, whereas Google's travel site was largely a technological platform for comparing flight and hotel options.

eBay

For both eBay and Google, search was the first step in many transactions. Customers shopping for a product could visit eBay's marketplace to find a qualified seller, or they could find a vendor through Google. In fact, many of Google's advertisers were also eBay sellers; these small companies carefully compared eBay's transaction fees to the costs of generating leads through search ads.

eBay's PayPal service faced similar competition from Google Checkout. Despite PayPal's historic focus on eBay auction payments and person-to-person payments, both services sought to offer checkout services to third-party retailers.

In a much-discussed 2013 paper, eBay economists questioned whether Google AdWords advertising actually worked as well as reports seemed to indicate. Berkeley Haas professor Steven

Tadelis and coauthors concluded that "brand-keyword ads have no measurable short-term benefits"—calling into question the rationale for ongoing advertising expenditures.[44] Google staff questioned the study's findings and results. In subsequent months, eBay suffered a sharp drop in algorithmic search traffic from Google, which some attributed to a penalty by Google.[45]

Apple

Apple's 2007 launch of the iPhone touch-screen smartphone had revolutionized the industry, showing the promise of mobile computing through flexible devices that could browse the web as well as run custom applications. As of 2014, Apple retained more than 40% market share among U.S. smartphone users,[46] more than any other single vendor, though less than Android vendors collectively. Apple devices remained more expensive than Androids and competitors, and Apple's users were understood to be a wealthier and freer-spending group. Thus, many app developers continued to write mobile apps for Apple iOS first or, in some instances, only for iOS.

Initially, both Apple and Google had seen Microsoft as a common enemy, but as the firms grew, relations between them became increasingly tense. Eric Schmidt, then CEO of Google, served on the Apple board beginning in 2006 but resigned in 2009, a decision that the companies attributed to potential conflicts of interest.[47] Later, Apple's then-CEO Steve Jobs perceived that Google had breached an agreement not to recruit Apple employees, and Jobs personally contacted Schmidt to offer a terse reminder of the agreement.[48] (In subsequent antitrust litigation, the firms, along with other large Silicon Valley tech companies, agreed to cease the non-solicitation and pay damages to affected employees.)

The most public dispute between Apple and Google came with Apple's September 2012 release of iOS 6, which removed Google Maps (previously preinstalled on every new iOS phone) and substituted its own Apple Maps. This change apparently took Google by surprise, and only in December 2012 did Google provide a replacement for users to install if they so chose. In the interim, users widely criticized Apple Maps, calling into question what benefits Apple obtained by removing Google Maps.

Amazon

Amazon initially sold only its own inventory, but in 1999 Amazon let third-party sellers sell alongside Amazon. At first focused on used books, third-party sellers soon helped Amazon expand into selling almost anything, with Amazon Marketplace items almost as prominent on Amazon's site as the company's own offerings. Many consumers began their shopping decision not at Google but at Amazon, making Amazon a potential de facto search engine for the crucial shopping sector.

Since 1996, Amazon's Associates program let interested websites promote products on Amazon for a fee of up to 8.5%. In an August 2014 announcement, Amazon proposed to broaden its advertising network, including letting external sites advertise both to users on the Amazon site (a feature Amazon had begun some years earlier) and potentially on the sites of Amazon's partners.

Others

From Hulu (online video) to the *New York Times* (news) and Facebook (communications, picture hosting, and app platform), Google's expansion threatened firms in a variety of sectors. Industry pundits issued warnings about the company's ever-expanding scope and its enormous influence. Even foreign governments voiced their concerns. In August 2005, French president Jacques Chirac announced a loan program for the development of a Franco-German multimedia search engine,

citing concerns that Google was "a tool of U.S. cultural imperialism."[49] One observer noted that "Google's ever-expanding agenda has put it on a collision course with nearly every company in the information technology industry: Amazon.com, Comcast, eBay, . . . Who's afraid of Google? Everyone."[50]

What Should Google Do?

