

2004 Founders' IPO Letter

From the S-1 Registration Statement

“An Owner’s Manual” for Google’s Shareholders¹

Introduction

Google is not a conventional company. We do not intend to become one. Throughout Google’s evolution as a privately held company, we have managed Google differently. We have also emphasized an atmosphere of creativity and challenge, which has helped us provide unbiased, accurate and free access to information for those who rely on us around the world.

Now the time has come for the company to move to public ownership. This change will bring important benefits for our employees, for our present and future shareholders, for our customers, and most of all for Google users. But the standard structure of public ownership may jeopardize the independence and focused objectivity that have been most important in Google’s past success and that we consider most fundamental for its future. Therefore, we have implemented a corporate structure that is designed to protect Google’s ability to innovate and retain its most distinctive characteristics. We are confident that, in the long run, this will benefit Google and its shareholders, old and new. We want to clearly explain our plans and the reasoning and values behind them. We are delighted you are considering an investment in Google and are reading this letter.

Sergey and I intend to write you a letter like this one every year in our annual report. We’ll take turns writing the letter so you’ll hear directly from each of us. We ask that you read this letter in conjunction with the rest of this prospectus.

Serving end users

Sergey and I founded Google because we believed we could provide an important service to the world—instantly delivering relevant information on virtually any topic. Serving our end users is at the heart of what we do and remains our number one priority.

Our goal is to develop services that significantly improve the lives of as many people as possible. In pursuing this goal, we may do things that we believe have a positive impact on the world, even if the near term financial returns are not obvious. For example, we make our services as widely available as we can by supporting over 90 languages and by providing most services for free. Advertising is our principal source of revenue, and the ads we provide are relevant and useful rather than intrusive and annoying. We strive to provide users with great commercial information.

We are proud of the products we have built, and we hope that those we create in the future will have an even greater positive impact on the world.

Long term focus

As a private company, we have concentrated on the long term, and this has served us well. As a public company, we will do the same. In our opinion, outside pressures too often tempt companies to sacrifice long term opportunities to meet quarterly market expectations. Sometimes this pressure has caused companies to manipulate financial results in order to “make their quarter.” In Warren Buffett’s words, “We won’t ‘smooth’ quarterly or annual results: If earnings figures are lumpy when they reach headquarters, they will be lumpy when they reach you.”

If opportunities arise that might cause us to sacrifice short term results but are in the best long term interest of our shareholders, we will take those opportunities. We will have the fortitude to do this. We would request that our shareholders take the long term view.

You might ask how long is long term? Usually we expect projects to have some realized benefit or progress within a year or two. But, we are trying to look forward as far as we can. Despite the quickly changing business and technology landscape, we try to look at three to five year scenarios in order to decide what to do now. We try to optimize total benefit over these multi-year scenarios. While we are strong advocates of this strategy, it is difficult to make good multi-year predictions in technology.

Many companies are under pressure to keep their earnings in line with analysts’ forecasts. Therefore, they often accept smaller, predictable earnings rather than larger and less predictable returns. Sergey and I feel this is harmful, and we intend to steer in the opposite direction.

Google has had adequate cash to fund our business and has generated additional cash through operations. This gives us the flexibility to weather costs, benefit from

opportunities and optimize our long term earnings. For example, in our ads system we make many improvements that affect revenue in both directions. These are in areas like end user relevance and satisfaction, advertiser satisfaction, partner needs and targeting technology. We release improvements immediately rather than delaying them, even though delay might give “smoother” financial results. You have our commitment to execute quickly to achieve long term value rather than making the quarters more predictable.

Our long term focus does have risks. Markets may have trouble evaluating long term value, thus potentially reducing the value of our company. Our long term focus may simply be the wrong business strategy. Competitors may be rewarded for short term tactics and grow stronger as a result. As potential investors, you should consider the risks around our long term focus.

We will make business decisions with the long term welfare of our company and shareholders in mind and not based on accounting considerations.

Although we may discuss long term trends in our business, we do not plan to give earnings guidance in the traditional sense. We are not able to predict our business within a narrow range for each quarter. We recognize that our duty is to advance our shareholders’ interests, and we believe that artificially creating short term target numbers serves our shareholders poorly. We would prefer not to be asked to make such predictions, and if asked we will respectfully decline. A management team distracted by a series of short term targets is as pointless as a dieter stepping on a scale every half hour.

Risk vs reward in the long run

Our business environment changes rapidly and needs long term investment. We will not hesitate to place major bets on promising new opportunities.

We will not shy away from high-risk, high-reward projects because of short term earnings pressure. Some of our past bets have gone extraordinarily well, and others have not. Because we recognize the pursuit of such projects as the key to our long term success, we will continue to seek them out. 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 when compared to our current businesses. Although we cannot quantify the specific level of risk we will undertake, as the ratio of reward to risk increases, we will accept projects further outside our current businesses, especially when the initial investment is small relative to the level of investment in our current businesses.

We encourage our employees, in addition to their regular projects, to spend 20% of their time working on what they think will most benefit Google. This empowers them to be more creative and innovative. Many of our significant advances have happened in this manner. For example, AdSense for content and Google News were both prototyped in “20% time.” Most risky projects fizzle, often teaching us something. Others succeed and become attractive businesses.

As we seek to maximize value in the long term, we may have quarter-to-quarter volatility as we realize losses on some new projects and gains on others. We would love to better quantify our level of risk and reward for you going forward, but that is very difficult. Even though we are excited about risky projects, we expect to devote the vast majority of our resources to improvements to our main businesses (currently search and advertising). Most employees naturally gravitate toward incremental improvements in core areas so this tends to happen naturally.

Executive roles

We run Google as a triumvirate. Sergey and I have worked closely together for the last eight years, five at Google. Eric, our CEO, joined Google three years ago. The three of us run the company collaboratively with Sergey and me as Presidents. The structure is unconventional, but we have worked successfully in this way.

To facilitate timely decisions, Eric, Sergey and I meet daily to update each other on the business and to focus our collaborative thinking on the most important and immediate issues. Decisions are often made by one of us, with the others being briefed later. This works because we have tremendous trust and respect for each other and we generally think alike. Because of our intense long term working relationship, we can often predict differences of opinion among the three of us. We know that when we disagree, the correct decision is far from obvious. For important decisions, we discuss the issue with a larger team appropriate to the task. Differences are resolved through discussion and analysis and by reaching consensus. Eric, Sergey and I run the company without any significant internal conflict, but with healthy debate. As different topics come up, we often delegate decision-making responsibility to one of us.

We hired Eric as a more experienced complement to Sergey and me to help us run the business. Eric was CTO of Sun Microsystems. He was also CEO of Novell and has a Ph.D. in computer science, a very unusual and important combination for Google given our scientific and technical culture. This partnership among the three of us has worked very well and we expect it to continue. The shared judgments and extra energy available from all three of us has significantly benefited Google.

Eric has the legal responsibilities of the CEO and focuses on management of our vice presidents and the sales organization. Sergey focuses on engineering and business deals. I focus on engineering and product management. All three of us devote considerable time to overall management of the company and other fluctuating needs. We also have a distinguished board of directors to oversee the management of Google. We have a talented executive staff that manages day-to-day operations in areas such as finance, sales, engineering, human resources, public relations, legal and product management. We are extremely fortunate to have talented management that has grown the company to where it is today—they operate the company and deserve the credit.

Corporate structure

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.

In the transition to public ownership, we have set up a corporate structure that will make it harder for outside parties to take over or influence Google. This structure will also make it easier for our management team to follow the long term, innovative approach emphasized earlier. This structure, called a dual class voting structure, is described elsewhere in this prospectus. The Class A common stock we are offering has one vote per share, while the Class B common stock held by many current shareholders has 10 votes per share.

The main effect of this structure is likely to leave our team, especially Sergey and me, with increasingly significant control over the company's decisions and fate, as Google shares change hands. After the IPO, Sergey, Eric and I will control 37.6% of the voting power of Google, and the executive management team and directors as a group will control 61.4% of the voting power. New investors will fully share in Google's long term economic future but will have little ability to influence its strategic decisions through their voting rights.

While this structure is unusual for technology companies, similar structures are common in the media business and has had a profound importance there. The New York Times Company, The Washington Post Company and Dow Jones, the publisher of The Wall Street Journal, all have similar dual class ownership

structures. Media observers have pointed out that dual class ownership has allowed these companies to concentrate on their core, long term interest in serious news coverage, despite fluctuations in quarterly results. Berkshire Hathaway has implemented a dual class structure for similar reasons. From the point of view of long term success in advancing a company's core values, we believe this structure has clearly been an advantage.

Some academic studies have shown that from a purely economic point of view, dual class structures have not harmed the share price of companies. Other studies have concluded that dual class structures have negatively affected share prices, and we cannot assure you that this will not be the case with Google. The shares of each of our classes have identical economic rights and differ only as to voting rights.

Google has prospered as a private company. We believe a dual class voting structure will enable Google, as a public company, to retain many of the positive aspects of being private. We understand some investors do not favor dual class structures. Some may believe that our dual class structure will give us the ability to take actions that benefit us, but not Google's shareholders as a whole. We have considered this point of view carefully, and we and the board have not made our decision lightly. We are convinced that everyone associated with Google-including new investors-will benefit from this structure. However, you should be aware that Google and its shareholders may not realize these intended benefits.

In addition, we have recently expanded our board of directors to include three additional members. John Hennessy is the President of Stanford and has a Doctoral degree in computer science. Art Levinson is CEO of Genentech and has a Ph.D. in biochemistry. Paul Otellini is President and COO of Intel. We could not be more excited about the caliber and experience of these directors.

We believe we have a world class management team impassioned by Google's mission and responsible for Google's success. We believe the stability afforded by the dual class structure will enable us to retain our unique culture and continue to attract and retain talented people who are Google's life blood. Our colleagues will be able to trust that they themselves and their labors of hard work, love and creativity will be well cared for by a company focused on stability and the long term.

As an investor, you are placing a potentially risky long term bet on the team, especially Sergey and me. The two of us, Eric and the rest of the management team recognize that our individual and collective interests are deeply aligned with those of the new investors who choose to support Google. Sergey and I are committed to

Google for the long term. The broader Google team has also demonstrated an extraordinary commitment to our long term success. With continued hard work and good fortune, this commitment will last and flourish.

When Sergey and I founded Google, we hoped, but did not expect, it would reach its current size and influence. Our intense and enduring interest was to objectively help people find information efficiently. We also believed that searching and organizing all the world's information was an unusually important task that should be carried out by a company that is trustworthy and interested in the public good. We believe a well functioning society should have abundant, free and unbiased access to high quality information. Google therefore has a responsibility to the world. The dual class structure helps ensure that this responsibility is met. We believe that fulfilling this responsibility will deliver increased value to our shareholders.

IPO pricing and allocation

It is important to us to have a fair process for our IPO that is inclusive of both small and large investors. It is also crucial that we achieve a good outcome for Google and its current shareholders. This has led us to pursue an auction-based IPO for our entire offering. Our goal is to have a share price that reflects an efficient market valuation of Google that moves rationally based on changes in our business and the stock market. (The auction process is discussed in more detail elsewhere in this prospectus.)

Many companies going public have suffered from unreasonable speculation, small initial share float, and stock price volatility that hurt them and their investors in the long run. We believe that our auction-based IPO will minimize these problems, though there is no guarantee that it will.

An auction is an unusual process for an IPO in the United States. Our experience with auction-based advertising systems has been helpful in the auction design process for the IPO. As in the stock market, if people bid for more shares than are available and bid at high prices, the IPO price will be higher. Of course, the IPO price will be lower if there are not enough bidders or if people bid lower prices. This is a simplification, but it captures the basic issues. Our goal is to have the price of our shares at the IPO and in the aftermarket reflect an efficient market price—in other words, a price set by rational and informed buyers and sellers. We seek to achieve a relatively stable price in the days following the IPO and that buyers and sellers receive an efficient market price at the IPO. We will try to achieve this outcome, but of course may not be successful. Our goal of achieving a relatively

stable market price may result in Google determining with our underwriters to set the initial public offering price below the auction clearing price.

We are working to create a sufficient supply of shares to meet investor demand at IPO time and after. We are encouraging current shareholders to consider selling some of their shares as part of the offering. These shares will supplement the shares the company sells to provide more supply for investors and hopefully provide a more stable price. Sergey and I, among others, are currently planning to sell a fraction of our shares in the IPO. The more shares current shareholders sell, the more likely it is that they believe the price is not unfairly low. The supply of shares available will likely have an effect on the clearing price of the auction. Since the number of shares being sold is likely to be larger at a high price and smaller at a lower price, investors will likely want to consider the scope of current shareholder participation in the IPO. We may communicate from time to time that we are sellers rather than buyers at certain prices.

While we have designed our IPO to be inclusive for both small and large investors, for a variety of reasons described in “Auction Process” not all interested investors will be able to receive an allocation of shares in our IPO.

We would like you to invest for the long term, and you should not expect to sell Google shares for a profit shortly after Google’s IPO. We encourage investors not to invest in Google at IPO or for some time after, if they believe the price is not sustainable over the long term. Even in the long term, the trading price of Google’s stock may decline.

We intend to take steps to help ensure shareholders are well informed. We encourage you to read this prospectus, especially the Risk Factors section. We think that short term speculation without paying attention to price is likely to lose you money, especially with our auction structure. In particular, we caution you that investing in Google through our auction could be followed by a significant decline in the value of your investment after the IPO.

Googlers

Our employees, who have named themselves Googlers, are everything. Google is organized around the ability to attract and leverage the talent of exceptional technologists and business people. We have been lucky to recruit many creative, principled and hard working stars. We hope to recruit many more in the future. We will reward and treat them well.

We provide many unusual benefits for our employees, including meals free of charge, doctors and washing machines. We are careful to consider the long term advantages to the company of these benefits. Expect us to add benefits rather than pare them down over time. We believe it is easy to be penny wise and pound foolish with respect to benefits that can save employees considerable time and improve their health and productivity.

The significant employee ownership of Google has made us what we are today. Because of our employee talent, Google is doing exciting work in nearly every area of computer science. We are in a very competitive industry where the quality of our product is paramount. Talented people are attracted to Google because we empower them to change the world; Google has large computational resources and distribution that enables individuals to make a difference. Our main benefit is a workplace with important projects, where employees can contribute and grow. We are focused on providing an environment where talented, hard working people are rewarded for their contributions to Google and for making the world a better place.

Don't be evil

Don't be evil. We believe strongly that in the long term, we will be better served-as shareholders and in all other ways-by a company that does good things for the world even if we forgo some short term gains. This is an important aspect of our culture and is broadly shared within the company.

Google users trust our systems to help them with important decisions: medical, financial and many others. Our search results are the best we know how to produce. They are unbiased and objective, and we do not accept payment for them or for inclusion or more frequent updating. We also display advertising, which we work hard to make relevant, and we label it clearly. This is similar to a well-run newspaper, where the advertisements are clear and the articles are not influenced by the advertisers' payments. We believe it is important for everyone to have access to the best information and research, not only to the information people pay for you to see.

Making the world a better place

We aspire to make Google an institution that makes the world a better place. In pursuing this goal, we will always be mindful of our responsibilities to our shareholders, employees, customers and business partners. With our products, Google connects people and information all around the world for free. We are adding other powerful services such as Gmail, which provides an efficient one gigabyte Gmail account for free. We know that some people have raised privacy concerns, primarily over Gmail's targeted ads, which could lead to negative

perceptions about Google. However, we believe Gmail protects a user's privacy. By releasing services, such as Gmail, for free, we hope to help bridge the digital divide. AdWords connects users and advertisers efficiently, helping both. AdSense helps fund a huge variety of online web sites and enables authors who could not otherwise publish. Last year we created Google Grants-a growing program in which hundreds of non-profits addressing issues, including the environment, poverty and human rights, receive free advertising. And now, we are in the process of establishing the Google Foundation. We intend to contribute significant resources to the foundation, including employee time and approximately 1% of Google's equity and profits in some form. We hope someday this institution may eclipse Google itself in terms of overall world impact by ambitiously applying innovation and significant resources to the largest of the world's problems.

Summary and conclusion

Google is not a conventional company. Eric, Sergey and I intend to operate Google differently, applying the values it has developed as a private company to its future as a public company. Our mission and business description are available in the rest of this prospectus; we encourage you to carefully read this information. We will optimize for the long term rather than trying to produce smooth earnings for each quarter. We will support selected high-risk, high-reward projects and manage our portfolio of projects. We will run the company collaboratively with Eric, our CEO, as a team of three. We are conscious of our duty as fiduciaries for our shareholders, and we will fulfill those responsibilities. We will continue to strive to attract creative, committed new employees, and we will welcome support from new shareholders. We will live up to our "don't be evil" principle by keeping user trust and not accepting payment for search results. We have a dual class structure that is biased toward stability and independence and that requires investors to bet on the team, especially Sergey and me.

In this letter we have talked about our IPO auction method and our desire for stability and access for all investors. We have discussed our goal to have investors who invest for the long term. Finally, we have discussed our desire to create an ideal working environment that will ultimately drive the success of Google by retaining and attracting talented Googlers.

We have tried hard to anticipate your questions. It will be difficult for us to respond to them given legal constraints during our offering process. We look forward to a long and hopefully prosperous relationship with you, our new investors. We wrote this letter to help you understand our company.

We have a strong commitment to our users worldwide, their communities, the web sites in our network, our advertisers, our investors, and of course our employees. Sergey and I, and the team will do our best to make Google a long term success and the world a better place.

A handwritten signature in black ink that reads "Larry Page". The script is fluid and cursive, with the first letters of "Larry" and "Page" being capitalized and prominent.

Larry Page

A handwritten signature in black ink that reads "Sergey Brin". The script is fluid and cursive, with the first letters of "Sergey" and "Brin" being capitalized and prominent.

Sergey Brin

¹ Much of this was inspired by Warren Buffett's essays in his annual reports and his "An Owner's Manual" to Berkshire Hathaway shareholders.

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2004 Founders' Letter

Google was born in 1998. If it were a person, it would have started elementary school late last summer (around August 19), and today it would have just about finished the first grade.

Of course companies are not people. Among other obvious differences, they must be responsible and selfsufficient at a very early age. But a long perspective, like that of a human lifespan, is useful in assessing yearby-year developments. While it may seem that we have come far already, this is just the beginning of a lifetime.

And while Google is not a single person, it does embody the effort, ability, and commitment of thousands of individuals. Together we strive toward a common mission: to organize the world's information and make it universally accessible and useful. This is an infinitely large task for a long-term company.

Last year, Larry discussed the principles of our work toward this goal in his letter that we included in the prospectus for our initial public offering. In this letter, I will update you on our progress over the past year, our team, and where we are headed in the future.

345 DAYS

It is hard to believe less than a year has passed since our last letter, given how much has happened. We made some big strides toward making more web information nearly instantly available. But just as important, we branched out to make a growing array of media forms and information types more accessible and, hopefully, more useful to people all around the world.

Here are some of the highlights:

8 billion pages. In web search alone, we doubled the size of our index over the past year. Now, users can search over 8 billion web pages and experience greater relevance. We have simultaneously worked to ensure that users encounter less spam or other interference.

More local information:

Google Maps. Released early this year, Google Maps is an original interface to maps on the web, letting people plot routes, get directions, and find businesses on a map intuitively and in a flash.

Keyhole. Our acquisition of this geographic information search pioneer brings to Google users a stunning digital mapping tool. Keyhole lets people view 3D images of any place on Earth, including a rich database of roads, businesses and many other points of interest.

Google SMS. Often when people need information they're not at a desktop computer. But they can use their cell phone to send a text message to GOOGL (46645) with a query and zip code to get local results in that area.

But not all information that matters to people is on the web. Much of it resides in different media - in books, on television, or on their hard drives. So we launched projects addressing each:

Google Print. Announced late last year, Google Print seeks to digitize and make searchable the wealth of the world's knowledge that is in the form of books. We have programs to work with both publishers and libraries to digitize their collections, including those at Stanford, Harvard, Oxford, the University of Michigan, and the New York Public Library.