In 2005, Google's Schmidt had suggested that "it will take, current estimate, 300 years to organize all the world's information."[51] What would Google do next?

One option was to stay focused on Google's distinctive competence: developing superior search solutions and monetizing them through targeted advertising. This approach offered many avenues for growth, especially when search was broadened beyond the World Wide Web to encompass print, video, mobile, and other information sources.

Alternatively, Google could branch into new areas. For example, it could expand into a full portal like Yahoo! or MSN by aggregating content into thematic channels. It could expand its Checkout function for facilitating transactions. It could continue to challenge Microsoft's prevalence on the PC desktop by developing more products to compete with Windows and Office. It could build warehouses to hold sellers' goods, and then even attempt same-day delivery—perhaps leveraging drones. It could invest heavily in its more speculative new products, such as Google Glass or self-driving cars.

Any of these initiatives would be an enormous undertaking, with tremendous risks and huge potential rewards. But were they consistent with the company's mission to organize the world's information? And if Google chose to pursue any of these opportunities, would its unique governance structure and its bottom-up approach to managing innovation prove to be assets or liabilities?

Google's top executives were characteristically cryptic about their plans, but Schmidt did dismiss some opportunities. Asked whether Google would become a portal, he replied:

> You're using a tired model . . . looking at us based on market share for technologies and ideas that were invented 10 years ago. A much better way to ask that is to say, "Are the things that we're doing consistent with the mission of the company?" We're not in the portal business, we're in the business of making all the world's information accessible and useful.[16]

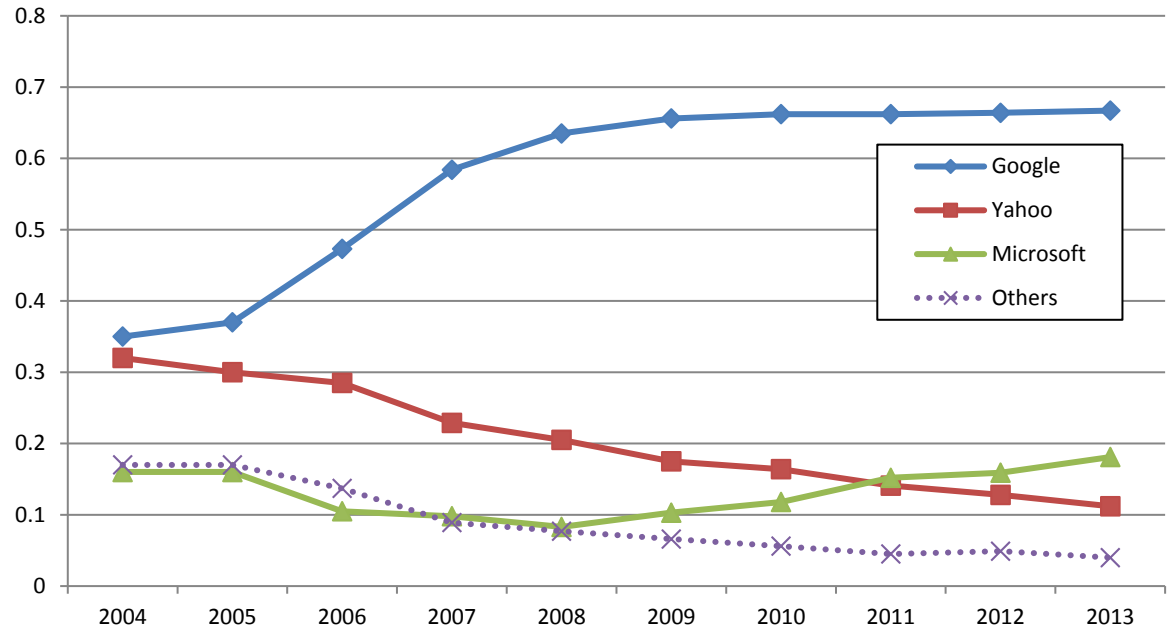
Exhibit 1 Google Financials, 1999–2013 ($ in millions)