Google Scholar. This service applies the power of link and citation analysis to scholarly research. With Google Scholar, researchers, students, professors, and others can find relevant information drawn from literature such as peer-reviewed papers, theses, books, preprints, abstracts, and technical reports.

Google Video. The preview release of Google Video demonstrated how searching television can work: People can search the content of TV programs, find programs containing the content they're looking for, and discover where and when the program next airs.

Google Desktop Search. Why should it be easier to search the web than it is to search for the information on your own hard drive? Google Desktop Search lets people search their own computer for files, MP3s, web history, and more, just as easily as they can search on Google.

Online communications have become pervasive in people's lives - so pervasive, in fact, that people often don't even think of it as information. As a result, we've begun developing products that improve the ways people can talk to each other - and share ideas and experiences - online.

Gmail. I am writing this document using Gmail, our innovative web mail service. It provides people with a huge amount of storage (1 gigabyte per account, free) and fast, Google-style search through their mail.

Picasa. With the acquisition of Picasa, we can help people manage their visual information in digital photographs. We released a much improved version of Picasa, and with Gmail integration, have started the work of making it easy for people to share photographs with family and friends.

Blogger. Blogging is about personal expression and the freedom to share ideas. This year we completely redesigned Blogger and introduced powerful features like comments and rich-text editing. In doing so, we've made it quicker and easier than ever for people to share their thoughts online.

We also launched a number of improvements to our AdWords and AdSense programs to make it easier and more rewarding for both advertisers and publishers to participate in the increasing use of commercial information online. Notably, we have focused on improving our ads quality, which increases ads relevance for users, and clickthrough rates for our advertisers and publishers.

Highlights for advertisers included:

- Smart pricing, which automatically adjusts the price paid for clicks from the Google content network based on our estimates of the value of the clicks.
- Image ads, which enable advertisers to use graphical ad formats, instead of simply plain text, on Google's content network.
- AdWords API and a collection of campaign management tools, which make it simpler and more efficient for advertisers and third parties to track and modify their ad campaigns.

Highlights for publishers include:

- The expansion of AdSense for content (in which we serve AdWords ads targeted to content on a publisher's site) to 10 new languages.
- The launch of AdSense for search (in which publishers can sign up online and offer Google search and related advertising on their site) in 21 new languages.

- New ad formats and improved reporting tools which give publishers greater monetization opportunities and more precise tracking.

We also made it affordable for organizations of any size to provide search as good as Google across their public websites and intranets. In 2005, we launched the Google Mini search appliance, which embeds Google search technology on a hardware platform.

70-20-10

Noting the number and range of these new offerings, some observers have wondered whether Google should focus more on its core - web search - because distractions from non-core services have previously led search engine companies astray. Others have asserted that we are a “one-trick pony,” too reliant on web search, and that we need to diversify.

Let me clarify our strategy in this regard: We have decided that we need balance among core and expanded services. Larry and I use a rule called 70-20-10. Seventy percent of our effort goes to our core: our web search engine and our advertising network. These products still are the largest contributors to the financial health of the company. {Comscore Media Metrix (October 2004) reports that our advertising network, which includes thousands of content sites, sites that use Google search, and Google properties, reaches 80% of Internet users.} But incremental resources have diminishing returns in almost any undertaking, so it is not desirable to put all your resources on the core product. That’s why we allocate 20 percent for adjacent areas such as Gmail and Google Desktop Search. The remaining 10 percent is saved for anything else, giving us the freedom to innovate. This is the logic behind our weighted balance.

Larry, Eric, and I are proud to be at a company which delivers new products so quickly - and at such a high quality. But we’re even more proud that so many people tell us that these products improve their lives.

The team that built it

Since we started Google, Larry and I have cared deeply about the people we hire and how we can find and attract the most qualified applicants. We then strive to empower and reward our employees from their first day at Google.

And those first days can be in many places. We have offices in 12 countries, and we’ve also begun building out research and development centers in Zurich,

Bangalore, and Tokyo. To date, we have built a great team, growing from 2,000 to more than 3,000 in the past year alone.

In this process, we have been careful to avoid hiring people who would not be good contributors at Google the 'false positives.' But we have paid less attention to avoiding 'false negatives.' Perhaps we have focused too sharply on certain technical skills. I am sure there have been many people who would have excelled at Google, but whom we failed to hire.

As we continue to grow and start to saturate certain specialties within geographic areas where we are based, we will redouble our efforts to identify and hire the most qualified candidates. Choosing the best people is a fundamental challenge for every company, but it is not a proven science. Nonetheless, we are committed to making Google a natural home for a diverse group of the most talented people in our industry, and we'll continue to work towards that goal.

We believe we have created a work environment that attracts exceptional people. We know that people value meaning in their work; they want to be involved with things that are important and that are going to make a difference. That is what we let them do at Google. We give them autonomy by structuring projects around small teams.

Our huge computational resources and business resources allow those teams to build great products and also empower individuals to create and test their own ideas.

Google employees have "20 percent time" - effectively one day per week - in which they are free to pursue projects they are passionate about and think will benefit Google. The results of this creative effort already include products such as Google News, Google Suggest, and Orkut - products which might otherwise have taken an entire start-up company to create and launch.

We have never forgotten since our start-up days that great things happen more frequently within the right culture and environment. So we offer Googlers a generous host of benefits - such as an on-site doctor and two fresh meals a day - as part of our efforts to keep Google a motivating, healthy, and productive place.

Compensation that rewards contribution

It's also why we are committed to rewarding employees fairly, commensurate with their contribution. We have instituted a number of incentives throughout the years, such as encouraging peers to recommend each other for company bonuses. But as

we have grown into a larger, public company, we have recognized that our compensation system must evolve. Beyond simply addressing the accounting treatment of options and other equity incentives, it must ensure that compensation is fair, offers good performance incentive, and facilitates hiring and retention.

We believe strongly in being generous with our greatest contributors. In too many companies, people who do great things are not justly rewarded.¹ Sometimes, this is because profit-sharing is so broad that any one person's reward gets averaged out with the rewards of everyone else. Other times, it's because contributions are simply not recognized. But we intend to be different. That is why we developed the Founders' Award program over the past quarter.

The Founders' Award is designed to give extraordinary rewards for extraordinary team accomplishments. While there's no single yardstick for measuring achievement, a general rule of thumb is that the team accomplished something that created tremendous value for Google. The awards pay out in the form of Google Stock Units (GSUs) that vest over time.² Team members receive awards based on their level of involvement and contribution, and the largest awards to individuals can reach several million dollars.

To date, Larry and I have given out two such awards for a total of about \$12 million. We are currently planning to make two to three additional awards of similar size for recent work. Like a small start-up, Google will provide substantial upside to our employees based on their accomplishments. But unlike a start-up, we provide a platform and an opportunity to make those accomplishments much more likely to occur.

Extraordinary contributions are not the only area where our compensation practices have evolved. We have also put in place a new long-term incentive program to complement our traditional stock option plan. We believe that our previous compensation practices could expose new hires to market volatility that is not related to their individual performance or contribution. Under our revised program, newly hired employees will still receive some traditional-style stock options. But a significant component of their hiring grant will come in the form of GSUs.² The actual number of GSUs any employee receives in any year is adjusted, based on the individual performance of the employee and on their option strike price relative to other employees who started at about the same time. We believe this approach accomplishes two important goals: it significantly reduces distortions based on the volatility of the initial strike price, and it provides a better incentive by more directly tying reward to performance.

Look for us to continue exploring novel ideas in benefits, compensation, and culture. Our goal is to build a company characterized not only by success and innovation, but also by the highest levels of integrity and fairness in our dealings with one another.

Our homework

Next year, Larry and I hope to report as much progress as we have had over the past year. Here are some of the areas in which we hope to advance:

More information: Currently, our index covers only a fraction of the world's information, and new information is being created at an extraordinary pace every day.³ We aim to greatly expand the scope of what's searchable, making more and different types of information readily accessible.

More mature products: Many of our latest products are in various test stages. In the coming year, we expect to see them develop further, graduate from Google Labs, and move from beta into more general availability.

The W-W in WWW

Google has always been a globally-available service, by virtue of the nature of the internet. And today, we strive to be a globally-useful service and a truly global company. Google search is available in over 100 interface languages on 112 international domains. We offer 41 different language interfaces for our AdWords product, and 21 for AdSense. We have offices in 12 countries.

But we have far to go. We need to make more of our products and services, not just Google's core search and ad products, available in more countries and languages. We need to figure out how to overcome certain technological challenges: for example, it's hard to offer a useful map product in countries where many places remain essentially unmapped. This is even harder in countries that do not have computers.

Google.org

We are aware of the challenges that are even more fundamental, such as: how to help people access water, clothing, and shelter, let alone information. In a direct sense such challenges are beyond the reach of even the most ambitious information-technology company. But our actions in areas of our competence and expertise are guided by an awareness of how much needs to be done to create opportunities for people in all countries of the world.

In last year's Founder's Letter, we made a commitment to set up a non-profit arm, called the Google Foundation, which we hope to be a lasting symbol of Google's values. As we said then, we hope that someday this institution will eclipse Google itself in overall world impact by ambitiously applying innovation and significant resources to the largest of the world's problems. We are grateful to have had the opportunity in the past year to brainstorm with some of the world's most dedicated and talented philanthropists and social entrepreneurs. We realize that the resources we have in mind, while large for a corporate foundation, are nonetheless small compared with offerings from governments and many non-governmental organizations (NGOs). This only increases our determination to find original ways to extend our assets, so that we can drive scalable, sustainable efforts. We have always been good at using our resources creatively; Larry and I started Google using Lego™ blocks. Thankfully, we now have more to offer, but the underlying principle is the same: Never stop looking for ways to do the best with what you have.

As a result, we believe we need to go beyond the traditional definition of a foundation and combine a variety of approaches - investing in socially progressive companies, making targeted philanthropic donations, influencing public policy, and more. We have therefore chosen to change the Google Foundation name and adopt the broader name Google.org. We are currently working on staffing as well as defining the goals, priorities, and principles of Google.org. We hope to have a lot more to share with you on this front by next year.

In the past year, we've learned a lot about how to run a company like Google, how to attract the best people, and how to arrange our efforts for the best result.

But all credit, of course, goes to our fellow Googlers. Throughout a year full of potential distractions, you demonstrated unwavering focus on the work at hand, dedication to our mission, and often soaring vision. We are honored to work with you.

If Google were a person, it would graduate from high school in 2016. Given a typical life span, it would expect to be around for almost a century - or more, thanks to continual innovations in healthcare technology. Today, it would only have seen a glimmer of its full potential.

We're just getting started.



Larry Page



Sergey Brin

¹ Often noted is the case of Shuji Nakamura. The inventor of the blue LED received a bonus of around \$200, while his company retained rights to the patent. Last year, he reached a legal settlement with his employer for \$8M.

² A Google Stock Unit (GSU) is a contractual promise made by the company to an employee to issue a specific number of shares to that employee at some future date, after they are vested. Unlike an option, which gives an employee the right to purchase a share at a given time for a set price, GSUs are already shares.

³ “How Much Information is There?” by Peter Lyman and Hal Varian, 2003.
<http://www.sims.berkeley.edu/research/projects/how-much-info-2003/>

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2005 Founders' Letter

Sitting here today, I cannot believe that a year has passed since Sergey last wrote to you. Our pace of change and growth has been remarkable. All of us at Google feel fortunate to be part of a phenomenon that continues to rapidly expand throughout the world. We work hard to use this amazing expansion and attention to do good and expand our business as best we can.

We remain an unconventional company. We are dedicated to serving our users with the best possible experience. And launching products early - involving users with "Labs" or "beta" versions - keeps us efficient at innovating.

We manage Google with a long-term focus. We're convinced that this is the best way to run our business. We've been consistent in this approach.

We devote extraordinary resources to finding the smartest, most creative people we can and offering them the tools they need to change the world. Googlers know they are expected to invest time and energy on risky projects that create new opportunities to serve users and build new markets. Our mission remains central to our culture. We believe more than ever that by organizing the world's information and making it universally accessible and useful, we can make the world a better place.

As Google grows, we touch more parts of society. This visibility means we have a responsibility to be transparent about what we do, to work in partnership with existing industries, and to explain how our moral compass - "Don't be evil" - guides us in making hard choices.

In this letter, I'll give you my perspective on our progress, the issues we face, and where we're headed.

Products

Search

Web search and advertising are our main products, and we continue to target 70 percent of our resources in these areas. We work very hard on web search. In Q3 of 2005 we expanded our coverage to reach about three times as much information as any other search engine, or more than 1,000 times our original coverage. What does that mean to you? You can find a lot more information on Google than anywhere else. That kind of expansion takes hard engineering work, as well as lots of computers.

We've also added new ways for users to add content that other users can find. Google Sitemaps makes it easier for webmasters to ensure that Google searches find the content they create, and Google Base aims to get the world's structured information organized and searchable through Google search. Now anyone can submit information on things with lots of attributes, such as cars, which you can search for by price, location, model, and so on. The same goes for finding recipes by their main ingredient, events by date and location, and countless other types of content. If you have any kind of information, our goal is to get it organized in Base and make it seamlessly available to all Google users.

Our search team also works very hard on relevancy - getting you exactly what you want, even when you aren't sure what you need. For example, when Google believes you really want images, it returns them, even if you didn't ask (try a query on sunsets).

An important aspect of relevancy is personalization. Last year, we launched personalized search, which gathers information about your interests in order to customize your search results. If you'd like personalized search results, which offer improved relevancy, all you have to do is sign in to your Google Account. Look for the link on the upper right side of the main Google homepage. You can also now personalize Google News and the Google homepage.

Currently we have at least 20 significant projects going on in web search, but I won't be able to cover even a small fraction of them here. Search will remain a huge focus for us until Google can always tell exactly what you want and understands everything - a task that will certainly take our engineers a while. In fact, we're excited that our list of things to do in core search seems to get longer as we learn more.

Advertising

Advertising is our other huge area of focus. Every year we're seeing how businesses increase their advertising spending with Google because of the greater and more

measurable return on their investment. This fundamental shift in the advertising industry has a powerful influence on our growth.

One area of focus for us is serving very large companies and very small companies with advertising solutions. Right now our sweet spot is more in the middle.

We have always been bullish on opportunities to improve our products and innovate in our ads solutions. In 2005 we rolled out several innovations:

- Site targeting - A new product that enables brand advertisers to bid for specific sites by impression, with a variety of text and image ad formats.
- On-site advertiser signup - A program that helps sites easily add advertisers.
- Improved AdWords API - A computer-to-computer interface into the ads system that helps drive efficiency and scale for large customers.
- Link units - A set of topical advertising links.
- Referrals - A new program that enables publishers to make money by introducing products such as AdSense or Firefox to their users.
- Quality-based bidding - A feature that helps advertisers keep keywords running while aligning incentives for high-quality ads.

Over the last year, we substantially improved quality and monetization per page of our advertising. Not bad - but we think there's room for more improvement. Just try typing 10 commercial queries into Google and see if the ads are perfect. In my experience, we still have a ways to go - just like with search.

Google Meets the Real World

A lot of you tell me you want Google to find your keys. We're not quite ready to announce that, but we are now able to find local businesses, and many other things in the real world, with our strong products, Google Local, Google Maps, Google Earth, and local advertising.

We added satellite photos to Maps last year, and we have tremendous and improving coverage of the whole globe, not to mention the Moon and Mars. We can even serve really nice maps, directions, and satellite photos to your cell phone using Google Local for Mobile. This product has saved me many times. The value of these products is amazing - we were able to integrate "before" and "after" aerial pictures of Hurricane Katrina into Google Earth, which the Coast Guard used to help find and rescue people.

Mobile

Speaking of mobile, we've also had a bunch of activity in this area. We signed a huge deal with T-Mobile for placement of Google on their phones. We've also released many products for mobile, including web search, Blogger, Gmail, and various SMS services.

Communications

Gmail has made tremendous progress in this area. The team has continually made a ton of enhancements, and recently integrated instant messaging right into your web browser. Our competitors haven't been able to match Gmail's clean interface and huge power - we currently offer about 2.7GB of searchable storage for free. We also made it easier to sign up for Gmail by using your mobile phone, while making it hard for spammers to get accounts.

Last year we also released Google Talk, which you can use to instant message or make high-quality voice calls. Talk uses open standards, and we pledged to interoperate with other providers to enable users to talk to anyone on any network, just like you can email anyone, no matter which service you use.

Other 2005 Products

I'm amazed at the quality and diversity of the video available on Google Video, with more being added every day. You can buy first-run programs, such as "Survivor" from CBS, with high picture quality, and watch them on your computer anytime. Or you can submit your own videos and let anyone in the world watch them for free.

You can even embed a video from Google Video on one of your own web pages and let us do the work of actually serving it. To view some of my favorites, search for "russian climbing" for acrobatics on tall buildings, "bsb" for amazing lip synchroners, or "airbus 7" to watch an Airbus being built in seven minutes.

For companies, we released the bright blue Google Mini, which does a great job of finding all your corporate information. It's easy to set up, and doesn't break the bank at \$1,995 with a year of support. You can also get special corporate versions of many of our software products.

For your computer, we also launched a bunch of products. The easiest way to get them all is with our new Google Pack, which automatically installs essential software from Google and third parties in a simple, painless way. Pack currently includes Earth, Picasa photo management, Desktop, Toolbar, Firefox, Norton Antivirus, Ad-Aware, Adobe Reader, and a nice screensaver. Many of these products were released or updated in the last year, including Earth, Picasa, and

Desktop, which now has a sidebar that shows mail, weather, photos, related information, and other cool stuff. These products have surpassed our expectations, and I highly recommend installing them using Pack - the simplest and fastest installation process you've ever tried.

Continuous Innovation, Not Instant Perfection

I'm delighted that so many people expect every new product from Google to astonish them as soon as it's released. We try hard to do brilliant things, but that isn't really how we operate our business. We try a lot of innovative things, and many of them won't be successful. At first it can be hard to tell the difference. Many products I thought were initially so-so have become huge successes - our ads system, for instance, took quite a while and many improvements before its achievements became clear.

An important part of our development process is our willingness to experiment publicly. Our teams are more productive once they get real users and feedback. We have learned that the best way to make something great is to actually launch it to the public. That's why we have the Google Labs and "beta" labels - these are our experiments.

Deep Engineering Projects

I mentioned earlier how we are striving to make Google really understand your query and all the information in the world. To do that, we will have to make Google smart, and that requires artificial intelligence. We are particular believers in large-scale AI that involves both a lot of computation and a lot of data. We're looking to build the best center for this kind of work in the world.

We have many deep infrastructure and systems projects in engineering, involving both hardware and software layers. Issues of machine allocation and sharing, data storage, access, and search and networking are all hot areas of work for us. I also believe that even our programming languages and development environments could be significantly improved. We believe our productivity can be significantly enhanced with the right investments in these areas.

Acquisitions

We have been busy buying companies opportunistically. In 2005 we purchased 15 different companies for \$85 million. That number will increase to \$130 million if they meet certain milestones. One of our more notable acquisitions was Urchin, a maker of web analytics that help websites understand where their visitors came from and

what they are doing. We really want our customers to track conversions and the performance of their advertising, because when they do, they make more informed bids in our ads auction. So we made Urchin - renamed Google Analytics - free. There is a lot more demand for Analytics than we expected, and we're working hard to meet it. That's the kind of problem we like.

Already this year we have purchased the company that makes SketchUp, a very cool intuitive 3D drawing system used by architects and casual users alike. We also purchased the company that makes Writely, a very exciting web-based collaborative word processor.

We also bought dMarc, an automated advertising system for the radio industry. The initial payment totaled \$102 million, with possible additional contingent payments of up to \$1.136 billion over the next three years. The very substantial contingent payments are based on product, net revenue, and advertising inventory milestones that we believe will add huge value to our business if they are met. The business was started and is headed by two experienced brothers, Chad and Ryan Steelberg, who also founded AdForce, an Internet advertising company that went public and was later acquired. We're very excited about helping our advertisers easily purchase radio ads.

Partnerships

One of the great untold stories of Google is our ability and desire to be a strong partner to many companies. We take our partnerships very seriously. The seriousness with which we meet these commitments is surpassed only by our desire to be an even stronger and more supportive partner. Early on, we actually briefly shut down the main Google web search in order to serve traffic from Netscape, a new partner that had underestimated their demand for our search service.

We have signed a deal with Time Warner and AOL to renew our partnership, through which we provide search and advertising solutions for AOL, and also agreed to invest \$1 billion for 5 percent of AOL. This deal includes many valuable aspects - for example, Google and AOL's AIM instant messaging users should soon be able to communicate directly. We're pleased that we've been able to build this relationship and hope our two companies will do more together.

Ask.com has remained an important partner, with Google providing advertising solutions for them. We signed a significant partnership with Sun, which will provide an intriguing distribution channel for our products. We now have Google search boxes in a number of browsers through ongoing partnerships with Apple and

Mozilla. And we even have a partnership with NASA involving scientific research and space, but in this case, unfortunately, “space” refers to the kind on the ground, and involves future expansion of our headquarters.

We have a tremendous number of relationships with publishers of books, videos, or websites to provide advertisements and revenue, or distribution and access to customers interested in their products. To help enhance communication with our partners, we held a very successful conference, Zeitgeist 2005, which brought everyone together at our headquarters. Partnerships - strategic and tactical, technical and marketing - are a huge priority for our company, and we expect to develop and cultivate more of these relationships.

Google And Our Impact On The World

Last year Google was very much in the news for our involvement in a variety of important and controversial issues. My opinion is that this is unavoidable; our business touches an enormous number of people on matters they care about deeply. We feel a tremendous responsibility to make the right decisions on behalf of our company, our users, and the world.

Privacy

This topic is particularly important at a time when technologies that can impact privacy are changing rapidly and people’s expectations of privacy are shifting and vary widely. Our users always come first, and so while we strive to offer really useful, innovative products, we also know that there might be trade-offs between privacy and functionality. But great products manage to capture a perfect balance, and that’s what we’re striving for at Google.

The good news is that the interests of our company and those of our users are well aligned. If anything bad happens to you with respect to privacy, we could lose your trust, and that would hurt our business. Recently we received a subpoena from the U.S. government that was a broad request for URLs and user queries. We resisted the request in court and ultimately were asked to return only a small number of random URLs and no user queries. We will continue to work hard to protect our users’ privacy, and think this ruling was a positive sign - a U.S. court siding with us in resisting overly broad requests for information.

Book Search

We believe one of the greatest services we can provide to users around the world is to increase people’s access to human knowledge. There has been tremendous

confusion over our book scanning efforts. Part of the problem has been that we have several products, some of which are only partially launched. The product available in force is the Google Book Search Partner Program. A great variety of publishers have signed contracts legally authorizing us to show full pages of their books online in response to searches. These are most of the books you'll see now on Google. This service is really useful, and many users follow the links to buy the books, which is good for the publishers, of course.

We also announced a groundbreaking effort to digitize several humongous university libraries. Many people falsely assume we offer the full text of library books online, like the ones you see now on books.google.com. Actually, we don't. We don't have permission to do all of that, and we respect copyright, of course. If a library book is in copyright, then users just get basic bibliographic information (such as the book's title and the author's name), usually quotations from the book, and information about which library it's in or where it can be bought. Even just this "virtual card catalog" view will still be an amazing tool for serious research because, unlike a traditional card catalog, you'll be able to search the full text of a book. But you won't be able to look at full pages unless legal agreements are in place or the book is out of copyright. If publishers or authors don't want to have their books digitized, they just have to say so, and we will exclude them. We'll even work hard with other providers to make this process easy.

For some publishers and authors, the transition to the online world is a huge change, and one they understandably view with some trepidation. We believe this transition will help the economics of publishers and authors because the information contained in books will be more useful and accessible to the world. Books that were previously hard to access could be sold as a traditional book or as an online book, or even monetized through advertising - at the copyright holder's choice. We will continue to talk and work with our partners in the publishing world to make Google Book Search a big win for all concerned.

China

Since our inception, Google.com has been available and popular in China. We had avoided the difficult issue of Chinese governmental restrictions on content by keeping our operations outside the country. Our competitors, including large, well-known Internet companies, chose to enter the country and comply with restrictions.

Unfortunately, access for Chinese users to the Google service outside of China was slow and unreliable, and some content was restricted by complex filtering within each Chinese ISP. Ironically, we were unable to get much public or governmental attention paid to the issue. Although we dislike altering our search results in any

way, we ultimately decided that staying out of China simply meant diminishing service and influence there.

Building a real operation in China should increase our influence on market practices, and certainly will enhance our service to the Chinese people. We will continue to offer our international, and thus unfiltered, google.com. But we also built safeguards into our new google.cn offering. While we now offer search inside China, we will continue to host other, more privacy-sensitive services, such as Blogger or Gmail, from outside the country. Also, as we pioneered in other countries, whenever we are forced to restrict information by local law, regulation, or policy, we'll disclose that fact with a message to users to make sure they understand that something is missing. To my knowledge, that disclosure is a first for China. Finally, we continue to offer the main google.com site, and we have also said we would terminate our google.cn offering if local conditions ultimately prove unacceptable for the quality of service we wish to provide.

In the end, we believe that improving access to Google through google.cn, even with some restrictions that we would not prefer, benefits Chinese users. At the same time, we have begun to work with governments and other Internet companies to develop global standards of conduct for countries that restrict access to content. We remain hopeful that these efforts will ultimately advance online users' interests worldwide.

Net Neutrality

The Internet has been an amazing force in the world. It was designed by university scientists to move information around as efficiently as possible, with no thought of commercial gain. The openness that resulted has changed the world. For example, communication across country borders has flourished (no need for dialing long country codes and paying a lot for telephone service).

Now, however, there is a movement among companies that carry Internet traffic to shatter those freedoms and discriminate between the bits they carry. In the future, for example, they might want to exercise control over which VOIP phone provider you use. Perhaps they'll prevent Google from serving you video, so they can have an advantage for their own service - or for anyone who pays them more.

Google will likely weather whatever happens with this issue because we have a lot of resources. But I do think there is a huge risk that consumers will not be able to access everything freely on the Internet, and that future innovation will be harmed if these changes are adopted. We are working hard to protect the open Internet and

keep it from being balkanized solely for the financial benefit of a few companies that are already collecting very substantial revenue from consumers.

Workforce

Huge Growth and We're Still Behind

From the beginning, we've tried to grow headcount fast enough to meet opportunities. We nearly doubled our headcount in 2005, and in fact have grown at roughly that rate on a percentage basis throughout our history. Surprisingly, in many areas we still feel like a startup - many employees stretched thin and trying to keep up. I also believe that we have plenty of good business opportunities for all these new people.

Google is perceived as a large company, but we are still a medium-size one in headcount, with only 7,000 employees to deal with all the global responsibilities and opportunities of a large multinational corporation. Wal-Mart, for example, has 1.7 million employees (we probably have more computers, though). We have substantially fewer employees than our main competitors. We are not even quite at startup stage in many countries, with few or no employees and many people using our services.

So hiring remains one of our most important priorities. I normally take the time to review every offer we make.

The quality of the new Googlers we are able to attract is amazing (Sergey and I are certain we would not meet the quality bar to be hired as engineers at Google today, as our programming skills are kind of weak by current standards). We see many areas and opportunities that would benefit from more employees, and we're working hard to get the best people hired and organized.

Nurturing Startup Culture within a Bigger Google

One of the amazing things about Google is the number of innovative startup-like projects that have been developed inside the company. We love it when we get a Gmail or an AdSense business, or save an unexpected few million dollars as a result of the hard work and dedication of employees who have really gone far beyond the call of duty. As shareholders, you love it, too, because these projects add to the company's value. We think it is important that employees get rewarded fairly and are encouraged to achieve amazing results within Google.

Last year Sergey wrote about our Founders' Awards program. In 2005, we awarded approximately \$45 million in restricted stock to 11 different projects after an extensive nomination and review process. We believe the people who received these awards have created tremendous value for the company.

Of course, not all outstanding contributions will result in Founders' Awards, so we have implemented compensation programs to provide similar rewards for high performers anywhere in the company. With careful consideration of tax and other complexities, we award options, restricted stock, and cash as appropriate for every Googler. We have had many outstanding achievements, and we hope to have many more.

Globetrotting

Google is available in 116 languages, and lots of people use our services in places Sergey or I haven't been to yet. We have Googlers all over the world working hard on setting up new facilities. We now have a total of 62 offices, 19 of which have opened outside the United States since the beginning of 2005. Every time we travel to a new Google office we see amazing, smart, excited people and lava lamps. Twenty-five percent of our employees now work outside the United States, compared with 15 percent at the end of 2004. This distribution makes good business sense, since 39 percent of our revenue and much more of our traffic comes from outside the United States. For example, Nikesh Arora runs our amazing European operations, and with his team has grown UK revenues to 14 percent of our total revenue. Google is a global company, and we are becoming more so.

Growing Our Leadership

Our existing managers are on fire. Over the last year, our executives have done a tremendous job growing the business, working together well and keeping their cool with a lot going on. Sergey, Eric and I have also been working well together, and sharing responsibilities just as the original Founders' Letter specified.

We doubled the size of our senior leadership team over the last year and are delighted that about half of our new leaders have come from internal promotions. We are counting on Google to grow more leadership that will take us to the next level.

We added two new amazing board members. Besides keeping all of us on good behavior, they have tremendous insight and backgrounds for our business. Shirley Tilghman is the president of Princeton University and an accomplished professor of molecular biology. She taught secondary school for two years in Sierra Leone, and is also renowned for her leadership on behalf of women in science, an area of

particular interest to Google. Ann Mather also joined our board as chairperson of the Audit Committee. She was previously chief financial officer of Pixar, and before that a senior executive at Disney. I can't imagine two directors more qualified or a better fit for us.

We've been hard at work adding a number of superstar executives to help us do the heavy lifting of running such a fast-growing business. Vint Cerf, our new vice president and chief Internet evangelist, is widely known as the "father of the Internet" for co-authoring the TCP/IP protocol, which enables all the computers on the Internet to talk to one another. He published this work in 1974, when Sergey was not even two years old. The recipient of the Turing Award (the Nobel Prize of computing), Vint has worked tirelessly to make the Internet what it is today.

Udi Manber, vice president of engineering, is a former computer science professor who has been working on search much longer than we have; we got to know him well as he negotiated on the other side of the table on the first major deal we did with Yahoo. After a stint running Amazon's A9 search operation, Udi is finally joining us, and we're delighted.

In China, we have the dual leadership team of Kai-Fu Lee as president of engineering, product, and public affairs, and Johnny Chou as president of sales and business development. Kai-Fu is an accomplished computer scientist and has been an executive at Microsoft, Apple, and SGI. Johnny is an operating executive experienced at running large organizations, most recently as president of UT Starcom China.

You might have noticed Google in the news a lot recently. Elliot Schrage, our new vice president of global communications and public affairs, is a man worthy of the task. He comes to us with extensive public policy experience and was a senior executive at Gap, Inc.

Google.org

In previous Founders' Letters, we've spoken about our commitment to developing Google's philanthropic efforts, known as Google.org, which we hope will eventually eclipse even Google in changing the world for the better. We want Google.org to think big, to tackle the gravest and the greatest of the world's problems.

We searched far and wide for the unique leader who we thought embodies this goal in spirit and accomplishments, and we've found that person in Dr. Larry Brilliant. Larry was one of the key leaders in the global eradication of smallpox, living in India

for many years. He was also chief executive officer of two public companies, was a professor at the University of Michigan, is a medical doctor, and cofounded both the early legendary online community the Well and the Seva Foundation for global development and health.

While we were searching for Larry, we set up and funded the Google Foundation and refined its focus areas to providing sustainable development for the world's poorest citizens and harnessing people, money, and scientific resources to combat climate change. We have already provided funding of \$7 million to Acumen Fund and TechnoServe, organizations that are taking unique approaches to solving these tough issues.

Conclusion

After writing all this down, I'm amazed by all we accomplished last year and excited by all we still have to do. The trust that you - our users and investors - place in us every day is something we take very seriously. We wouldn't be here without our users, shareholders, partners, employees, advertisers, publishers, authors, families, and everybody else I forgot to mention. Thank you all for joining us on this amazing journey.

A handwritten signature in black ink that reads "Larry Page". The script is fluid and cursive, with the first letters of "Larry" and "Page" being significantly larger and more prominent.

Larry Page

A handwritten signature in black ink that reads "Sergey Brin". The script is fluid and cursive, with the first letters of "Sergey" and "Brin" being significantly larger and more prominent.

Sergey Brin

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2006 Founders' Letter

Introduction

There are few things as powerful as human passion. On the Internet, we see it in blogs, videos, and social networks, through many voices with a story to tell, eager to be heard. Over the past year, there have been many developments at Google I would like to share with you - products, partnerships, and milestones. There are many feature lists, statistics, and technical accomplishments behind them. However, what really inspires me are the words of the people whose lives we touch. While in the past Larry and I have taken turns writing this letter, this year I would like to give a voice to these people so you can hear just as I do how Google affects their lives.

Search

Search remains the heart of Google. Every day, millions of people search on Google for information either for themselves or someone close to them - information that can help their careers, their education, or their health. Sometimes it is just a casual curiosity that sends them searching, but at other times, their need for information can be critical - and what they find can even save a life. That is why we work so hard to provide the best possible information for every query, on any topic, in any language, in any country.

I found some minor swelling after feeling minor pain over a couple of days. A Google search brought up several pages with links to articles, all pointing to the same type of cancer... Without Google I would have ignored and possibly forgotten about the incident until it would have been too late. Google also helped me find the doctor who checked me out the very next day, and who organized surgery for the very same day he identified the cancer. It took me a long time to write and express my thanks to all of you who are working there. You are life savers!

- Peter Mackenzie

Our search must also work well for different levels of expertise. Sometimes it is patients who seek medical information on Google, but other times it is doctors themselves. To go more deeply into technical fields, we have developed Google Scholar™, the most comprehensive search for scholarly work. And we also launched Google Patent Search as well as News archive search, which adds nearly 200 years of newspaper archives to Google News™. In addition, information providers and individuals can now help us improve search within their fields of expertise by creating Custom Search Engines on their own sites that provide more specific search results related to their interests.

Like many people on the Internet, I use Google so many times daily that I hardly remember a time without it... Recently, I had a similar realization while using Google Scholar to search the medical literature. Potentially, Google Scholar can instantly direct you to the most important papers in any field anywhere you can access the Internet, and many of these papers are now available online. I use it at least several times weekly and sometimes daily... A seventy year old woman with neurofibromatosis came to me with severe hypertension. I was initially concerned that she had a pheochromocytoma, which is associated with neurofibromatosis. To look for other associations, I searched ["hypertension and neurofibromatosis"] in Google Scholar, which revealed that renal artery stenosis from vascular neurofibromas was also possible. We looked, and that's what she had... A second patient was referred to me complaining that he had stopped sweating three months ago. I'd never seen anything like this before. So I searched Google Scholar, which quickly directed me to the literature on acquired idiopathic generalized anhidrosis, a rare neurologic disorder. I sent him to a neurologist for a skin biopsy, and this confirmed the diagnosis.

- Joshua Schwimmer, MD

"Aren't 'X' billion pages enough? Who needs more search results?" I hear questions like this often. The answer is, "We all do." When you are looking for something specific, like a particular person or place, comprehensiveness is the difference between finding a long-lost relative or love, and not.

The first time I used Google... I put in my name to see what would come up on me. Imagine my surprise when I found another 3 women who shared my name... one of the other Una McGurks I found on Google is a survivor of the 1998 Omagh bombing, which was just miles from the farm where my father was born and raised on in Tyrone, Northern Ireland. I ended up planning a trip back to Ireland to find the other women with my name... So, I have Google and global

awareness to thank for tracking down 3 long lost relatives who share my unusual name.

- Una Mcgurk

I looked up my first love, whom I had not seen nor spoken to in 22 years, via Google. Long story short - we're getting married... Thanks Google!

- Joshua Byron

Stories like these help us understand just how important it can be for people to have comprehensive search results. In the past year, we have increased our search index size by billions of documents, leveraging continued infrastructure improvements to our indexing system. This has increased capacity and improved refresh time. We also launched Webmaster Central as the place for webmasters to get information about how Google crawls and indexes websites, and to find tools such as Google Sitemaps™ to direct our crawler more efficiently.

Books

A comprehensive search engine is not restricted to the Internet. Much of the highest quality information in the world may be found in tens of millions of books tucked away in libraries and on publishers' shelves. These books can be tremendous assets - but only if people know that they exist. Google has embarked on a mission to digitize the world's books and make them discoverable, simply by searching online.

Book publishers benefit from wider distribution of their books. In 2006, we continued to add to our growing book index. We introduced four new partners to the Library Project, including the University of California, considered the largest research and academic library in the world; University Complutense of Madrid; University of Wisconsin-Madison; and the University of Virginia. Our Partner Program grew with new relationships and expanded agreements and now includes more than 10,000 publishers. Book Search is now available in 9 languages, and next year, there will be more.

Today users can search through millions of books to find popular, obscure, and beloved titles on every topic imaginable. Of course, Google Book Search is not just good for readers. Publishers benefit from increased exposure for their books.

At first, we didn't understand why all of a sudden we were getting a request for this older title. But when we looked at the reports from Google, we saw that it was one of the most-viewed titles over the past 15 days. Best of all, this book is not an exception. Our e-commerce sales have increased 60% across the board.

- Grace Guinand, Inter-american Development Bank

This year we also developed a new look and browsing interface for Google Book Search™ that makes it even easier to use. We're hearing from readers, researchers, and book lovers around the world that they are locating books more quickly and easily than before.

I was idly trying a search on "roads" to see what sort of a literature would turn up for the period of my dissertation research, 1740-1850. I didn't expect much. I've spent the last two years wandering through the Yale, Harvard, and California libraries, the British Library, Britain's National Archives, and the immense reserves of North American Inter Library Loan reading every book on London, pavement, or travel I could get my hands on. Surprise. In a single idle search I just added twenty extra full-text books to my list...Hallelujah, Google Books.

- Jo Guldi, UC Berkeley

Video

Sometimes text isn't the best way to communicate or understand an idea. If you are learning about a sport, an art performance, or a mechanical invention, video can be a far more compelling medium. This is one reason 2006 saw such a dramatic growth in the viewing and sharing of online videos. To this end, we have developed Google Video™ to search video, and this year we acquired YouTube™ - an incredibly dynamic and compelling way for people around the world to share their lives and express themselves.

YouTube has the largest online video audience and offers the most entertaining, original content on the Internet - with a community that continues to grow exponentially month after month. YouTube has struck more than 1,000 partnership deals with content providers looking to participate in this growing creative community - including Universal Music Group, CBS, BBC, Sony Music Group, Warner Music Group, the NBA, and The Sundance Channel.

YouTube users are clearly being entertained by the CBS programming they're watching as evidenced by the sheer number of video views. Professional

content seeds YouTube and allows an open dialogue between established media players and a new set of viewers.

- Quincy Smith, President, CBS Interactive

In addition to professional content, user-generated content is central to the YouTube community experience. As more people capture special moments on video, YouTube empowers them to become the broadcasters of tomorrow. YouTube is a cultural phenomenon, winning the hearts and minds of an increasingly broad demographic. It has democratized the entertainment experience and created a new way for people to communicate across the globe. For example, when Leigh Buckley, a wife and mother from New Hampshire, was diagnosed with leukemia, she and her husband Andrew began chronicling her experience and posting the videos to YouTube. They have received an overwhelming response from people not only wishing her well but also organizing bone marrow drives.

Google is about connecting people with information. Online video is a new genre for connection that engages a new generation.