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Revenue:	$0.2	$19.1	$86.4	$439.5	$1,465	$3,189	$6,138	$10,604	$16,594	$21,795	$23,651	$29,321	$37,905	$46,039	$55,550
– Ad revenue															
- Google sites	N/A	N/A	66.0	307.0	792	1,589	3,377	6,332	10,624	14,413	15,723	19,444	26,145	31,221	37,453
- Network sites	N/A	N/A	--	103.9	628	1,554	2,688	4,159	5,787	6,714	7,166	8,792	10,386	12,465	13,125
– Licensing and other	N/A	N/A	19.5	28.6	45	45	736	112	181	667	762	1,085	1,374	2,353	4,972
Traffic acquisition cost (network sites)	--	--	--	94.5	525	1,228	2,115	3,308	4,933	5,939	6,169	7,317	8,811	10,956	12,258
Cost of net rev. (data centers, bandwidth, etc.)	0.9	6.1	14.2	37.0	99	229	456	4,225	6,649	8,621	8,844	10,417	13,188	20,634	25,858
R&D	2.9	10.5	16.5	31.7	91	225	484	1,228	2,120	2,793	2,843	3,763	5,162	6,793	7,952
Sales and marketing	1.7	10.4	20.1	43.8	120	246	439	849	1,461	1,946	1,984	2,799	4,589	6,143	7,253
G&A	1.2	4.4	12.3	24.3	56	139	335	751	1,279	1,802	1,668	1,962	2,724	3,845	4,796
Stock-based compensation	--	2.5	12.4	21.6	229	278	200	458	868	1,119	1,164	1,376	1,974	2,523	3,247
Yahoo! patent litigation settlement	--	--	--	--	--	201	--	--	--	--	--	--	--	--	--
Contribution to Google Foundation	--	--	--	--	--	--	90	--	--	--	--	--	--	--	--
TOTAL EXPENSES *	$6.7	$33.8	$75.5	$253.0	$1,123	$2,549	$4,121	$7,054	$11,509	$15,163	$15,339	$18,940	$26,163	$37,415	$45,859
Income (loss) from operations	$(6.5)	$(14.7)	$11.0	$186.5	$342	$640	$2,017	$3,550	$5,084	$6,632	$8,132	$10,381	$11,742	$12,760	$13,966
Net income	$(6.1)	$(14.7)	$7.0	$99.7	$105	$399	$1,465	$3,077	$4,203	$4,226	$6,520	$8,505	$9,737	$10,737	$12,920
Cash and marketable securities, year-end	20.0	19.1	33.6	146.3	334	2,132	8,034	11,234	14,218	15,846	24,485	34,975	44,626	48,088	58,717
Purchase of property and equipment	N/A	N/A	13.1	37.2	176	319	838	1,902	2,402	2,358	810	4,018	3,438	3,273	7,358
Depreciation and amortization	N/A	N/A	9.8	17.8	43	128	256	494	807	1,212	1,240	1,067	1,396	1,988	2,781
Acquisitions, net of cash acquired	N/A	N/A	--	--	40	22	86	402	906	3,320	108	1,067	1,900	10,568	1,448
Revenue by geography:															
– United States	N/A	N/A	74.0	275.3	707	2,127	3,744	6,030	8,698	10,635	11,194	14,056	17,560	23,502	26,768
– International	N/A	N/A	12.4	72.5	254	1,062	2,394	4,573	7,895	11,160	12,457	15,265	20,345	26,673	33057

Source: Google S1 and annual 10K statements.

* 2006 and onwards: Does not include traffic acquisition cost or stock-based compensation.

Exhibit 2 U.S. Search Engine Market Share



Source: Compiled by casewriter from comScore Media Metrix press releases (various).