Local

People use Google products to learn not just about the farthest reaches of the universe but about places closer to home. Google Maps™ has become the #1 mapping site across Europe and #2 in the U.S., and now offers detailed street maps in more than 50 countries. We are pleased that so many developers have used our mapping technology as a platform for further innovation, and proud that more than 30,000 websites use our maps API. Local authorities in London now use the Google Maps API to let residents report problems such as road defects and trash on the streets. Google Maps is also available now on mobile devices and plays an integral role in our partnerships with mobile providers. We expect more and better local products to result from our work in the mobile space.

With more than 200 million unique downloads, Google Earth™ users worldwide are venturing out to explore, understand, and share our planet. Google Earth now covers more than half of the world's population and a third of the land surface in high resolution. We've found that one of the first things users do after launching Google Earth is look at their own home from space. Then they quickly discover that Google Earth lets them search and browse a growing web of geospatial content from community storytelling, 3D buildings, location referenced photos and historic maps to Wikipedia articles, United Nations and European Space Agency content, and even photos and stories from National Geographic and videos from Discovery

Networks. Furthermore, Google Earth also enables people with limited resources to better understand the world around them.

We used Google technology to prove to the authorities that the land is fertile [so that the Indian government would compensate us at a higher rate in developing an SEZ (Special Economic Zone)].

- Arun Shivkar

Mobile

We were shaken and quite upset [at learning that one of our newborn twins might require a blood transfusion, which is risky for small babies]. Armed with only a cell phone - and a very low battery - I was able to Google [hemoglobin ‘ premature infant’] and found a medical journal article claiming that it’s perfectly normal for preemies to have their hemoglobin levels drop to 7 between the first and third months of life, and apparently this is especially true with twins. [I showed the Google results to the doctors, who eventually concurred that the risky transfusion was not, in fact, necessary.]

- Howard, Google Mobile User

In many regions, mobile is often a “first screen” device - the primary way users access information.

Here’s a story that illustrates this global reality:

A Googler was vacationing in Africa recently and happened to be wearing a Google T-shirt. A local approached him, clearly very excited about Google News. Naturally, the Googler asked, “Do you know you can get Google News on your mobile now too?” To which the man replied, “How else would I get it?” Indeed.

We’ve made great strides toward universal accessibility, in no small part because we have forged relationships with some of the most prominent carriers and equipment manufacturers in the world. Motorola, Sony Ericsson, Vodafone, Nokia, Beeline, KDDI, NTT DoCoMo, Bharti Airtel, China Mobile, and Samsung are our partners, and we look forward to growing these relationships.

Our efforts in mobile are helping to drive adoption of the mobile web and create interesting revenue opportunities for our partners, such as the mobile ad pilots that we launched in more than a dozen markets in 2006.

The partnership with Google is making a substantial contribution to the very rapid increase in our customers' uptake of mobile search. Even more so, the performance of Google's Mobile Search Ads is greatly exceeding our expectations. We are strongly dedicated to keep developing our world of mobile Internet services through our continuing partnership with Google.

- Tadashi Onodera, CEO, KDDI

Content, Collaboration, Community

We have worked to expand our offerings that enable users to manage their information - to create content, collaborate on it as a group, and then share it with the world.

Perhaps the most important online collaborative tool is email. Gmail's introduction in 2004 contributed to a new focus on webmail generally, including a shift from offering storage space in megabytes to gigabytes. Gmail™ has developed substantially, with the introduction of features like Gmail Chat, which brings together email and instant messaging.

I depend on my gmail and gtalk big-time! today, i got a notification that (yipee!) i had new gmail. anyway - it was email promoting a pre-sale for tickets to a huge concert...within seconds, i had checked my gmail, hopped on the ticket buying website, and am now sitting pretty with tickets secured, while the rest of the non-google-users are waiting in a buyers-queue/waiting-room server waiting to purchase... now i have tickets to the hottest show in town for an amazing price, as well as my sister's birthday present. you're the BEST!

- Emily Bouchard

For better time management, we offer Google Calendar™ a free online service that we launched this year that makes it easy to keep track of your schedule and share it with friends. Google Calendar fits perfectly with our other online collaboration applications like Gmail and Google Docs & Spreadsheets™ designed for managing and sharing documents. This product combines both ease of use (nothing to install, just use your browser) along with powerful Internet capabilities like collaborative editing, access controls, and content available anywhere you can get to the web.

As I write this right now, other Google employees are editing this document (and making it "flow" - I confess I am difficult to edit).

Products that enable the discovery and sharing of content have become a dynamic force on the Internet. We want to support these activities for all types of information, including photos, documents, and blog content. For example, today we offer Picasa™ photo-organizing software and more recently launched Picasa Web Albums for online photo sharing.

My mother is happy about the ease of using Picasa and finds it a joy working with this service. [She] is not a computer guru, but has learned many ways that Picasa makes photo albums more fun than ever. Color pictures as far back as 1943 are an online testament to how Picasa has now become our family treasure and is bringing our family together. My mother hopes that the whole family will build upon her work and add to a priceless family treasure Picasa has given all of us.

- James Hernandez

Another focus is products that enable users to discover new people and learn more about each other. Orkut™ our experiment with social networking, is now part of the social fabric for the majority of online users in such countries as Brazil and more recently, India.

Finally, in the area of personal publishing for large audiences, we unveiled major updates to Blogger™ and Google Groups™ and introduced Google Page Creator™, which people can use to easily and quickly create professional-looking web pages. Our acquisition of JotSpot, collaborative wiki technology, is another demonstration of our commitment to this space.

Organizations are increasingly sharing these services with all of their users. In 2006, we developed Google Apps for your domain, which includes Gmail, Google Talk™, Google Calendar, Google Docs & Spreadsheets, Page Creator, and the Start Page. Arizona State University (ASU), with 65,000 students, has already implemented Google Apps across the university.

On the day of the announcement [that ASU was adopting Google Apps], students were converting to Gmail for ASU at the rate of 300 an hour... In addition to providing an exciting new service for students... the feat that Google and ASU achieved in the past fortnight displayed a nimbleness that rivals the best of what Silicon Valley can do... The range of technology solutions that Google is putting forward, at the speed and scale that they have proven they can deliver them, is sparking nothing short of a revolution in the IT business...

| - Adrian Sannier, CTO, ASU

Advertising

Our goal is to create a single and complete advertising system. Diversity in our advertising and publisher base continues to be central to our business and is important to our long-term success. Advertisers large and small use Google to reach their target audiences easily and get measurable ROI.

Last year we launched the AdWords™ Starter Edition, a simplified version of AdWords that lets users create an account quickly using a one-page sign-up form.

| I was up and running in 15 minutes. For somebody like me who isn't comfortable with the PC, it was quite a revelation.

| - Cosmo Buono, Bbpiano.com

As more and more users look for local information online, we must continue to improve our ability to attract local advertisers. We have launched local business ads, local coupons, and refined local targeting so businesses can target customers right in their neighborhood. This year we partnered with companies like Intuit, Verizon, and AT&T to help us bring more business information online and convert more small businesses into happy Google customers. Small business is big business.

We have also gone beyond text for brand advertisers. Traditionally, video and other rich formats have been used exclusively by large advertisers because of their higher production costs and higher minimum spending requirements. However, our new click-to-play video ad format can serve ads to both large and small advertisers. In fact, video can be the best way for a small business to communicate its offerings in a genuine and personal way.

| Since we started advertising our robotic guitar tuner with Google Click-to-Play Video Ads, not only have we seen a dramatic increase in sales, both in the USA and internationally, we've also had lots of inquiries from distributors all over the world who want to carry our product. I don't know of any other advertising that could have had this kind of impact... Now when people bring us exciting products to market, we know that Google's video ads can be our strongest new tool to help demonstrate and promote those products nationally or even internationally at a very reasonable cost.

| - Evan Shofron, Action Marketing

And we're helping advertisers of all sizes buy and place offline ads more effectively. In January, we acquired dMarc™ Broadcasting to help develop a radio advertising product and now have more than 900 stations in more than 200 metro markets. In addition, more than 100 advertisers and 70 newspapers have participated in significant tests for print advertising. We believe these offline efforts are key to creating a complete ad system. We continue to roll out new pricing and account tools to help online advertisers better manage their campaigns. Last year the ads team launched Position Preference, which allows advertisers to set controls to have bids automatically adjusted to maintain a desired ad-position range. We also released Preferred CPC in beta, which enables advertisers to bid to an average CPC. To help improve conversions, there is now Web Optimizer for doing multivariate testing on landing pages. And for easier, more robust account management, there is AdWords Editor, a client-based application for making offline changes to AdWords accounts and uploading them later.

Effective advertising is just one component of ROI. Once a customer is on an advertiser's website, it's important that they find what they are looking for and complete a transaction. Google Analytics™ allows webmasters to easily monitor and optimize the design of their sites to make them as frictionless for customers as possible.

Every new piece of information we get from Google Analytics gives us 10 new ideas that can help our customers find what they need online. Google Analytics helps us prioritize what to try first, and then track success metrics around each change to make sure our assumptions are correct. Google Analytics is key to continuously improving our site and our customer experience.

- Mike Bolland, Discount Tire

Once a customer has decided to make a purchase, completing the purchase swiftly and easily is paramount. Google Checkout™ tremendously simplifies the buying process by enabling you to shop across the web with just your Google login. Checkout has done a great job of increasing conversion and driving leads. Initially launched last summer with just a few stores, it has now reached millions of registered users and signed thousands of merchants, including more than 100 of the top 500 online stores.

We always want to give our customers more choice and more convenience when they shop with us, and Google Checkout gives them both. In addition to the positive customer experience Google Checkout offers, we've also been very pleased with the benefits for our business. We're seeing great results as

Checkout helps us acquire new customers every day. We've appreciated the increased sales as well as the ability to process transactions for free...

- Tim Mccue, Jockey.com

Early in Google's development we realized that great search depended on great content. To that end we created Google AdSense™ for content, which now enables thousands publishers to spend their time developing great material instead of having to sell ads themselves.

We'd tried all sorts of affiliate programs and they amounted to nothing... Without the AdSense program, [our] free service would never have been possible.

- Adsense Publisher

Global

I've mentioned some of our global efforts earlier, but it's so important to us that I want to call out a few more facts here. Last year we added 44 domains so that Google is now available in 158 domains and more than 100 languages. Google News is now up to 39 editions, with launches in Hebrew, Arabic, and Russian. Gmail added Hebrew and Arabic to reach 40 total languages.

Google Toolbar™ is now available in 42 languages for Internet Explorer (26 for Firefox) and Desktop™ 4 is in 28 languages. And Google Groups 2 came out of beta and is available in over 40 languages. With international sources comprising 43% of Google's revenue in 2006, we continue to grow our global monetization efforts. AdWords added several additional language/country interfaces, and now supports more than 40 languages. AdSense for search and AdSense for content both added four new languages bringing their totals to 27 and 23 respectively. We also launched electronic fund transfer payments in 9 more countries and piloted a Western Union payment method in China and Malaysia to further extend payments in local currencies.

Our mobile initiatives, critical to worldwide access, also include these firsts: we integrated mobile search and our first syndicated mobile sponsored links with KDDI, Japan's second-largest mobile carrier; and we partnered with major mobile carriers and global handset manufacturers such as Vodafone and Telefonica.

We're also making great strides with our awardwinning machine translation system. We want it to vastly improve the web experience for users everywhere. We improved or added several new language pairs, including English to/from Chinese, Arabic, and Russian; we now have over 20 language pairs.

Google is committed to its investment in markets across the globe, and the advances mentioned above bring us closer to our goal of making Google accessible to people in more languages and in more countries - a goal we will continue to pursue in 2007.

Culture

We have worked hard to create and maintain a compelling environment for Googlers. We're building a culture rooted in transparency, innovation, and scale. Because we aspire to innovate as much on the people side as we do on the product side, we were honored to top FORTUNE's "100 Best Companies to Work For" list in our first year of eligibility.

None of what we do would happen without a global employee base. In 2006, we hired 4,994 full-time employees, and for the first time, half of our software engineering hires were outside our Mountain View headquarters, including significant increases in China, Russia, India, Brazil, and Europe. Employees outside the U.S. now make up nearly a third of the company, and many of them moved into new offices this year including Beijing, Trondheim, Istanbul, Tel Aviv, Copenhagen, Vienna, Taipei, Warsaw, Haifa, Moscow, St Petersburg, Sydney, Mumbai, Cairo, and Delhi. Having a presence in all these locations attracts Googlers who want to work where they already live, and contributes to local economies.

We have improved our benefits programs to include such things as more doctors on staff and many new cafes in different locations. We expanded our equity refresh program and introduced our Transferable Stock Options program. We launched a range of development programs including EDGE, which helps grow our engineers into better leaders. And we work hard to infuse Google's culture and principles into every office around the world, empowering employees to make contributions that help drive Google's overall success.

Working at Google Kirkland is a fantastic opportunity to get a team together and launch great things. We've got the advantages of a small environment that makes it easy to know everyone, coupled with Google culture that keeps us connected with Mountain View so we can work with teams there, rather than as an isolated island. This helps us develop search products like Google

Webmaster Central, which is improving search quality and making a big impact for all of Google, not just our office.

- Vanessa Fox, Google Kirkland

These initiatives help us scale by attracting amazingly talented people, and then nurturing them as we preserve what's special about our culture. Whenever we open new offices, we strive to keep things "Googley."

The office culture is still relatively intimate, even though we've grown 200% since the office opened in September(!). The atmosphere is fun and engaging, and my coworkers are smart, funny and overall great people to be around all day. Even though we're a much smaller office than our Mountain View counterpart, we continue to have that Googley, welcoming feel.

- Stephanie Duchaine, Google Ann Arbor

Our commitment to our employees is matched by a broader sense of responsibility to our user communities worldwide. Specifically, we recognize that access to information is a powerful tool to help identify and solve problems. We are committed to harnessing our resources to help address pressing global needs.

Sustainability is one example. Last fall we kicked off a project to install 1.6 megawatts of solar photovoltaic panels at our Mountain View campus. This project will be the largest solar installation on any corporate campus in the U.S., and we think it's one of the largest on any corporate site in the world. The amount of electricity that will be generated is equivalent to powering about 1,000 average California homes. We'll use that electricity to power several of our Mountain View office facilities, offsetting approximately 30% of our peak electricity consumption for those buildings. Our work in this area has just begun and we hope to do much more in the future.

This past year Google.org, our philanthropic arm, got off the ground by building out a leadership team. Among these new hires was Dr. Larry Brilliant, who joined us in March to serve as the head of Google.org. He is a great leader to help Google.org tackle its threefold mission of global health, global wealth, and the environment. While Google.org is ramping up, our existing philanthropic activities are still going strong. Google Grants puts our advertising program to work for charities and nonprofit organizations that don't always have equal footing in the traditional advertising business. More than 2,100 organizations in 16 countries have now been accepted to run targeted ads to reach their constituencies around the world.

Our current program is a smoking cessation site testing four Web-based methods to quit smoking. We are very appreciative of your support. Over 190,000 Spanish- and English-speaking users looking for help to stop smoking have clicked on to our site from your ads.

- Dr Ricardo F. Muñoz, UC-San Francisco

Since we first became a grantee, website activity has increased by a dramatic 400% and the number of youth we serve has increased by 20%. Our annual budget has increased 20% due in part to increased donor activity and increased community partnerships - both of which are influenced by our sponsored link positioning on Google.

- Brande Martin, My Friend's Place

This is just a start. When I write this letter in future years, I am optimistic that I can report significant progress on the global challenges that we hope to address through Google.org's work.

Thank you

We had a remarkable 2006. None of our achievements would have been possible without our passionate users, strong partnerships, and talented employees. As I read back over this letter, what stands out are the individual experiences of the people who use our products. It is an honor to share these pages with a few of them.

A handwritten signature in black ink that reads "Larry Page". The script is fluid and cursive, with the first letters of "Larry" and "Page" being capitalized and prominent.

Larry Page

A handwritten signature in black ink that reads "Sergey Brin". The script is fluid and cursive, with the first letters of "Sergey" and "Brin" being capitalized and prominent.

Sergey Brin

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2007 Founders' Letter

Introduction

It is amazing to me that it has been nearly ten years since Sergey and I founded Google. When we went public, we promised to write a yearly founders' letter in a frank style to keep all of you updated on our progress. We've taken turns writing the letter, and this year that responsibility falls to me.

We have seen our company scale tremendously, to more than 17,000 employees in 20 countries worldwide. But what's even more amazing to me are the possibilities that appear before us—close enough to envision, but important enough to inspire our best efforts. I'm excited and hopeful we will continue to make progress in a wide variety of significant areas. I'm also happy to report that Sergey, Eric, and I continue to work together fabulously. I feel very lucky to be working with them and with our whole growing team (growing mostly just in numbers, despite our excellent food).

Speaking of our team, I wanted to give our deep thanks to George Reyes, our retiring chief financial officer. He has served Google extremely well. I also could not be more grateful to our users, customers, Googlers (our employees), and investors who help bring everything that is Google to life.

I will try to keep this letter relatively short, but I want to cover a lot of ground. I figure if you are interested in a particular area, you can just use Google to get more depth.

Still Searching

Search is a really hard problem. To do a perfect job, you would need to understand all the world's information, and the precise meaning of every query. With all that understanding, you would then have to produce the perfect answer instantly. We are making significant progress, but remain a long way from perfection. We're so serious about improving search that more than a third of our people are working on it. Another third work on advertising. We have dramatically improved our understanding of all the different languages, the meanings and synonyms of words, and the many different types of specialized information such as businesses and

products. We continue our effort to extract more and more real meaning from the web in order to help people find the right answers. We recently improved universal search, integrating different types of relevant information, such as video, maps, news, books, images, and more, right into your search results.

Sometimes you don't get a good answer to a search because the information simply isn't available on the web. So we are working hard to encourage ecosystems that can generate more content from more authors and creators. For example, we recently announced an early version of a tool called "knol" to help people generate and organize more high-quality authored content.

Systems that facilitate high-quality content creation and editing are crucial for the Internet's continued growth. Our AdSense program also helps the content ecosystem by letting any author or publisher instantly make money by inserting Google-brokered ads into their pages. This helps them pay people to write more great content in a virtuous and profitable cycle for everyone.

In all of these efforts, of course, the trust of our users is paramount. We simply will not bias our search results for financial reasons. Our ads are separated from the search results and clearly labeled. We believe strongly in maintaining the integrity of search.

I'm happy to report that we have a tremendous number of ideas to further improve search. Just about every week, we implement a new (and often clever) improvement to our basic search system. We will continue to work very hard in this area for a long time to come.

Advertising

Advertising is even harder than search. Not only do you have to find the right ad for every situation, but you have to handle paying customers! We have developed very sophisticated advertising systems designed to benefit both users and advertisers. For users, we strive to produce relevant advertising as good as the main content or search results. For advertisers, we provide tools to target and tune their advertising and accurately measure the results of their spending. Just as with search, we devise new clever improvements to our advertising system nearly every week. Fundamentally, every advertisement you see from Google results from a real-time auction conducted among advertisers. Imagine if we had a real auctioneer, how breathless and tired she would become!

Our advertising system works well, but we still have tremendous opportunities to improve it. For example, I just did a search for natural swimming pool, which

returned eight righthandside ads, with only the last two of those somewhat relevant. This is both good and bad news. The good news is that we have enough breadth to have some relevant ads for an unusual topic. Furthermore, it is certainly possible to produce more relevant ads that would be valuable to both the user and the advertiser. Also, a user interested in natural pools is probably worth a considerable amount of money if there is enough competition among advertisers to bid up the auction price. The bad news is that we aren't doing a good enough job yet for this natural pools query and many others. We also happened to have a number of local pool suppliers advertising in the San Francisco area for this query. Locally targeted advertising is another important area for us to grow both in revenue and relevance.