Note: "Others" includes AOL and Ask.com. Ask.com used its own technology for web search and relied on Google for paid listings.

Exhibit 3 International Search Engine Market Share (selected countries)

Thailand	99%	Italy	95%	UK	89%
Belgium	98%	Mexico	95%	Canada	88%
Brazil	98%	Saudi Arabia	95%	Czech Republic	71%
Indonesia	98%	Sweden	94%	Hong Kong	68%
Egypt	97%	Australia	93%	United States	67%
India	97%	Germany	93%	Japan	40%*
Poland	97%	Malaysia	93%	S. Korea	37%
Spain	96%	Netherlands	93%	Russia	26%
Turkey	96%	New Zealand	92%	China	3%
Denmark	95%	Philippines	90%		
France	95%	Singapore	90%		

Source: Adapted by casewriter from "2013 Search Engine Market Share By Country," Return On Now, http://returnonnow.com/internet-marketing-resources/2013-search-engine-market-share-by-country/.

* Google also powered Yahoo! Japan, which had 53% market share.

Exhibit 4 Google's Statement of Philosophy

Ten things we know to be true

"The perfect search engine," says co-founder Larry Page, "would understand exactly what you mean and give back exactly what you want." When Google began, you would have been pleasantly surprised to enter a search query and immediately find the right answer. Google became successful precisely because we were better and faster at finding the right answer than other search engines at the time. But technology has come a long way since then, and the face of the web has changed. . . . As we keep looking towards the future, these core principles guide our actions.

1. Focus on the user and all else will follow.

Since the beginning, we've focused on providing the best user experience possible. Whether we're designing a new Internet browser or a new tweak to the look of the homepage, we take great care to ensure that they will ultimately serve you, rather than our own internal goal or bottom line. Our homepage interface is clear and simple, and pages load instantly. Placement in search results is never sold to anyone, and advertising is not only clearly marked as such, it offers relevant content and is not distracting. And when we build new tools and applications, we believe they should work so well you don't have to consider how they might have been designed differently.

2. It's best to do one thing really, really well.

We do search. With one of the world's largest research groups focused exclusively on solving search problems, we know what we do well, and how we could do it better. Through continued iteration on difficult problems, we've been able to solve complex issues and provide continuous improvements to a service that already makes finding information a fast and seamless experience for millions of people. Our dedication to improving search helps us apply what we've learned to new products, like Gmail and Google Maps. Our hope is to bring the power of search to previously unexplored areas, and to help people access and use even more of the ever-expanding information in their lives.

3. Fast is better than slow.

We know your time is valuable, so when you're seeking an answer on the web you want it right away—and we aim to please. We may be the only people in the world who can say our goal is to have people leave our homepage as quickly as possible. By shaving excess bits and bytes from our pages and increasing the efficiency of our serving environment, we've broken our own speed records many times over. . . .

4. Democracy on the web works.

Google search works because it relies on the millions of individuals posting links on websites to help determine which other sites offer content of value. We assess the importance of every web page using more than 200 signals and a variety of techniques, including our patented PageRank™ algorithm, which analyzes which sites have been "voted" to be the best sources of information by other pages across the web. As the web gets bigger, this approach actually improves, as each new site is another point of information and another vote to be counted. In the same vein, we are active in open source software development, where innovation takes place through the collective effort of many programmers.

5. You don't need to be at your desk to need an answer.

The world is increasingly mobile: people want access to information wherever they are, whenever they need it. We're pioneering new technologies and offering new solutions for mobile services that help people all over the globe to do any number of tasks on their phone, from checking e-mail and calendar events to watching videos, not to mention the several different ways to access Google search on a phone. In addition, we're hoping to fuel greater innovation for mobile users everywhere with Android, a free, open source mobile platform. Android brings the openness that shaped the Internet to the mobile world. . . .

6. You can make money without doing evil.

Google is a business. The revenue we generate is derived from offering search technology to companies and from the sale of advertising displayed on our site and on other sites across the web. Hundreds of thousands of advertisers worldwide use AdWords to promote their products; hundreds of thousands of publishers take advantage of our AdSense program to deliver ads relevant to their site content. To ensure that we're ultimately serving all our users (whether they are advertisers or not), we have a set of guiding principles for our advertising programs and practices:

* We don't allow ads to be displayed on our results pages unless they are relevant where they are shown. And we firmly believe that ads can provide useful information if, and only if, they are relevant to what you wish to find—so it's possible that certain searches won't lead to any ads at all.

* We believe that advertising can be effective without being flashy. We don't accept pop-up advertising, which interferes with your ability to see the content you've requested. We've found that text ads that are relevant to the person reading them draw much higher clickthrough rates than ads appearing randomly. Any advertiser, whether small or large, can take advantage of this highly targeted medium.

* Advertising on Google is always clearly identified as a "Sponsored Link," so it does not compromise the integrity of our search results. We never manipulate rankings to put our partners higher in our search results and no one can buy better PageRank. Our users trust our objectivity and no short-term gain could ever justify breaching that trust.

7. There's always more information out there.

Once we'd indexed more of the HTML pages on the Internet than any other search service, our engineers turned their attention to information that was not as readily accessible. Sometimes it was just a matter of integrating new databases into search, such as adding a phone number and address lookup and a business directory. Other efforts required a bit more creativity, like adding the ability to search news archives, patents, academic journals, billions of images and millions of books. . . .

8. The need for information crosses all borders.

Our company was founded in California, but our mission is to facilitate access to information for the entire world, and in every language. To that end, we have offices in dozens of countries, maintain more than 150 Internet domains, and serve more than half of our results to people living outside the United States. We offer Google's search interface in more than 110 languages. . . . Using our translation tools, people can discover content written on the other side of the world in languages they don't speak. . . .

9. You can be serious without a suit.

Our founders built Google around the idea that work should be challenging, and the challenge should be fun. We believe that great, creative things are more likely to happen with the right company culture—and that doesn't just mean lava lamps and rubber balls. There is an emphasis on team achievements and pride in individual accomplishments that contributes to our overall success. . . .

10. Great just isn't good enough.

We see being great at something as a starting point, not an endpoint. We set ourselves goals we know we can't reach yet, because we know that by stretching to meet them we can get further than we expected. . . . When we launched Gmail, it had more storage space than any e-mail service available. In retrospect, offering that seems obvious—but that's because now we have new standards for e-mail storage. Those are the kinds of changes we seek to make, and we're always looking for new places where we can make a difference. Ultimately, our constant dissatisfaction with the way things are becomes the driving force behind everything we do.

Source: Google 2010, www.google.com, corporate/tenthings.html, accessed January 7, 2010.

Exhibit 5 Google's 10 Golden Rules

Getting the most out of knowledge workers will be the key to business success for the next quarter century. Here's how we do it at Google.

By Eric Schmidt and Hal Varian, December 2, 2005

What follows are seven key principles we use to make knowledge workers most effective. As in most technology companies, many of our employees are engineers, so we will focus on that particular group, but many of the policies apply to all sorts of knowledge workers.

Hire by committee. Virtually every person who interviews at Google talks to at least half-a-dozen interviewers, drawn from both management and potential colleagues. Everyone's opinion counts, making the hiring process more fair and pushing standards higher. Yes, it takes longer, but we think it's worth it. If you hire great people and involve them intensively in the hiring process, you'll get more great people. We started building this positive feedback loop when the company was founded, and it has had a huge payoff.

Cater to their every need. [T]he goal is to "strip away everything that gets in their way." We provide a standard package of fringe benefits, but on top of that are first-class dining facilities, gyms, laundry rooms, massage rooms, haircuts, carwashes, dry cleaning, commuting buses—just about anything a hardworking engineer might want. Let's face it: programmers want to program, they don't want to do their laundry. So we make it easy for them to do both.