This general problem of ad targeting is very difficult and requires cooperation from huge numbers of advertisers. We continue to make significant progress on this challenging but exceptionally worthwhile problem. Sergey and I spend an action-packed hour nearly every week reviewing the noteworthy changes to the ads system.

70-20-10

We are still keeping to our long-standing plan of devoting 70% of our resources to search and advertising. We debate where we should classify our Apps (Gmail, Docs, etc.) products, but they currently fall into the 20% of resources we devote to related businesses. We use the remaining 10% of our resources on areas that are farther afield but have huge potential, such as Android. We strongly believe that allocating modest resources to new areas is crucial to continuing to innovate. This 10% of our resources generates a tremendous amount of interest and press, precisely because these projects are different and new. Often, we find small teams of only a few people suddenly command huge attention worldwide. That's useful to keep in mind as you read about Google-the vast majority of our resources are working on our core businesses: search and advertising.

Of course, the needs of the 70% projects are different from the needs of the smaller 10% projects. While I would like to report we understand how to structure these perfectly, we are still actively evolving how we create, manage, and compensate these different kinds of projects. This is a crucial area of focus as we work to recruit and retain the best people, and keep them really happy, organized, and productive.

Acquisitions

Throughout our history, we have acquired more than 50 companies. Our goal is to be the best home for amazing companies that want to be acquired. We acquire companies in all different stages of development, but I will cover some of the larger deals here. We acquired YouTube a bit more than a year ago, and it has been

growing like gangbusters. Eric worked with YouTube leaders Chad and Steve to establish a largely independent operating structure, with YouTube remaining in a separate office in San Bruno, about 25 miles from the main Googleplex. This is working well.

When we acquired Postini last year, we significantly enhanced our enterprise email capabilities and reinforced our commitment to serve the enterprise market. And by the time you read this, our acquisition of DoubleClick will have likely been cleared in Europe as well as the U.S. We are fortunate that DoubleClick's headquarters is in the same building as our Manhattan Googleplex, which will make for easier communication between the combined teams, now totaling a few thousand people. I believe DoubleClick's expertise in display advertising will be a tremendous addition to Google and will help open up new opportunities in this important market.

Apps

We have made tremendous strides in our web applications. I am writing this using Google Docs. I don't have to worry that my computer hard drive might fail and lose my work, because it is automatically being saved into the Google network cloud. Sharing what I write is easy. My colleagues can write and edit the live copy without having to email endless revisions (my writing needs a lot of revising!). You can also create spreadsheets and presentations in Docs. Every week, I approve a Google spreadsheet with a summary of every single hire we are making worldwide. With Google Apps, you can collaborate and share all types of documents and calendars with other people in your organization in seconds.

Gmail continues to enjoy tremendous growth, and now has a brand new implementation that's faster and makes it easier for us to add new features. Instant messaging within Gmail- which works right inside your browser with no installation- has been a big hit. We're also planning to roll out a plethora of new features. We are working hard to combine our many Apps offerings into a more coherent set of products that "just work." I use Google Apps every day for all of my work.

Our products are improving quickly and have incredibly powerful sharing and chat functionality that wasn't possible before the web.

We've started the next phase in productivity software. That phase is about working with everyone seamlessly and effortlessly. Our goal is fast, easy access to create or share from any computer in the world. No futzing with software required. Just open your browser.

Mobile

Android is our newly announced mobile phone platform. We've gathered more than 30 companies together into Android's Open Handset Alliance. The goals of Android are ambitious: We aim to make your phone work better than your computer.

Android is very open, so you can run any software, just like a computer. Today, Android is released as a software toolkit for developers based on Linux, Java, and high-end web browser technologies. We and our partners are very much looking forward to having Android ship in real devices. We are excited about realizing the potential of that little computer in your pocket (your cool, web-centric Android phone).

In addition to Android, we endeavor to make all of our products work well with existing phones and have been quite successful with much greater usage in a wide variety of areas. We have been working to try to apply some of the open-access principles of the Internet to increase user choice and innovation in the mobile space. We also have been active with a 10% project focused on wireless spectrum, which has created a great deal of interest. We were successful in helping convince the US Federal Communications Commission to attach most of our desired openness principles to the ongoing 700 Mhz auction.

The World

It turns out the real world matters to people, in the form of maps, satellite images, business locations, bike paths, and all other types of geographic data. We are hard at work in all these domains. We even launched photographs of nearly everything at street level in 30 metro areas, integrated right into Google Maps (click the Street View button). Google Earth literally goes out of this world with a new Sky mode (just click on the Sky icon). You can see an amazing view of the night sky, complete with super-high resolution images from the Hubble telescope that you can zoom right into.

Speaking of the world, we don't want it to end-especially by environmental catastrophe. Consequently, we are working hard on our own considerable energy use in data centers by making them far more efficient. We're working directly on our own carbon/methane off sets to cover our usage. But we are all on the same Spaceship Earth, and we need to energetically address harmful emissions. To this end, we launched RE<C, an initiative to make renewable energy cheaper than coal-fired plants. We have started our own internal development effort, and have made investments in promising technologies. We are working on new clean technologies that could make more energy than we have now, and do it at a lower cost. Our goal is to generate a gigawatt (roughly enough to power San Francisco) of clean, cheap

energy in years, not decades. If we are successful, we will not only help the world, but also make substantial profits.

We continue our efforts to make Google more global. Google is available in 160 different local country domains and 117 languages (including some obscure ones like “Swedish Chef” - Bork, Bork, Bork). While Google is available virtually everywhere there is Internet access, our business operations are in just 20 countries. We are still working to establish a significant business presence in places such as the Middle East. As we expand our operations and hire our first employees in another country, that part of Google feels like a startup.

We started Google.org with the idea of eclipsing the impact of Google itself while focusing on more philanthropic causes. Though we are working on extremely tough problems in difficult locations, we have made significant strides. We have established several main focus areas, including predicting and preventing disease; improving public services by informing and empowering people; and increasing economic growth and job creation through stimulating small- and medium-sized enterprises.

Conclusion

By organizing the world’s information and making it universally accessible and useful, we’re helping people worldwide make better decisions and improve their lives. I feel lucky-I am lucky-to be involved in this important ecosystem of better information. While almost all of our effort is focused on important improvements to core search and advertising, the small percentage left over is producing a lot of important innovation and even more notice from the world. I could not be more excited about all the possibilities for Googlers to produce amazing computer experiences that their mothers and fathers-and hundreds of millions of other people-will use every day.

A handwritten signature in black ink that reads "Larry Page". The signature is written in a cursive, flowing style with a large initial 'L' and 'P'.

Larry Page

Sergey Brin

Sergey Brin

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2008 Founders' Letter

Introduction

Since 2004, when Google began to have annual reports, Larry and I have taken turns writing an annual letter. I never imagined I would be writing one in the midst of an economic crisis unlike any we have seen in decades. As I write this, search queries are reflecting economic hardship, the major market indexes are one half of what they were less than 18 months ago, and unemployment is at record levels.

Nonetheless, I am optimistic about the future, because I believe scarcity breeds clarity: it focuses minds, forcing people to think creatively and rise to the challenge. While much smaller in scale than today's global collapse, the dot-com bust of 2000-2002 pushed Google and others in the industry to take some tough decisions — and we all emerged stronger as a result.

This new crisis punctuates the end of our first decade as a company, a decade that has brought great change to Google, the web and the Internet as a whole. As I reflect on this short time period, our accomplishments and our shortcomings, I am very excited about what the next ten years may bring.

But let me start a little farther back — in 1990, the very first web page was created at <http://info.cern.ch/>. By late 1992, there were only 26 websites in the world so there was not much need for a search engine. When NCSA Mosaic (the first widely used web browser) came out in 1993, every new website that was created would get posted to its “What's New” page at a rate of about one a day:

http://www.dejavu.org/prep_whatsnew.htm. Just five years later, in 1998, web pages numbered in the tens of millions, and search became crucial. At this point, Google was a small research project at Stanford; later that year it became a tiny startup. The search index sat on a small number of disk drives enclosed within Lego-like blocks. Perhaps a few thousand people, mostly academics, used the service.

Fast forward to today, the changes in scale are striking. The web itself has grown by about a factor of 10,000, as has our search index. The number of people who use Google's services every day is now in the hundreds of millions. More importantly, billions of people now have access to the Internet via computers and mobile

phones. Like many other web companies, the vast majority of our services are available worldwide and free to users because they are supported by ads. So a child in an Internet cafe in a developing nation can use the same online tools as the wealthiest person in the world. I am proud of the small role Google has played in the democratization of information, but there is much more left to do.

Search

Search remains at the very core of what we do at Google, just as it has been from our earliest days. As the scale has changed dramatically over the years, the presentation and quality of our search results have also undergone many changes since 1998. In the past year alone we have made 359 changes to our web search — nearly one per day. Some are not easy to spot, such as changes in ranking based on personalization (launched broadly in 2005) but they are important in getting the most relevant search results. Others are very easy to see and improve search efficiency in a very clear way, such as spelling correction, annotations, and suggestions.

While I am proud of what has been accomplished in search over the past decade, there are important areas in which I wish we had made more progress. Perfect search requires human-level artificial intelligence which many of us believe is still quite distant. However, I think it will soon be possible to have a search engine that “understands” more of the queries and documents than we do today. Others claim to have accomplished this, and Google’s systems have more smarts behind the curtains than may be apparent from the outside, but the field as a whole is still shy of where I would have expected it to be. Part of the reason is the dramatic growth of the web — for any particular query, it is likely there are many documents on the topic using the exact same vocabulary. And as the web grows, so does the breadth and depth of the curiosity of those searching. I expect our search engine to become much “smarter” in the coming decade.

So too will the interfaces by which users look for and receive information. While many things have changed, the basic structure of Google search results today is fairly similar to how it was ten years ago. This is partly because of the benefits of simplicity; in fact, the Google home page has become increasingly simple over the years: <http://blogoscoped.com/archive/2006-04-21-n63.html>. But we are starting to see more significant changes in search interfaces. Today you can search from your cell phone by just speaking into it and Google Reader can suggest interesting blogs without any query at all. It is my expectation that in the next decade our searches and results will look very different than they do today.

One of the most striking changes that has happened in the past few years is that search results are no longer just web pages. They include images, videos, books, maps, and more. From the outset, we realized that to have comprehensive search we would have to venture beyond web pages. In 2001, we launched Google Image Search and via Google Groups we made available and searchable the most comprehensive archive of Usenet postings ever assembled (800 million messages dating back to 1981).

Just this past fall we expanded Image Search to include the LIFE Magazine photo archive. This is a collection of 10 million photos, more than 95 percent of which have never been seen before, and includes historical pictures such as the Skylab space station orbiting above Earth and Neil Armstrong landing on the moon. Integrating images into search remains a challenge, primarily because we are so reliant on the surrounding text to gauge a picture's relevance. In the future, using enhanced computer vision technology, we hope to be able to understand what's depicted in the image itself.

YouTube

Video is often thought of as an entertainment medium, but it is also a very important source of high-quality information. Some queries seem like natural choices to show video results, such as for sports and travel destinations. Yet videos are also great resources for topics such as computer hardware and software (I bought my last RAID based on a video review), scientific experiments, and education such as courses on quantum mechanics.

Google Video was first launched in 2005 as a search service for television content because TV close-captioning made search possible and user-generated video had yet to take off. But it subsequently evolved to a site where individuals and corporations alike could post their own videos. Today Google Video searches many different video hosting sites, the largest of which is YouTube, which we acquired in 2006.

Every minute, 15 hours worth of video are uploaded to YouTube — the equivalent of 86,000 new full length movies every week. YouTube channels now include world leaders (the President of the United States and Prime Ministers of Japan, the UK and Australia), royalty (The Queen of England and Queen Rania of Jordan), religious leaders (the Pope), and those seeking free expression (when Venezuelan broadcaster El Observador was shut down by the government, it started broadcasting on YouTube).

When it began, online video was associated with small fuzzy images. Today, many of our uploads are in HD quality (720 rows and greater) and can be streamed to computers, televisions, and mobile phones with increasing fidelity (thanks to improvements in video compression). In the future, vast libraries of movie-theater-quality video (4000+ columns) will be available instantly on any device.

Books

Books are one of the greatest sources of information in the world and from the earliest days of Google we hoped to eventually incorporate them into our search corpus. Within a couple of years, Larry was experimenting with digitizing books using a jury-rigged contraption in our office. By 2003, we launched Google Print, now called Google Book Search. Today, we are able to search the full text of almost 10 million books. Moreover, in October we reached a landmark agreement with a broad class of authors and publishers, including the Authors' Guild and the Association of American Publishers. If approved by the Court, this deal will make millions of in-copyright, out-of-print books available for U.S. readers to search, preview, and buy online — something that has been simply unavailable to date. Many of these books are difficult, if not impossible, to find because they are not sold through bookstores or held on most library shelves; yet they make up the vast majority of books in existence. The agreement also provides other important public benefits, including increased access to users with disabilities, the creation of a non-profit registry to help others license these books, the creation of a corpus to promote basic research, and free access to full texts at a kiosk in every public library in the United States.

Geo

While digitizing all the world's books is an ambitious project, digitizing the world is even more challenging. Beginning with our acquisition of Keyhole (the basis of Google Earth) in October 2004, it has been our goal to provide high-quality information for geographic needs. By offering both Google Earth and Google Maps, we aim to provide a comprehensive world model encompassing all geographic information including imagery, topography, road, buildings, and annotations. Today we stitch together images from satellites, airplanes, cars, and user uploads, as well as collect important data, such as roads, from numerous different sources including governments, companies, and directly from users. After the launch of Google Map Maker in Pakistan, users mapped 25,000 kilometers of uncharted road in just two months.

Ads

We always believed that we could have an advertising system that would add value not only to our bottom line but also to the quality of our search result pages. Rather than relying on distracting flashy ads, we developed relevant, clearly marked text-based ads above and to the right of our search results. After a number of early experiments, the first self-service system known as AdWords launched in 2000 starting with 350 advertisers. While these ads yielded small amounts of money compared to banner ads at the time, as the dot-com bubble burst, this system became our life preserver. As we syndicated it to EarthLink and then AOL, it became an important source of revenue for other companies as well.

Today, AdWords has grown beyond just being a feature of Google. It is a vast ecosystem that provides valuable traffic and leads to hundreds of thousands of businesses: indeed in many ways it has helped democratize access to advertising, by creating an open marketplace where small business and start-ups can compete with well-established, well-funded companies. AdWords is also an important source of revenue for websites that create the content that we all search. Last year, AdSense (our publisher-facing program) generated more than \$5 billion dollars of revenue for our many publishing partners.

Also in the last year we ventured further into other advertising formats with the acquisition of DoubleClick. This may seem at odds with the value we place on relevant text-based ads. However, we have found that richer ad formats have their place such as video ads within YouTube and dynamic ads on game websites. In fact, we also now serve video ads on television with our AdSense for TV product. Our goal is to match advertisers and publishers using the formats and mediums most appropriate to their goals and audience.

Despite the progress in our advertising systems and the growth of our base of advertisers, I believe there are significant improvements still to be made. While our ad system has powerful features, it is also complex, and can confuse many small and local advertisers whose products and services could be very useful to our users. Furthermore, the presentation formats of our advertisements are not the optimal way to peruse through large numbers of products. In the next decade, I hope we can more effectively incorporate commercial offerings from the tens of millions of businesses worldwide and present them to consumers when and where they are most useful.

Apps

Within a couple of years of our founding, a number of colleagues and I were starting to hit the limitations of our traditional email clients. Our mailboxes were too big for them to handle speedily and reliably. It was challenging or impossible to have email

available and synchronized when switching between different computers and platforms. Furthermore, email access required VPN (virtual private networks) so everyone was always VPN'ing, thereby creating extra security risks. Searching mail was slow, awkward, and cumbersome.

By the end of 2001 we had a prototype of Gmail that was used internally. Like several existing services at the time, it was web-based. But unlike those services it was designed for power users with high volumes of email. While our initial focus was on internal usage, it soon became clear we had something of value for the whole world. When Gmail was launched externally, in 2004, other top webmail sites offered 2MB and 4MB mailboxes, less than the size of a single attachment I might find in a message today. Gmail offered 1 Gigabyte at launch, included full-text search, and a host of other features not previously found in webmail. Since then Gmail has continued to push the envelope of email systems, including functionality such as instant messaging, video-conferencing, and offline access (launched in Gmail Labs this past January). Today some Googlers have more than 25 gigabytes of email going back nearly 10 years that they can search through in seconds. By the time you read this, you should be able to receive emails written in French and read them in English.

The benefits of web-based services, also known as cloud computing, are clear. There is no installation. All data is stored safely in a data center (no worries if your hard drive crashes). It can be accessed anytime, anywhere there is a working web browser and Internet connection (and sometimes even if there is not one - see below).

Perhaps even more importantly, new forms of communication and collaboration become possible. I am writing this letter using Google Docs. There are several other people helping me edit it simultaneously. Moments ago I stepped away and worked on it on a laptop. Without having to hit save or manage any synchronization all the changes appeared in seconds on the desktop that I am back to using now. In fact, today I have worked on this document using three different operating systems and two different web browsers, all without any special software or complex logistics.

In addition to Gmail and Google Docs, the Google Apps suite of products now includes Spreadsheets, Calendar, Sites, and more. It is also now available to companies, universities, and other organizations. In fact, more than 1 million organizations use Google Apps today, including Genentech, the Washington D.C. city government, the University of Arizona, and Gothenburg University in Sweden.

Because tens of millions of consumers already use our products, it is easy for organizations — from businesses to non-profits — to adopt them. Very little training is required and the passionate Google users already in these organizations are usually excited to help those who need a hand. In many ways, Google Apps are even more powerful in a business or group than they are for individuals because Apps can change the way businesses operate and the speed at which they move. For example, with Google Apps Web Forms we innovated by addressing the key problem of distributed data collection, making it incredibly simple to collect survey data from within the enterprise — a critical feature for collecting internal feedback we use extensively when “dogfooding” all of our products.

There are a number of things we could improve about these web services. For example, since they have arisen from different groups and acquisitions, there is less uniformity across them than there should be. For example, they can have different sharing models and chat capabilities. We are working to shift all of our applications to a common infrastructure. I believe we will achieve this soon, creating greater uniformity and capability across all of them.

Chrome

We have found the web-based service model to have significant advantages. But it also comes with its own set of challenges, primarily related to web browsers, which can be slow, unreliable, and unable to function offline. Rather than accept these shortcomings, we have sought to remedy them in a number of ways. We have contributed code and generated revenue for several existing web browsers like Mozilla Firefox, enabling them to invest more in their software. We have also developed extensions such as Google Gears, which allows a browser to function offline.

In the past couple of years, however, we decided that we wanted to make some substantial architectural changes to how web browsers work. For example, we felt that different tabs should be segregated into separate sandboxes so that one poorly functioning website does not take down the whole browser. We also felt that for us to continue to build great web services we needed much faster Javascript performance than current browsers offered.

To address these issues we have created a new browser, called Google Chrome. It has a multiprocess model and a very fast JavaScript engine we call V8. There are many other notable features, so I invite you to try it out for yourself. Chrome is not yet available on Mac and Linux so many of us, myself included, are not able to use it on a regular basis. If all goes well, this should be addressed later this year. Of course, this is just the start, and Chrome will continue to evolve. Furthermore, other

web browsers have been spurred on by Chrome in areas such as JavaScript performance, making everyone better off.

Android

We first created mobile search for Google back in 2000 and then we started to create progressively more tailored and complex mobile offerings. Today, the phone I carry in my pocket is more powerful than the desktop computer I used in 1998. It is possible that this year, more Internet-capable smartphones will ship than desktop PCs. In fact, your most “personal” computer, the one that you carry with you in your pocket, is the smartphone. Today, almost a third of all Google searches in Japan are coming from mobile devices — a leading indicator of where the rest of the world will soon be.

However, mobile software development has been challenging. There are different mobile platforms, customized differently to each device and carrier combination. Furthermore, deploying mobile applications can require separate business arrangements with individual carriers and manufacturers. While the rise of app stores from Apple, Nokia, RIM, Microsoft, and others as well as the adoption of HTML 5 on mobile platforms have helped, it is still very difficult to provide a service to the largest group of network-connected people in the world.

We acquired the startup Android in 2005 and set about the ambitious goal of creating a new mobile operating system that would allow open interoperation across carriers and manufacturers. Last year, after a lot of hard work, we released Android to the world. As it is open source, anyone is free to use it and modify it. We look forward to seeing how this open platform will spur greater innovation. Furthermore, Android allows for easy creation of applications which can be deployed on any Android device. To date, more than 1000 apps have been uploaded to the Android Market including Shop Savvy (which reads bar codes and then compares prices), our own Latitude, and Guitar Hero World Tour.

AI

The past decade has seen tremendous changes in computing power amplified by the continued growth of Google’s data centers. It has enabled the growth and processing of increasingly large data sets such as the web, the world’s books, and video. This in turn has allowed problems once considered to be in the fantasy realm of artificial intelligence to come closer to reality.

Google Translate supports automatic machine translation between 1640 language pairs. This is made possible by large computer clusters and vast repositories of monolingual and multilingual texts. This technology also allows us to support

translated search where the query gets translated to another language and the results get translated back.

While the earliest Google Voice Search ran as a crude demo in 2001, today our own speech recognition technology powers GOOG411, the voice search feature of the Google Mobile App, and Google Voice. It, too, takes advantage of large training sets and significant computing capability. Last year, PicasaWeb, our photo hosting site, released face recognition, bringing a technology that is on the cutting edge of computer science to a consumer web service.

Just a few months ago we released Google Flu Trends, a service that uses our logs data (without revealing personally identifiable information) to predict flu incidence weeks ahead of estimates by the Centers for Disease Control (CDC). It is amazing how an existing data set typically used for improving search quality can be brought to bear on a seemingly unrelated issue and can help to save lives. I believe this sort of approach can do even more — going beyond monitoring to inferring potential causes and cures of disease. This is just one example of how large data sets such as search logs coupled with powerful data mining can improve the world while safe guarding privacy.

Conclusion

Given the tremendous pace of technology, it is impossible to predict far into the future. However, I think the past decade tells us some things to expect in the next. Computers will be 100 times faster still and storage will be 100 times cheaper. Many of the problems that we call artificial intelligence today will become accepted as standard computational capabilities, including image processing, speech recognition, and natural language processing. New and amazing computational capabilities will be born that we cannot even imagine today.

While about half the people in the world are online today via computers and mobile phones, the Internet will reach billions more in the coming decade. I expect that by using simple yet powerful models of computing such as web services, everyone will be more productive. These tools enable individuals, small groups, and small businesses to accomplish tasks that only large corporations could achieve before, whether it is making and releasing a movie, marketing a product, or reporting on a war.

When I was a child, researching anything involved a long trip to the local library and good deal of luck that one of the books there would be about the subject of interest. I could not have imagined that today anyone would be able to research any topic in seconds. The dark clouds currently looming over the world economy are a hardship

for us all, but by the time today's children grow up, this recession will be a footnote in history. Yet the technologies that we create between now and then will define their way of life.

A handwritten signature in black ink that reads "Larry Page". The letters are fluid and cursive, with a large initial 'L' and 'P'.

Larry Page

A handwritten signature in black ink that reads "Sergey Brin". The letters are fluid and cursive, with a large initial 'S' and 'B'.

Sergey Brin

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2009 Founders' Letter

Introduction

Sergey and I got over our fear of failure and finally founded Google in 1998. If we had known then what Google would become in 2009, we would have been totally flabbergasted. The scale and scope of our services, and the opportunities they offer users, are phenomenal, and we are very lucky to be a part of this business. Rather than try to run through an exhaustive list of everything we have done this year, I'm going to focus on a couple of issues—access to information and a new model of computing—that are of particular interest to me, and on which I have unique perspective.

I was lucky enough to grow up with computers, and so from an early age I learned that there's always more potential at hand with technology, especially as I struggled to read programs off kludgy cassette tapes. While I'm astounded at the pace and progress we have made on many areas of the Internet and computing, I am also amazed how slow progress has been in other equally promising areas. Often what is required to make progress in technology is focus. For example, there is a hundred times more activity in clean energy today than there was just a few years ago simply because more people are now focused on this issue. What really motivates me is this dichotomy of slow progress in some areas and fast progress in others. This is a tremendous social and business opportunity. Who would have thought in 1998 that anyone could get for free a highresolution picture of their house from above, and even from the street? That is Google Earth, Maps, and Street View. Was it a foregone conclusion that we would have these kind of products now? No, it was not. This progress happened because focused teams of people made those ideas a reality. We could just as easily have hit 2010 and not have had these services available on the Internet at all.

Finding important technological areas where progress is currently slow, but could be made fast, is what Google is all about.

I'm excited about our opportunities to make a big difference in people's lives through technology. We can build these great new products into great new businesses too. Google Translate is a recent example. You can now translate pretty

well and instantly between any of 54 languages—that is about 2550 language pairs—and search the web and read results in languages you don't speak! We even have Google Translate for your Android phone—so you speak in English and it translates into German out loud! This is all using software for speech recognition and translation that we have developed at Google. Users around the world have noticed the speed and quality of our translations, which is why Google Translate is growing like wildfire. We're putting this technology into YouTube too, so you can watch videos even if you don't speak the same language, or have difficulty hearing—automatically. Imagine anyone in the world being able to watch and understand any video no matter the language. YouTube is an extraordinary platform, and for me is like another kind of tube that I use every day, toothpaste. Apparently I am not alone: we have over 1,000,000,000 daily views on YouTube. YouTube has new features like full high-definition content at 1080p and tools to help you share videos with your friends. Over the last year, YouTube has also been making a lot more money for us and our partners, with content partner ad revenue more than tripling in 2009.

Recently we announced a new project to build 1 gigabit per second fiber-to-the-home broadband networks for one or more U.S. cities and towns between 50,000 and 500,000 people. This access is about 100x faster than most people have today. We asked communities to come back with ideas, and one mayor had an unusual response:

“I, William W. Bunten, mayor of the city of Topeka, Kansas, urge the citizens of Topeka to recognize and support the continuing efforts to bring Google's 'Fiber for Communities' experiment to our city, and do hereby proclaim that for the month of March 2010, the city of Topeka will be known as Google, Kansas.”

From such quirky tributes and detailed applications, we have seen a lot of interest in Google Fiber. Our goal with this project is to show what's possible by driving technological development of home Internet connections at a faster rate. If we succeed, it will benefit users everywhere, as well as our own services, which can debut amazing new capabilities using higher speed connections.

Access to Information

Search and Ads

Roughly 70% of our resources are allocated to core search and advertising, and we have been doing a tremendous amount of work on both. Creating the perfect search engine remains our ultimate goal, but we're still a long way from doing that, which is why we are not resting on our laurels. I have really enjoyed our new “show options” link that appears at the top of the results. If you click this you get a whole bunch of

options, including time, geography, prices, images from the pages, more or less shopping, and even thumbnails of the pages. This has really improved my searches when I'm looking for something a little harder to find. We have made our snippets "richer" in all sorts of ways. We also improved personalized search, helping you get results more tailored to you, and have done a lot of work on getting real-time results to you in seconds. A lot of our focus goes towards improving core relevance—making sure you get exactly what you want when you type a query. Typically we are running hundreds of experiments at a time to improve relevance. And we made additional improvements around comprehensiveness, making sure we search everything in the world.

Search ads are our main source of revenue and of course an important focus. We view our search ads as information for users, just like search results. With Universal Search, we now provide results in many different formats, such as videos, maps and news, and we needed to do the same for advertisements. For example, you can now see product ads with prices and pictures of the items, similar to the shopping search results you can get in organic search. It is interesting to note these retail ads can be cost-per-acquisition, which means the advertiser pays only if someone buys something. This is wonderful for the advertiser, who doesn't have to take any risk at all. Advertisers can easily put in all their inventory without worry, rather than just a subset of the most important items. We also get to build great new prediction systems that do the hard work of estimating what bid yields the best results for advertisers, based on the cost-per-acquisition goal they set. There are new ad formats specifically for local businesses, comparison ads for financial products, and sitelinks for navigational queries. I'm really excited about the benefits new ad formats can have both for our advertisers and our users. We also have done some significant work to reduce what we call "scammy" advertising to make ads safer and more relevant for users. In addition, we made many improvements to our core advertising systems behind the scenes. There is a lot of technology used to make the advertising work and estimate clickthroughs of ads and so on. Improvements to these systems have very measurable and meaningful effects on advertiser and user happiness.

On display ads, we have really benefited from a successful integration with DoubleClick. We launched new analytics and media planning in DART for Advertisers (DFA), and have made big strides in the Google Content Network—the extensive collection of partner sites on which we run ads from our network. In 2009, we sold display advertising on that network, which includes YouTube, to 94 of the Ad Age top 100 advertisers. I'm also very excited about interest-based advertising, which helps deliver ads tailored to people's interests. Users can adjust their preferences to generate more relevant ads, or opt out altogether (which very few people choose to do). A tool called Display Ad Builder helps you build display ads in

seconds so that even the smallest advertisers can use display. Through our acquisition of Teracent you can automatically create thousands of potential permutations of display ads and automatically optimize each ad that is displayed. The DoubleClick Ad Exchange helps make the display industry more open, transparent, fair, and effective for everyone from ad networks to agency holding companies to large publishers. Over 50 U.S. ad networks have already signed up for the new Ad Exchange. There are a ton of improvements we are focused on making in all of these areas, and I am excited about our very substantial progress to date.

Google Analytics

Sergey and I like to use as many of our products as possible, and we have both signed up for AdWords so we can get closer to the real experience customers face every day. Whenever we spend money on advertising, we like to know if we are actually getting our money's worth. Turns out other people want to know as well! Google Analytics lets you measure in great detail the return on your investment, and everything else going on in your website too. You can directly and automatically use this information to improve your advertising. Getting many more advertising customers to take advantage of this system is a priority. The data Analytics provides, and the analysis it makes possible, is quite a contrast to traditional advertising where it can be very hard to know exactly how well any particular ad worked. This is because the Internet enables much more measurement, and we are trying to accelerate that trend.

Geo

Unfortunately no one I know has figured out how to be in multiple places at the same time, so location is important to everyone. As I mentioned earlier, I'm amazed at the geographic products our teams have built. You can get a pretty accurate 3D view of nearly anywhere in the world. Amazing. In the last year we have released our own comprehensive source maps of streets and addresses for Mexico and the U.S.—and users have been working on building and correcting over 60 countries. Street View has exploded around the world with more than twice the countries covered and has unbelievable, higher resolution images in many places. Our Street View images of Whistler at the Olympics had nearly as many views as there are Canadians! We also made many improvements to how we handle local businesses.

I love that you can now search for something in Google Maps and then see all the little dots on the map, no matter how many there are, or how much you move the map around. With all the progress we've made with geo products, I can now be found in my one-time location of Happy, Texas!

On a much more serious and sad note, after the tragic earthquakes in Haiti and Chile we were able to gather updated high resolution imagery very quickly to help the relief efforts in both countries. In Google Earth, you can view images of places over time by enabling “historical imagery”. I did this for Haiti and found it brought home the devastation of the earthquake because I would see exactly which buildings had been damaged. It was almost as if I was there.

Google Books

I was amazed to see on Google Books a fully accessible archive of some priceless magazines, including Popular Science—going back 137 years! It has all the ads and everything, though they didn’t seem to have many ads back in the April 1872 edition. It is truly a dream fulfilled for me that we now have 12 million books scanned and available for searching at books.google.com. That is already bigger than almost any university library, and we’re not done yet. We negotiated a settlement agreement with publishers and authors to sell the full text of many of these books, so they can earn money from their work, much of which is out of print. It’s currently awaiting court approval, in the wake of much controversy and much support.

At the basic level, there is tremendous knowledge available in books and libraries that hasn’t made it onto the Internet. We now have relationships with over 30,000 publishers—an enormous number of partners. Together, we’re working toward a system where everyone has increased access to these valuable texts. I am very excited about the possibilities to help expand human knowledge, create new revenue streams for content creators, and improve the quality of search for every Google user.

A New Kind of Computing

Google Chrome, Google Chrome OS, and Android are all very exciting to me. What we are aiming to do is to redefine the nature of commercial computing by making it modern, simple, and open source. Sergey and I (and Google) grew up with Linux and we have all benefited greatly from that open model. We believe that it is a great way to run a healthy and vibrant high tech ecosystem. In fact it is how the Internet came to be.

All of these products are open source because we believe that is the best way to improve the ecosystem. An open model not only inspires innovation among developers, but also helps generally improve the quality of the software through peer review and public scrutiny of the code. And both are good for users. Google has released over 12 million lines of code across over 350 open source projects, and we host over 220,000 open source projects on the Google Code site. We have had

tremendous response from the developer community with more and more developers participating in our ecosystem— an important business goal for us./

Google Chrome

I think Google Chrome is a beautiful, fast, and simple browser. I just read a review where it handily beat all others in speed and won the overall award. It is an amazing product, and usage is growing quickly, with over 40 million active users despite the fact that the product is just eighteen months old. We have worked hard to improve the security model so you can browse with less worry of your computer being compromised. We have all sorts of technological magic to make the web into a much more robust platform, so you can run powerful software as easy as viewing a web page. Chrome is so small and fast to install you can get it on your computer faster than you can make your morning coffee. Make your life better and install it now at google.com/chrome.

I love Chrome!

Google Chrome OS

One day several years ago in one of our meetings everyone had a laptop out and was working (this is unfortunately typical behavior, and I feel partially responsible because I demanded power for laptops in all our conference tables). By doing a survey of the room I noticed that only a few people were running anything besides a web browser on their laptop. This seemed rather surprising as you have this big complex OS but it was only running one program, the browser. We decided it would be a good idea to rethink what you are running on your computer from the inside out. If we spend our lives in the browser, and the cloud, why not have the whole computer organized around that? It turns out if you think this way, you can really change a lot about computers. They get simpler, easier, and faster. Google Chrome OS boots from a cold machine in seconds you can count on one hand. This is great and is about the same time it takes most laptops to wake from a suspend (a much more complicated battery-consuming and error-prone process). I should note that Chrome OS is not out yet, and in mentioning it we have violated our own policy of not talking about things before we launch. We knew we wanted to develop Chrome OS in concert with the open source community and of course that had to be in the open. Therefore we had to pre-announce Chrome OS. One reason we don't like to pre-announce is that we don't like to pretend we know how long things take to become great products. So we don't really know exactly when you'll get a super-shiny polished Chrome OS netbook in your hands. I'm still planning on being young when it happens.

Android

It is amazing to me that everyone doesn't yet have a smartphone running Android. Doesn't everyone want an open, Internet-enabled computer in their pocket that is as good as a laptop from a couple of years ago? The reality is that the costs are still a bit high for everyone to switch today, especially with carrier costs and contracts, but that is changing really quickly. My Google Nexus One phone has no trouble playing music through Bluetooth over my car stereo, interrupting to read street names and display a map from Google Maps. I should note that driving directions that prompt you, just like a real navigation system, are free on the new Android phones. Get your car dock ready and you will have an amazing experience with updated traffic and even a photo from Street View of your destination. I can't even count all the partners we have in our Open Handset Alliance (sounds like Star Wars, doesn't it?)—turns out there are now 65. We have over 20,000 applications in our market, my favorite is an app called Facelt that displays a Dracula face you can put in front of your mouth that moves when you talk. Android is another product only in its baby stage, and yet we have already seen significant uptake. These types of projects take a lot of foresight to develop. We acquired Android in 2005, so it spent quite a while in gestation before launching. We also have over 60 carriers in 49 countries and 19 languages. Android has changed my life and I can't wait for what it does next.

Summary

Our employees, or Googlers, as we call ourselves, now number about 20,000. This seems like a big number. But given the importance of the web, we think there are not yet enough people working in earnest on the many exciting opportunities in technology. Our challenge as we expand is to keep everyone organized and motivated. This keeps Sergey, Eric, and me quite busy, and I'm sure it will keep us and the rest of the team engaged for a long time to come.

Google has grown very quickly in the last eleven years. While we've undoubtedly had a lot of good luck, we have also worked really hard on search and advertising for more than a decade. That focus has paid off, both for our users and our business. Google is now a much larger company, and with size comes scrutiny and a certain amount of skepticism. We get that. But we also know that while new technology is often disruptive, it can help solve many of the problems we face in the world. We're excited about the possibilities before us at Google and plan to work hard to make those possibilities real.

Larry Page

Larry Page

Sergey Brin

Sergey Brin

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2010 Founders' Letter

My father did not have the freedom to pursue the career of his choice in the Soviet Union. Nevertheless, he produced copious research on dynamical systems, a branch of mathematics, in his spare time. When I was four years old, there was an international conference on the subject in Warsaw—a rare event in any scientific field behind the Iron Curtain. Even though he was not officially allowed to attend and it was challenging to get permission to travel, my father was able to make the trip with the help of supporters in Poland. What he learned there went well beyond mathematics, and dramatically changed the course of our lives.

Contrary to what my father had been taught, the mathematicians from the other side of the Iron Curtain were not monsters. They were fellow scientists who shared the same passions. The key difference was that they were free: free to pursue the career of their choice, free to voice their opinions, free to travel, and above all they were free from fear of their own government. That small but powerful piece of information drove my family to flee the Soviet Union two years later and start a new life in the United States.

Today the vast majority of the world's population has access to mobile phones, and over two billion people are connected to the Internet. As a result, the trickle of information that made its way into closed societies such as the USSR when I was a child has now become a torrent—and millions of people living under totalitarian regimes are able to glimpse freedom every day of their lives, albeit virtually.

While the trends in technology and communication that made this all possible have been clear for decades, I believe we have now reached an important inflection point. As I write this letter, a wave of change is passing through the Middle East and North Africa. I cannot predict what countries it will touch, or what the state of the world will be by the time you read this in two months. But I can be certain of one thing: access to information will play a key role.

Access to Information

We founded Google to help connect people to the information they need— and we have been obsessively focused on that goal ever since. Today, hundreds of millions

of people rely on Google to search through many petabytes of the world's knowledge. We do it across nations, languages and cultures, for information that's both online and offline, on PCs and tablets, phones and televisions, with text and images and video and sound... whatever it takes. Over the past year, the whole web experience has become richer, thanks to faster processors and improved software in both client computers and data centers. For example, Google Instant (launched late last year) starts searching with every keystroke, thereby saving users time on every search. To date, Google Instant has now saved our users over 100 billion keystrokes and counting. Going forward, this is just the tip of the iceberg in terms of the kind of interactivity one should expect to see in search.

Because we serve users in nearly every country and 146 languages, the best available information is not always in a language that they understand. To that end, our translation systems have been very important ever since we introduced them five years ago. Google Translate now works in 58 languages including Hindi, Persian and Swahili, and can offer translations between 3,306 language pairs. It's still far from perfect, but we've come a long, long way, thanks to improved algorithms and scaled computing power. For geographic information, we literally cover the globe with imagery from satellites, airplanes, and cars, and we've made street maps available of nearly 100 countries.

Some of the best information in the world across many cultures was not born on the web, but resides in the world's books. This is why we launched our books project in 2004 and we've now scanned (and enable searchers to discover) more than 15 million books, which we estimate to be more than 10 percent of all the books published since Gutenberg—and we're still going strong. These books span hundreds of languages and over three million are already available online as Google eBooks. In the past year, we expanded our scanning efforts to encompass other kinds of physical content, such as Yad Vashem's Holocaust archives, Nelson Mandela's personal documents, and minutely-detailed scans of some of the world's greatest paintings as part of the Art Project.

A Video is Worth a Million Words

Sal Khan quit his job as a hedge fund manager to create an online academy on YouTube that tutors people in subjects from mathematics to chemistry. His 2,000 videos have been viewed 45 million times.