Pack them in. Almost every project at Google is a team project, and teams have to communicate. The best way to make communication easy is to put team members within a few feet of each other. The result is that virtually everyone at Google shares an office. This way, when a programmer needs to confer with a colleague, there is immediate access: no telephone tag, no e-mail delay, no waiting for a reply. Of course, there are many conference rooms that people can use for detailed discussion so that they don't disturb their office mates. Even the CEO shared an office at Google for several months after he arrived. . . .

Make coordination easy. Because all members of a team are within a few feet of one another, it is relatively easy to coordinate projects. In addition to physical proximity, each Googler e-mails a snippet once a week to his work group describing what he has done in the last week. This gives everyone an easy way to track what everyone else is up to, making it much easier to monitor progress and synchronize work flow.

Eat your own dog food. Google workers use the company's tools intensively. The most obvious tool is the Web, with an internal Web page for virtually every project and every task. They are all indexed and available to project participants on an as-needed basis. We also make extensive use of other information-management tools, some of which are eventually rolled out as products. For example, one of the reasons for Gmail's success is that it was beta tested within the company for many months. The use of e-mail is critical within the organization, so Gmail had to be tuned to satisfy the needs of some of our most demanding customers—our knowledge workers.

Encourage creativity. Google engineers can spend up to 20 percent of their time on a project of their choice. There is, of course, an approval process and some oversight, but basically we want to allow creative people to be creative. One of our not-so-secret weapons is our ideas mailing list: a companywide suggestion box where people can post ideas ranging from parking procedures to the next killer app. The software allows for everyone to comment on and rate ideas, permitting the best ideas to percolate to the top.

Strive to reach consensus. Modern corporate mythology has the unique decision maker as hero. We adhere to the view that the "many are smarter than the few," and solicit a broad base of views before reaching any decision. At Google, the role of the manager is that of an aggregator of viewpoints, not the dictator of decisions. Building a consensus sometimes takes longer, but always produces a more committed team and better decisions.

Don't be evil. Much has been written about Google's slogan, but we really try to live by it, particularly in the ranks of management. As in every organization, people are passionate about their views. But nobody throws chairs at Google, unlike management practices used at some other well-known technology companies. We foster an atmosphere of tolerance and respect, not a company full of yes men.

Data drive decisions. At Google, almost every decision is based on quantitative analysis. We've built systems to manage information, not only on the Internet at large, but also internally. We have dozens of analysts who plow through the data, analyze performance metrics and plot trends to keep us as up to date as possible. . . .

Communicate effectively. Every Friday we have an all-hands assembly with announcements, introductions and questions and answers. (Oh, yes, and some food and drink.) This allows management to stay in touch with what our knowledge workers are thinking and vice versa. . . .

[But] there are several problems that we (and other companies like us) face.

One is "techno arrogance." Engineers are competitive by nature and they have low tolerance for those who aren't as driven or as knowledgeable as they are. But almost all engineering projects are team projects; having a smart but inflexible person on a team can be deadly. If we see a recommendation that says "smartest person I've ever known" combined with "I wouldn't ever want to work with them again," we decline to make them an offer. . . .

A related problem is the not-invented-here syndrome. A good engineer is always convinced that he can build a better system than the existing ones, leading to the refrain "Don't buy it, build it." Well, they may be right, but we have to focus on those projects with the biggest payoff. Sometimes this means going outside the company for products and services.

Another issue that we will face in the coming years is the maturation of the company, the industry and our work force. We, along with other firms in this industry, are in a rapid growth stage now, but that won't go on forever. Some of our new workers are fresh out of college; others have families and extensive job experience. Their interests and needs are different. We need to provide benefits and a work environment that will be attractive to all ages.

A final issue is making sure that as Google grows, communication procedures keep pace with our increasing scale. The Friday meetings are great for the Mountain View team, but Google is now a global organization. . . .

We are building technology infrastructure that is dramatically larger, more complex and more demanding than anything that has been built in history. . . . At Google, operations are not just an afterthought: they are critical to the company's success, and we want to have just as much effort and creativity in this domain as in new product development.

Source: Adapted from *Newsweek*, December 2, 2005.

References

[1] "comScore Releases June 2014 U.S. Search Engine Rankings," comScore, July 21, 2014.

[2] Chad Bartley and Steve Weinstein, *High Growth in Search Creates Opportunities for Niche Players*, Pacific Crest Securities, November 4, 2003.

[3] "Worldwide Web Domination," *Industry Standard*, August 6, 2001.

[4] Saul Hansell, "AOL Coaxes Google to Try Busier Ads," *New York Times*, December 20, 2005.

[5] Safa Raschty, "The Golden Search," *Equity Research*, U.S. Bancorp Piper Jaffray, March 2003.

[6] Thomas Rizzo, Microsoft Corporation, "WinFS 101: Introducing the New Windows File System," March 17, 2004, Microsoft Developer Network, referencing IDC data, http://msdn.microsoft.com/enus/library/aa480687.aspx, accessed September 2, 2014.

[7] BIA Kelsey, "Phone Calls Are the New Click: The True SMB Marketing Opportunity," April 2014.

[8] Robert Peck, Alexia Quadrani, Victor Anthony, and Julia Choi, "Google Cubes," *Equity Research,* Bear Stearns, December 19, 2005, p. 3.

[9] Saul Hansell, "Your Ads Here (All of Them)," *New York Times,* October 30, 2005.

[10] Neal Mohan, "The DoubleClick Ad Exchange: Growing the Display Advertising Pie for Everyone," The Official Google Blog, September 17, 2009.

[11] Mark Bergen, "Ad Tech Companies Create Mobile Ad Exchange to Rival Google, Twitter," *Advertising Age*, May 29, 2014.

[12] John Battelle, *The Search: How Google and Its Rivals Rewrote the Rules of Business and Transformed Our Culture* (New York: Penguin Group, 2005).

[13] Larry Page and Sergey Brin, "Letter from the Founders: 'An Owner's Manual' for Google Shareholders," Google Inc., Form S-1 Registration, April 29, 2004.

[14] Thomas R. Eisenmann, "Betting on Google's Future," *Wall Street Journal,* August 24, 2004.

[15] "Interview: Google Guys," *Playboy,* September 2004.

[16] John Battelle, "The 70 Percent Solution," *Business 2.0,* December 2005.

[17] "Google: One Million Servers and Counting," Pandia Search Engine News, July 2, 2007, http://www.pandia.com/sew/481-gartner.html , accessed January 10, 2010.

[18] Matt Lynley, "Ex-Google Employee Blasts Management, Says 20% Time Is Dead," *Business Insider*, March 14, 2012.

[19] David A. Vise and Mark Malseed, *The Google Story* (New York: Delacorte Press), 2005, p. 256.

[20] Charles C. Mann, "How Click Fraud Could Swallow the Internet," *Wired,* January 2006, pp. 138–141, 149–150.

[21] "Google Agrees to Change Its Business Practices to Resolve FTC Competition Concerns In the Markets for Devices Like Smart Phones, Games and Tablets, and in Online Search," FTC, January 3, 2013.

[22] "Google CEO On Privacy: 'If You Have Something You Don't Want Anyone To Know, Maybe You Shouldn't Be Doing It,'" *Huffington Post*, December 7, 2009.

[23] *Goddard v. Google*, N.D.Cal., Case No. C 08-02738 (JF).

[24] Danny Sullivan, "Are Google's Results Getting Too Ad-Heavy & Self-Promotional?," Search Engine Land, July 9, 2013.

[25] comScore, "U.S. Online Video Viewing Surges 13% in Record-Setting December," comScore press release, February 4, 2009.