There is rarely a more compelling way to capture and convey something than by video, and thanks to advances in processors, networks and storage, video is quickly becoming as ubiquitous as text. YouTube, which is only six years old, now serves over two billion videos per day from a selection of over 500 million. While it may

have been known for its “lolcats” videos several years ago, YouTube is now used for citizen engagement (such as interviews with President Obama), documenting human rights violations (such as in Tunisia, Egypt, and Libya), full-length movies, education, and much more.

Although it seemed a dream a decade ago, today YouTube enables viewers to watch what they want, when they want, on the device of their choosing, and to post their own videos for the world to see. The ability to easily publish video has leveled the playing field between the select few and the rest of the world in terms of being able to communicate using this powerful medium.

Power in Every Pocket

Nearly 10 percent of YouTube playbacks now happen on mobile phones, which is remarkable given the technical hurdles that needed to be overcome in order to stream video to small, low-power wireless devices. Increasingly, technology is moving to the world’s five-billion-plus mobile phones, thereby democratizing information well beyond the PC. The more sophisticated functionality is typically available on the fast-growing smartphone segment, which shipped over 300 million devices last year alone. Android, our own mobile operating system for smartphones, first shipped only two years ago, and now it’s the most used in the world with over 300,000 devices activated daily. New Internet-connected screens, such as tablets and televisions, also provide an ever-growing base to deploy these technologies.

And new mobile applications are springing up everywhere. Just a few years ago mapping and navigation were the domain of specialized devices. Today, more than 150 million people use Google Maps every month on their mobile phones, and nearly 10 million now use Google Latitude to connect with their friends and families on maps.

Moreover, via mobile phones, what were once considered the far-flung corners of artificial intelligence research have now reached the mainstream. For example, Google Goggles utilizes leading edge machine vision to identify and learn more about objects and places by sight. Our Voice Actions feature enables millions of people to use state of the art speech recognition to more easily interact with their phones to dictate emails or searches. With Google Translate on mobile phones, people can now—literally—speak in one language and have it repeated in another.

Making a Living Online

A panama hat maker in Bolivia is now selling in 84 markets and has grown to 50 employees across Latin America using AdWords.

The owner of a baby products store in Nigeria had such a response to her AdWords campaign that she literally ran out of stock.

A butcher in Warsaw using AdWords saw that at Easter, one of the busiest times of the year, the queue of people who came to pick up their online orders was longer than the queue of those shopping in the store.

Displaced by Hurricane Katrina, the founder of a fitness bootcamp was able to completely rebuild, and then grow, his customer base with AdWords when he returned to New Orleans and started over.

Using AdWords to find new customers in the wake of the recession, a son helped his father turn around his ailing home security business, now the largest in El Paso.

The first Thai AdWords customer, a third-generation tailor, has grown his business from 5,000 customers in 2002 to over 400,000 internationally today.

The technology revolution also has an economic impact: it is enabling more and more people globally to make a living for themselves entirely online. Worldwide, more than one million advertisers are now using AdWords—and it's transforming the fortunes of businesses at every scale. There are countless examples of entrepreneurs building and growing businesses with AdWords as their sole marketing vehicle, reaching new markets and finding new customers throughout the world with just a couple of clicks.

Ads also enable publishers of all types to fund content creation and make that content available for free. The AdSense program now generates revenue for over two million publishers worldwide. In 2010, we gave back over \$6 billion to our AdSense partners, who range from well-known newspapers to bloggers and niche websites.

Communication for All

Technology has also democratized communication and creation of information. Capabilities that were once available only to the largest corporations are now available to businesses, political movements, governments, and individuals alike. There is no longer a need to manage servers, updates, and patches; instead, users simply refresh their browser. In addition to Gmail, our most-used communications app, our broader suite of apps is now used by over three million businesses and 10 million students.

Personal communications are increasingly complicated to manage, given the volume of email people receive. Launching Priority Inbox, which uses machine learning to rank and prioritize emails, we started to tackle this problem. We're encouraged by indications that show its utility. Priority Inbox users spend 43 percent more time reading important mail compared to unimportant, and 15 percent less time reading email overall, compared to Gmail users who don't use Priority Inbox.

After a server crash took down its website, a city in Florida moved their site to Google Apps, which has given them more time to focus on open government initiatives like live-streaming city council meetings on YouTube.

Insightly, a one-person software business in Perth, Australia, acquired more than 10,000 customers in its first seven months thanks to the Google Apps Marketplace.

What's Next?

Larry and I have always shared a profound belief in the potential for technology to make the world a better place. It's why we've been prepared, from the get-go, to place big bets on new technologies—with the full knowledge that not all of these will always pay off. In the last year we have seen Google Wave fail, but our browser Chrome has succeeded beyond what we thought was possible. As always, we learn as much from our failures as our successes, and are constantly reminded that execution and delivery matter as much as great ideas.

Chrome (Google's web browser) was released two and a half years ago. Today, at version 10 Chrome is over six times faster than it was then and over 120 million people now use it. What's more, it's helping push browser standards forward everywhere.

For the last decade, Eric has done an unbelievable job as CEO steering Google through rapid growth, while also managing two willful founders.

Clever, strategic, wise... it's hard to think of anyone on the planet who could have done a better job than Eric has, and we would both like to thank him from the bottom of our hearts. The good news is that as Larry takes over as Chief Executive (again!), Eric is still very much involved as Executive Chairman, and all three of us are just as excited about the next 10 years as we were about the last decade.

The Internet, mobile phones, and other technologies are having profound effects on the spread of information and the lives of people worldwide. It's a virtuous circle, with the information revolution directly accelerating the pace of technical

development as inventors and entrepreneurs benefit from the increased demand for new products, the opening of new markets and dramatic gains in productivity. As a result, new technologies that emerge from research labs fall into the hands of users within a few years; new online offerings reach tens of millions of people in months; and startups spring up overnight.

Decades ago, my father had to make a journey to Poland for the information that would shape my family's life. Today, billions of people can make that journey online every day—and the world will never look the same. In the coming years, technology will evolve even more rapidly, and what is still science fiction today will have worldwide impact almost overnight.

A handwritten signature in black ink that reads "Sergey Brin". The signature is written in a cursive, flowing style with a large initial 'S' and 'B'.

Sergey Brin

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2011 Founders' Letter

Introduction

Throughout our evolution, from privately held start-up to large, publicly listed company, we have managed Google for the long term—enjoying tremendous success as a result, especially since our IPO in 2004. Sergey and I hoped, though we did not expect, that Google would have such significant impact, and this progress has made us even more impatient to do important things that matter in the world. Our enduring love for Google comes from a strong desire to create technology products that enrich millions of people's lives in deep and meaningful ways. To fulfill these dreams, we need to ensure that Google remains a successful, growing business that can generate significant returns for everyone involved.

Corporate Structure

When we went public, we created a dual-class voting structure. Our goal was to maintain the freedom to focus on the long term by ensuring that the management team, in particular Eric, Sergey and I, retained control over Google's destiny. As we explained in our [first founders' 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...

In the transition to public ownership, we have set up a corporate structure that will make it harder for outside parties to take over or influence Google. This structure will also make it easier for our management team to follow the long term, innovative approach emphasized earlier...

The main effect of this structure is likely to leave our team, especially Sergey and me, with increasingly significant control over the company's decisions and fate, as Google shares change hands...

New investors will fully share in Google's long term economic future but will have little ability to influence its strategic decisions through their voting rights...

Our colleagues will be able to trust that they themselves and their labors of hard work, love and creativity will be well cared for by a company focused on stability and the long term...

As an investor, you are placing a potentially risky long term bet on the team, especially Sergey and me. Sergey and I are committed to Google for the long term.”

I wanted to quote all that because these were the clear, well-publicized expectations we established for investors in 2004. While this decision was controversial at the time, we believe with hindsight it was absolutely the right thing to do. Eight years later, these statements are still remarkably accurate, and everyone involved has realized tremendous benefits as a result. Given Google's success, it's unsurprising that this type of dual-class governance structure is now somewhat standard among newer technology companies.

In our experience, success is more likely if you concentrate on the long term. Technology products often require significant investment over many years to fulfill their potential. For example, it took over three years just to ship our first Android handset, and then another three years on top of that before the operating system truly reached critical mass. These kinds of investments are not for the faint-hearted.

We have protected Google from outside pressures and the temptation to sacrifice future opportunities to meet short-term demands. Long-term product investments, like Chrome and YouTube, which now enjoy phenomenal usage, were made with a significant degree of independence.

We have a structure that prevents outside parties from taking over or unduly influencing our management decisions. However, day-to-day dilution from routine equity-based employee compensation and other possible dilution, such as stock-based acquisitions, will likely undermine this dual-class structure and our aspirations for Google over the very long term. We have put our hearts into Google and hope to do so for many more years to come. So we want to ensure that our corporate structure can sustain these efforts and our desire to improve the world.

Effectively a Stock Split: And a New Class of Stock

Today we announced plans to create a new class of non-voting capital stock, which will be listed on NASDAQ. These shares will be distributed via a stock dividend to all

existing stockholders: the owner of each existing share will receive one new share of the non-voting stock, giving investors twice the number of shares they had before. It's effectively a two-for-one stock split—something many of our investors have long asked us for. These non-voting shares will be available for corporate uses, like equity-based employee compensation, that might otherwise dilute our governance structure.

We recognize that some people, particularly those who opposed this structure at the start, won't support this change—and we understand that other companies have been very successful with more traditional governance models. But after careful consideration with our board of directors, we have decided that maintaining this founder-led approach is in the best interests of Google, our shareholders and our users. Having the flexibility to use stock without diluting our structure will help ensure we are set up for success for decades to come.

In November 2009, Sergey and I published plans to sell a modest percentage of our overall stock, ending in 2015. We are currently halfway through those plans and we don't expect any changes to that, certainly not as the result of this new potential class. We both remain very much committed to Google for the long term.

It's important to bear in mind that this proposal will only have an effect on governance over the very long term. In fact, there's no particular urgency to make these changes now—we don't have an unusually big acquisition planned, in case you were wondering. It's just that since we know what we want to do, there's no reason to delay the decision. Also note that there will be no immediate change in votes, because everyone will still have the same number. In addition, Eric, Sergey and I have all agreed to “stapling” arrangements so that, above set thresholds, if our economic interest in Google were to decline, our votes would as well. We also have provisions to ensure all shareholders are treated fairly from an economic perspective.

For more details on all of this, please see the postscript below from our Chief Legal Officer, David Drummond, and the preliminary proxy statement we will file with the SEC next week.

Conclusion

We have always managed Google for the long term, investing heavily in the big bets we hope will make a significant difference in the world. Some of these bets have been tremendous, funding our activities and generating significant gains for our shareholders. Others have been less successful. But the ability to take these kinds of

risks has been crucial to Google's overall success and we aim to maintain this pioneering culture going forward.

The proposal we announced today is consistent with the governance philosophy we articulated when we took the company public, as well as the trend for newer technology companies to adopt strong dual-class structures. We believe that it will provide great competitive strength—insulating Google from short-term pressures, whatever the source, for a long time to come, while also giving us more flexibility around equity grants.

Investors and others have always taken a big bet on us, the founders, and that bet will likely last longer as a result of these changes. We are honored that so many of you have put your trust in us and we recognize the tremendous responsibility that rests on our shoulders. We think this is a good thing because users rely on Google to produce and operate amazing technology products and to safely and responsibly store their data. This is our passion.

Sergey and I share a profound belief in the potential for technology to improve people's lives and we are enormously excited about what lies ahead. I couldn't write a better conclusion to this founder's letter than what we wrote in 2004... so here goes: "We have a strong commitment to our users worldwide, their communities, the web sites in our network, our advertisers, our investors, and of course our employees. Sergey and I, and the team will do our best to make Google a long term success and the world a better place."

A handwritten signature in black ink that reads "Larry Page". The script is fluid and cursive, with the first letters of "Larry" and "Page" being significantly larger and more stylized.

Larry Page

A handwritten signature in black ink that reads "Sergey Brin". The script is fluid and cursive, with the first letters of "Sergey" and "Brin" being significantly larger and more stylized.

Sergey Brin
April 2012

Postscript from David Drummond, Chief Legal Officer, Google Inc.

This is not the usual yada yada... so please read on.

Although we'll be filing a comprehensive proxy statement soon, I wanted to share some details about today's proposal to create a new class of stock and the process our board of directors followed to approve it.

As Larry and Sergey note above, the stock dividend we are announcing today will have the basic effect of a two-for-one stock split. Each holder of a share of Class A or Class B common stock will receive one share of the new non-voting Class C capital stock. So after the dividend, a stockholder who currently owns one Class A share with a single vote will continue to own that share plus one Class C share without a vote.

The Class A shares will continue to trade under the "GOOG" ticker symbol, while the Class C shares will trade under a different ticker symbol, so stockholders will be able to trade these shares, just as they can with Class A shares today. Except for voting rights, the Class C shares will have the same rights as the existing Class A and Class B shares. As is typically the case with stock splits, the Class C stock dividend will be tax-free.

One thing to keep in mind is that immediately after the Class C dividend, all stockholders, including Larry, Sergey and Eric, will retain the same voting interest they hold prior to the dividend. In addition, Larry, Sergey and Eric have agreed to subject their shares to a Transfer Restriction Agreement. This agreement will maintain the same link between their voting and economic interests that exists today, even if they sell some of their non-voting Class C shares. If the founders or Eric wish to sell or transfer their non-voting Class C shares, a "stapling" provision in the agreement requires them to either sell an equal number of Class B shares, or convert an equal number of Class B shares into Class A shares. No other stockholders will be subject to these restrictions upon the transfer or sale of their shares. The stapling requirement will terminate as to the founders when their collective ownership falls below a certain threshold, and as to Eric when his ownership falls below a certain threshold. Further details of the Transfer Restriction Agreement will be included in our proxy, but it's important to note that the stapling provision is designed so that, subject to the thresholds, the votes held by the

founders and Eric will be reduced proportionally as their economic interest in the company declines.

Our board of directors carefully considered this proposal to create a new class of stock before reaching a decision. In January 2011, the board established a special committee, comprised of independent, non-management board members to consider a new class of stock, or other alternatives. This committee retained its own financial and legal advisers to assist with its deliberations, and met on numerous occasions over the 15 months that the special committee considered the proposal separately from the board. The committee recommended, and the board unanimously approved, today's proposal.

The proposal is subject to the approval of a majority of the voting power of Google's common stock, voting together as a single class, at our annual meeting on June 21, 2012. Given that Larry, Sergey, and Eric control the majority of voting power and support this proposal, we expect it to pass. The Board of Directors has not set a record date for the issuance of the Class C dividend and currently expects to set the date following the annual meeting.

Next week, we'll file a preliminary proxy statement with the SEC, which will contain further details regarding today's proposal.

David Drummond
Chief Legal Officer, Google Inc.
April 2012

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2012 Founders' Letter

Imagine you are catching up with an old friend 15 years from now. She wants to go out for a coffee. So you hit a button and within seconds a self-driving car pulls up outside your apartment. You both get in, say your destination, and are whisked away. On your journey, you talk, play games and catch up on news, while the car effortlessly navigates the roads. It merges onto a freeway and gets into a high-speed lane where self-driving cars flow faster, more smoothly and use less of the road (their precision driving allows them to travel much closer together). You look around and all sorts of people are in such cars – the young, the elderly, and people with disabilities. Within minutes you arrive at a nearby park and cafe where parking lots used to be and people are now enjoying themselves in this green, open space.

It's these kinds of ideas – which have the potential to transform lives and communities – that make me excited about coming to work every day. Will these dreams become reality? Will Google play an important role? Will these technologies ultimately be good for the world? There is no way to answer these questions with certainty. Nonetheless I am optimistic that if we choose important problems – transportation in this case – work in partnership with others, and have a vision we believe in, the odds are on our side. On a year-by-year basis, progress may seem slow and success dubious, but over a longer time period technological change is often abrupt and revolutionary.

For example, when Larry and I started the company less than 15 years ago, we afforded ourselves the rare luxury of having a cell phone.

Back then they were brick-sized devices, used solely for making calls that only the privileged few could have. Over the next 15 years, the phones became pocket-sized and more powerful than the computers we started Google with. Most importantly they are now in the hands of billions of people, making them nearly ubiquitous throughout the world.

This transformation has made a huge difference to people's lives. In 1998, meetings had to be prearranged, travel had to be carefully planned, a paper map was in order to get to a new place, and knowledge was contained in your mind. Today, it takes a

minute on a street corner to catch up with a friend, book a holiday, find your way in almost any corner of the world, and find out almost anything about almost anything.

Of course it's important to recognize that sometimes change is positive – forging closer connections, making life easier, improving productivity. Sometimes it is negative – increasing distraction and stress levels, as well as overwhelming us with choice. I am optimistic that on balance technology will make the world a better place. Still, we need to continue to work hard to ensure that our contributions are decidedly beneficial – helping people to lead easier, richer, and more fulfilling lives.

A handwritten signature in black ink that reads "Sergey Brin". The signature is written in a cursive, flowing style.

Sergey Brin

2012 Update from the CEO

Velocity, execution and focus

Sergey and I founded Google because we believed that building a great search experience would improve people's lives and, hopefully, the world. And in the decade-plus that's followed, we've been constantly delighted by the ways in which people have used our technology—such as making an artificial limb using old designs discovered [online](#).

But we're always impatient to do better for our users. Excellence matters, and technology advances so fast that the potential for improvement is tremendous. So, since becoming CEO again, I've pushed hard to increase our velocity, improve our execution, and focus on the big bets that will make a difference in the world.

Google is a large company now, but we will achieve more, and do it faster, if we approach life with the passion and soul of a start-up.

Last April, I began by reorganizing the management team around our core products to improve responsibility and accountability across Google. I also kicked off a big clean-up. Google has so many opportunities that, unless we make some hard choices, we end up spreading ourselves too thin and don't have the impact we want. So we have closed or combined over 30 products, including projects like Knol and Sidewiki. In addition, we gave many of our products, such as Google Search, a visual refresh, and they now have a cleaner, more consistent, and beautiful look.

A beautifully simple experience across Google

Creating a simpler, more intuitive experience across Google has been another important focus. I have always believed that technology should do the hard work—discovery, organization, communication—so users can do what makes them happiest: living and loving, not messing with annoying computers! That means making our products work together seamlessly. People shouldn't have to navigate Google to get stuff done. It should just happen. As Sergey said in the memorable way only he can, "We've let a thousand flowers bloom; now we want to put together a coherent bouquet."

Think about basic actions like sharing or recommendations. When you find a great article, you want to share that knowledge with people who will find it interesting, too. If you see a great movie, you want to recommend it to friends. Google+ makes sharing super easy by creating a social layer across all our products so users connect with the people who matter to them.

When you sign up for Google+, you can use Circles to group people into different categories, such as "Friends," "Family," or "Rocket Scientists," and then engage with them just like in real life. You can recommend great news articles, websites, and videos to specific Circles, or share photos with "Family" straight from your Android device. And the photos are even uploaded for you automatically! To follow people with shared interests, such as photography, just add them to your Circles. And you can share your own ideas with the world, or a smaller group, via the Google+ Stream and have others respond.

It's still early days, and we have a long way to go. But these are tremendously important changes, and with over 120 Google+ integrations to date (including Google Search, YouTube and Android), we are on the right track. Well over 100 million users are active on Google+, and we're seeing a positive impact across the Web, with Google users being able to recommend search results and videos they like—a goal we've had ever since we started the company.

Activity on the Google+ Stream itself is increasing too. We're excited about the tremendous speed with which some people have amassed over one million followers, as well as the depth of the discussions taking place among happy, passionate users—all evidence that we're generating genuine engagement. When I post publicly I get a ton of high quality comments, which makes me happy and encourages me to keep posting. I strongly encourage all of you to follow me on Google+—I love having this new way to communicate and share with all of you!