[26] See, e.g., Ken Fisher, "YouTube and the Copyright Cops: Safe . . . For Now?" *Ars Technica*, July 16, 2006.

[27] "Analyst: YouTube Will Take Half a Billion off Google's Bottom Line This Year," *Silicon Alley Business Insider*, April 3, 2009.

[28] eMarketer, "Advertisers to Spend $5.60 Billion on YouTube in 2013 Worldwide," December 11, 2013.

[29] *Authors Guild v. Google,* 05 Civ. 8136 (DC), Summary judgment decision, November 14, 2013.

[30] Stephen E. Arnold, *The Google Legacy* (Infonortics, 2005), p. 18.

[31] "IE11 Gains the Most Market Share, and Chrome Finally Passes Firefox," TheNextWeb, April 1, 2014.

[32] Jeffrey Birnbaum, "Learning from Microsoft's Error, Google Builds a Lobbying Engine," *Washington Post*, June 20, 2007.

[33] Richard Whitt, "What Do We Mean By 'Net Neutrality?,'" Google Public Policy Blog, June 16, 2007.

[34] Google, "Google Intends to Bid in Spectrum Auction If FCC Adopts Consumer Choice and Competition Requirements," Google press release, July 20, 2007.

[35] Alex Chitu, "Google's Market Share in Your Country," March 13, 2009, http://googlesystem.blogspot.com/2009/03/googles-market-share-in-your-country.html , accessed September 2, 2014.

[36] comScore, "comScore Releases November 2009 U.S. Search Engine Rankings," comScore press release, December 16, 2009.

[37] Adam Kovacevich, "Google's Approach to Competition," Google Public Policy Blog, May 8, 2009.

[38] Scott Cleland, "What is 'One Click Away'?," The Precursor Blog, June 22, 2009.

[39] "Analysis of Google Charm Offensive," Consumer Watchdog, May 7, 2009, http://www.scribd.com/doc/15067030/Anonymous-Analysis-of-Google-Charm-Offensive, accessed September 2, 2014.

[40] "Yahoo! Inc. and Google Inc. Abandon Their Advertising Agreement," Department of Justice, November 8, 2008.

[41] James Rowley, "Antitrust Pick Varney Saw Google as Next Microsoft," *Bloomberg*, February 17, 2009.

[42] European Commission COMP/C-3/39.740, "Commission Obtains from Google Comparable Display of Specialised Search Rivals."

[43] See, e.g., Mathias Döpfner, "Why We Fear Google," *Frankfurter Allgemeine Zeitung*, April 17, 2014.

[44] Thomas Blake, Chris Nosko, and Steven Tadelis, "Consumer Heterogeneity and Paid Search Effectiveness: A Large Scale Field Experiment," *Econometrica,* forthcoming.

[45] Barry Schwarz, "Tabke: Google Penalized eBay for Dropping AdWords Ads," Search Engine Roundtable, June 2, 2014.

[46] comScore, "comScore Reports May 2014 U.S. Smartphone Subscriber Market Share," May 2, 2014.

[47] Apple, "Dr. Eric Schmidt Resigns from Apple's Board of Directors," Apple press release, August 3, 2009.

[48] High-Tech Employee Antitrust Litigation, C 11-2509 LHK. N.D.Cal.

[49] David Litterick, "Chirac Backs Eurocentric Search Engine," *The Telegraph*, August 31, 2005.

[50] Kevin Kelleher, "Who's Afraid of Google?," *Wired*, December 2005, pp. 233–236.

[51] Eric Schmidt, cited in Kevin J. Delaney and Brooks Barnes, "Image Control: For Soaring Google, Next Act Won't Be As Easy As the First—Moves to Search Video, Books Raise Hackles As Owners of Copyrights Complain—An Angry Letter From NBC," *Wall Street Journal,* June 30, 2005, p. A1.