Next-generation search

Understanding identity and relationships can also help us improve search. Today, most search results are generic, so two strangers sitting next to each other in a café will get very similar answers. Yet everyone's life experiences are unique. We are all knowledgeable about different things; we have different interests and our preferences—for music, food, vacations, sports, movies, TV shows, and especially people—vary enormously.

Imagine how much better search would be if we added... you. Say you've been studying computer science for awhile like me, then the information you need won't be that helpful to a relative novice and vice versa. If you're searching for a particular person, you want the results for that person—not everyone else with the same name. These are hard problems to solve without knowing your identity, your interests, or the people you care about.

We have an old-time Googler called Ben Smith, who is a good friend of mine. It turns out that he isn't the only Ben Smith in the world! Today, it's tough for Google to find the right Ben for me. Many people share only their public profiles, not their posts, photos, or connections. And privacy considerations certainly limit the information that can be shared between platforms—even if the third parties hosting it were willing to work with Google, which hasn't always been the case.

Google+ helps solve this problem for us because it enables Google to understand people and their connections. So when I search for Ben Smith, I get the real Ben Smith (for me), right there in my search box, complete with his picture. Previously, the search box would just have had the series of letters I had typed, with no real understanding that I was looking for a unique person. This is a huge and important change, and there's a ton more work to do. But this kind of next-generation search in which Google understands real-world entities—things, not strings—will help improve our results in exciting new ways. It's about building genuine knowledge into our search engine.

Taking actions

In the early days of Google you would type in a query, we'd return ten blue links, and you would move on fairly happily. Today you want more. If you search for "weather san francisco", chances are you want... the weather in San Francisco right there on the results page, not another click or two away. So that's what we now provide. In fact, before you've even finished typing "weather" into the search box we give you the weather because we've learned that's most likely what you're looking for.

Truly great search is all about turning your needs into actions in the blink of an eye. There is a huge amount of data in the world that isn't publicly available today.

Showing it in our results involves deep partnerships across different industries in many countries. It's very similar to the work we did to get Google Maps off the ground.

Last year, for example, we welcomed ITA Software to the Google family. They have strong relationships with the airline industry, and using that data we can now provide more relevant results for travel queries. This means that if you search for "flights from Chicago to Los Angeles", you get a list of the most relevant flights with prices, and you can book directly with the airline—or click on an ad for an online travel agency. We're also experimenting with a feature called Hotel Finder, which enables you to compare prices and book a hotel room right from the results page. It's all about speeding things up so users can get on with the things that matter in their lives.

From desktop to mobiles and tablets, oh my

Getting from needs to actions lightning fast is especially important on smaller devices like mobile phones, where screen size is limited and context really matters.

That's why I'm so excited about Android. Take Google Maps, one of our best-loved services. With it, you can search for something, perhaps the nearest bookstore, find it, and be shown the way straight there. And you can now turn your phone into a wallet using... Google Wallet. So you can tap, pay, and save while you shop. No more claiming you left your credit card at home when your friend asks you to pay for lunch!

It wasn't always that easy. I remember first meeting Andy Rubin, the creator of Android, back in 2004. At the time, developing apps for mobile devices was incredibly painful. We had a closet full of over 100 phones, and we were building our software pretty much one device at a time. Andy believed that aligning standards around an open source operating system would drive innovation across the mobile industry. At the time, most people thought he was nuts.

Fast forward to today. Android is on fire, and the pace of mobile innovation has never been greater. Over 850,000 devices are activated daily through a network of 55 manufacturers and more than 300 carriers. Android is a tremendous example of the power of partnership, and it just gets better with each version. The latest update, Ice Cream Sandwich, has a beautiful interface that adapts to the form of the device. Whether it's on a phone or tablet, the software works seamlessly.

As devices multiply and usage changes (many users coming online today may never use a desktop machine), it becomes more and more important to ensure that people can access all of their stuff anywhere. Constant downloading is a terrible experience, so I am excited about products like Gmail and Google Docs that work well across Android and desktop. With Chrome now recently available on Android, switching devices becomes painless, too, because all of your tabs are just there across your desktop and Android. You can even click the back button on a different device, and it just works! And with Google Play, movies, books, apps, and games are all accessible from the Web or an Android device—no cables, downloading, or syncing required. I think there is a theme here!

In August, we announced plans to acquire Motorola Mobility, a company that bet big on Android very early on. We are excited about the opportunities to build great devices capitalizing on the tremendous success and growth of Android and Motorola's long history of technological innovation. But it's important to reiterate that openness and investment by many hardware partners have contributed to Android's success. So we look forward to working with all of them in the future to deliver outstanding user experiences. Android was built as an open ecosystem, and we have no plans to change that.

Long-term focus

We have always tried to concentrate on the long term, and to place bets on technology we believe will have a significant impact over time. It's hard to imagine now, but when we started Google most people thought search was a solved problem and that there was no money to be made apart from some banner advertising. We felt the exact opposite: that search quality was very poor, and that awesome user experiences would clearly make money.

Today it feels like we're watching the same movie in slow motion over again. We have tremendous new products that were seen as crazy at launch yet now have phenomenal usage. They easily pass the toothbrush test: they are important enough that millions of people use them at least once or twice a day. Take Chrome, for example. In 2008, people asked whether the world really needed another browser. Today Chrome has over 200 million users and is growing fast, thanks to its speed, simplicity, and security. If you don't use Chrome, just try it out, you'll never go back! I promise it won't take too long to install, and if it does you probably need a new computer.

We are seeing phenomenal usage of our Web-based applications, too. When we launched Gmail in 2004, most people thought webmail was a toy, but its accessibility—all your email from anywhere, on any device—and insane storage

have made it a winner with more than 350 million people. And our enterprise customers love it too. Over 5,000 new businesses and educational establishments now sign up every day.

In 2006, when Google acquired YouTube, we faced a lot of skepticism. Today, YouTube has over 800 million monthly users uploading over an hour of video per second. It enables an activist in Syria to broadcast globally or a young star to build an entertainment network from scratch. YouTube channels have real potential to entertain and educate, as well as to help organize all the amazing videos that are available. So I'm excited we have a new effort working with media powerhouses such as Jay-Z, the Wall Street Journal, and Disney to create channels that appeal to every interest.

People rightly ask how we'll make money from these big bets. We understand the need to balance our short- and longer-term needs because our revenue is the engine that funds all our innovation. But over time, our emerging high-usage products will likely generate significant new revenue streams for Google as well as for our partners, just as search does today. For example, we're seeing a hugely positive revenue impact from mobile advertising, which grew to a run rate of over \$2.5 billion by the third quarter of 2011—two and a half times more than at the same point in 2010. Our goal is long-term growth in revenue and absolute profit—so we invest aggressively in future innovation while tightly managing our short-term costs.

Love and trust

We have always wanted Google to be a company that is deserving of great love. But we recognize this is an ambitious goal because most large companies are not well-loved, or even seemingly set up with that in mind. We're lucky to have a very direct relationship with our users, which creates a strong incentive for us to do the right thing. For every magic moment we create—like the ability to drop a photo into Google and search by image—we have a very happy user. And when our products don't work or we make mistakes, it's easy for users to go elsewhere because our competition is only a click away.

Users place a lot of trust in Google when they store data, like emails and documents, on our systems. And we need to be responsible stewards of that information. It's why we invest a lot of effort in security and related tools for users, like 2-step verification and encryption, which help prevent unauthorized access to information. The recent changes we made to our privacy policies generated a lot of interest. But they will enable us to create a much better, more intuitive experience across Google—our key focus for the year.

We have always believed that it's possible to make money without being evil. In fact, healthy revenue is essential if we are to change the world through innovation, and hire (and retain) great people. As a child I remember reading about Nikola Tesla, a genius whose impact was severely limited by his failure to make money from his inventions. It was a good lesson. Today, most of our revenue comes from advertising. We take pains to make sure that users know when something is paid for, and we work hard to make these advertisements relevant for users. Better ads are better for everyone—better information or offers for users, growth for businesses, and increased revenue for publishers to fund better content.

Over one million businesses now use Google's advertising products and we're delighted with the ways in which we have helped other companies (both large and small) succeed. I recently heard about a Thai dressmaker whose store was destroyed by floods. To start rebuilding her business, she invested \$5 a day in Google AdWords and doubled her revenue. Today over 80 percent of her orders come from the Web. Taylor's Bike Shop in Utah, a family-run store, saw increase in sales of over 50 percent when they started using AdWords. Today they maintain a staff of eight people on a steady basis.

At the heart of our business model has always been the belief that we're better off if we can create a larger pie for our partners. We started with AdSense, and Google has paid out over \$30 billion to support content on the Web since its launch over a decade ago. That is a mighty big check (actually lots of smaller checks!) and I'm delighted we've been able to support our partners with that much resource. The same is true for our newer technologies like DoubleClick for online publishers and AdMob for mobile developers. YouTube also generates healthy revenue for Google and our content partners—in fact, partner ad revenue has more than doubled for the fourth year in a row. One thing I've learned is that if you keep doubling things, it really adds up fast!

All that said, we recognize that we don't get everything right—and that the changes we make, like our recent visual refresh, can initially upset some users (even if they later come to love them). But we don't operate in a static industry, and technology changes so fast that we need to innovate and iterate. Of course, when we do make mistakes we try to fix them as quickly as possible and, if necessary, change the way we do things to prevent problems from arising again. And we work hard to explain what we are doing—and why—because with size comes responsibility.

Googlers

People are a crucial part of Google's long-term success, since companies are no greater than the efforts and ingenuity of their employees. Our goal is to hire the best

at every level and keep them. In our experience your working environment is enormously important because people want to feel part of a family in the office, just as they do at home. So we invest in great food, high quality medical care, gyms, and other fitness facilities, as well as cool workspaces that bring people together.

Most important of all, however, we believe that work should be challenging. People are more motivated and have more fun when they work on important projects. Take Google Translate, which we started eight years ago and now enables anyone to translate text in an instant between any two of 64 languages—including Hindi, Arabic and Chinese. That’s actually 4032 different pairs of languages you can translate! In fact, by combining it with our voice recognition technology, we’ve turned mobile phones into pocket translators for millions of users globally. When you work on projects of this magnitude, it’s impossible not to wake up excited about work; the chance to make a difference is the greatest motivation anyone can have.

Happiness is a healthy disregard for the impossible

When I was a student at the University of Michigan, I went on a summer leadership course. The slogan was “a healthy disregard for the impossible,” and it’s an idea that has stayed with me ever since. It may sound nuts, but I’ve found that it’s easier to make progress on mega-ambitious goals than on less risky projects. Few people are crazy enough to try, and the best people always want to work on the biggest challenges. We’ve also found that “failed” ambitious projects often yield other dividends. Believe it or not, the technological innovation behind AdSense, which, as I mentioned earlier, has paid out over \$30 billion to partners, was the result of a “failed” more ambitious project to understand the Web. The team failed at understanding the Web, mostly, I think, because they were distracted by their work making advertisements amazingly relevant.

Last year, the Google+ team decided to integrate multi-person video into their efforts. They had a small committed team that was crazy enough to believe this was possible, and Google+ Hangouts was born. You can now video chat with anyone, anywhere, even from [the Great Barrier Reef](#). It was the same with driverless cars, which we started on in 2008. Today we have driven over 200,000 miles, and Steve Mahan, who is legally blind, recently [took a drive](#) in one of them. So the one-sentence summary of how to change the world... work on something that is uncomfortably exciting!

Today the opportunities are greater than ever. Things we used to think were magic, we now take for granted: the ability to get a map instantly, to find information quickly and easily, to choose any video from millions on YouTube rather than just a few TV channels. People are buying more devices and using them more because

technology is playing an increasingly important role in our lives. I believe that by producing innovative technology products that touch people deeply, we will enable you to do truly amazing things that change the world. It's a very exciting time to be at Google, and I take the responsibility I have to all of you very seriously.

A handwritten signature in black ink that reads "Larry Page". The signature is written in a cursive, flowing style.

Larry Page

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2013 Founders' Letter

Sergey and I started Google because we wanted “to develop services that significantly improve the lives of as many people as possible” (Founders' IPO Letter, 2004). We've stayed true to that mission, placing long-term bets on new technologies that users truly love—from Search to Gmail, Maps, Chrome, YouTube, and Android. We've covered a lot of ground in a short space of time and so people naturally ask, what is Google today, and where are you heading? It's a good question.

Search on...

Information is Google's core. We're motivated by a profound belief that access to knowledge will improve humankind. As kids, we were both quite curious. I remember spending a huge amount of time poring over books and magazines, or taking things apart at home to figure out how they worked. Today, it's much easier to find out about stuff. You just go to Google and start searching. Search is so meaningful because even a little bit of knowledge can make a tremendous difference—whether it's something seemingly small but important in everyday life, like avoiding traffic, or something bigger, like this [farmer in Africa](#) who figured out how to save his potato crop.

The activity on Google Search is astounding. There are over 100 billion searches a month (a whopping 15 percent of which we've never seen before), and we now update our index within seconds to ensure we show the freshest results. To make life easier, we're increasingly able to provide direct answers to your questions. For example, “what's the deepest lake in the world?” (It's Lake Baikal in Siberia at 1,741 meters) or, “when does my flight leave?” or, “how many calories in a [pancake](#)?”

And, I am excited by the progress we have made with Voice Search, which now works in over 38 languages, including, most recently, Thai and Vietnamese.

Speaking is often the quickest, easiest way to ask, especially if you're using a mobile device.

Yet, in many ways, we're a million miles away from creating the search engine of my dreams, one that gets you just the right information at the exact moment you need it with almost no effort. That's partly because understanding information in a deep

way is a hard problem to solve. Google Now is starting to tackle this challenge. It provides information without you even having to ask, so no more digging around in your inbox to find the tracking number for a much-needed delivery; it's already there on your screen. And recommendations on Google+, which are based on your interests, have also become a great source of information. I get things that are highly relevant all the time, like [this YouTube video](#) about the history of kitesurfing that appeared in my stream recently.

While it is still early days, we've also made significant progress understanding people's context, which is crucial if we are to improve human-computer interaction. Think about your commute. You need the traffic information very accessible so you can plan for it, or avoid it altogether. If you're going to another appointment, you want the directions to start from where you are at that moment (rather than having to type in your location on a small screen). Improved context will also help make search more natural, and not a series of keywords you artificially type into a computer. We're getting closer: ask how tall the Eiffel Tower is, and then when "it" was built. By understanding what "it" means in different contexts, we can make search conversational.

Living in a multi-screen world

As devices proliferate, it becomes more and more important to ensure that you can navigate effortlessly across them. Our Chrome browser, which has over 750 million users and is super fast and secure, works seamlessly across devices. Open a map on your desktop; when you switch to your mobile device, the same tab will be open so you can pick up right where you left off.

Think about photos: they are a really great use case for how bad things can be in a multi-screen world. We've all suffered the frustration of having our photos marooned on different devices, making them hard to find, let alone share. G+ instantly uploads them to the web, so you can view them from any device. Better still, if you lose your phone, your photos don't get lost, too.

In less than six years, over one billion Android devices have been activated (and growing fast)—creating an amazing platform for the increasing number of app developers globally. It's super exciting to see this ecosystem take off, with Android developers earning four times more on average in 2013 than they did the year before from user payments. We're now taking Android to wearables, like watches, and to cars, where we can make it super easy to get directions, make a call or play music.

The idea behind Google Play is similar, in that you can get apps, movies, books and music from one place, and play them on any device without the need for endless

syncing. Start listening to a song on your tablet and when you switch to your mobile it will be there (as you can see there is a theme emerging here!). And most recently with Chromecast, we've made it easy to watch movies from Google Play or Netflix on your TV screen at home or at a friend's apartment. You can throw away all your remotes and just use your phone or tablet to control your TV in the apps you are already used to—like YouTube. Best of all, it costs just \$35.

Now, none of this matters without good design. I remember taking a class at the University of Michigan on usability. Students had to pick a program they knew really well (I chose an email program) and estimate how long it would take experts to perform different tasks. It really helped me understand that building good, efficient interfaces is hard, and a bit more like engineering than you might think. Another tab here, another drop-down menu there. The more choices you throw at people (even if they never use them), the longer it takes them to get stuff done. People still talk about the simplicity of the Google homepage, and that was a huge part of our original success. There's no reason the same principles can't apply across our products, especially now, with so many devices and options, and so much opportunity for distraction.

Access is an unsolved problem

Of course, this all assumes you are one of the two billion people who have access to the Internet. That leaves five billion other people. It's a tragedy that with so much information available today, two-thirds of the world's population lack even the most basic Internet connection. That's why I'm so excited the team has gotten **Project Loon** off the ground (literally). The idea is to create a network of balloons on the very edge of space (they fly about twice the altitude of commercial airlines) that can provide connectivity in rural and remote areas. Soon there will be a classroom in northeast Brazil we are working to put online for the first time, using Loon. And as the program expands, we hope to bring the power of connection to more and more people—creating opportunities that none of us have yet imagined.

Invention and reinvention

It's amazing what you can achieve with a small dedicated team when you start from first principles and aren't encumbered by the established way of doing things. Yet I've learned over time that it's surprisingly difficult to get teams to be super ambitious because most people haven't been educated in this kind of moonshot thinking. They tend to assume that things are impossible, or get frightened of failure. It's why we've put so much energy into hiring independent thinkers at Google, and setting big goals. Because if you hire the right people and have bold enough dreams, you'll usually get there. And even if you fail, you'll probably learn something important.

It's also true that over time many companies get comfortable doing what they have always done, with a few incremental changes. This kind of incrementalism leads to irrelevance over time, especially in technology, because change tends to be revolutionary, not evolutionary. It's why we continue to invest for the long term, in our next generation of big bets. In healthcare we have Calico—a new company led by the former CEO of Genentech, Art Levinson, that's focused on health, wellbeing and longevity—and Iris, a smart contact lens designed to transform the lives of people with diabetes. We also recently acquired Nest, a company that's taken unloved household products like thermostats and made them much more useful. And we're excited about our new Google Shopping Express service, which is a great way to get deliveries the same day you order them, and self-driving cars (no explanation needed!). These seem like pretty crazy ideas today, but if the past is any indicator of our future success, today's big bets won't seem so wild in a few years' time.

Sixteen years after we started Google, we're just scratching the surface of what's possible. Sergey and I come to work each day excited about what lies ahead and the extraordinary people we work with. Googlers make everything possible, and they are our future. And, while the world may have changed over the years, we're as motivated by the potential to make a difference in people's lives today as when we first started.

A handwritten signature in black ink that reads "Larry Page". The signature is written in a cursive, flowing style.

Larry Page

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2014 Founders' Letter

When Larry and I founded Google in 1998, many elements came together to make our work possible. Like other companies at the time, we benefited from the increasing power and low cost of computation and from the unprecedented shift of information to the Internet. We shared a profound belief in the power of technology to make life better for people everywhere and imagined what life could be like 10, 15, 20 years down the road. Nevertheless, now that we are here, I am amazed at the progress and opportunities. For example, I could not have imagined we would be making a computer that fits in a contact lens, with the potential to make life better for millions of people with diabetes.

Yet, this is something we are working on today. Our glucose-sensing contact lens is being developed in partnership with Novartis. A tiny chip, using power measured in nanowatts, is embedded into the lens in order to monitor glucose levels continuously. This technology, and others like it being developed today, was made possible through continued improvements in electronics and the ever-accelerating pace of technological progress. As computers get smaller, cheaper, and more powerful, their potential gets larger and the world is transformed.

Larry and I were lucky to participate in one such period of transformation nearly two decades ago: search engines made a leap from modest-sized ones that would search over limited, separate corpuses, to those we know today that attempt to search all the world's knowledge. Just as advancements in miniaturization and power consumption have made the contact lens possible, it was similar progress in computing power and cost that allowed us to create comprehensive search, and make it accessible to anyone with an internet connection. It was the right time for search to become a universally available tool for bringing all the world's information to your home, to your school, to your pocket.

These advances also made it possible to provide enterprise class email, featuring vast storage and search capabilities, to anyone in the world - for free; that's why we created Gmail. And, if you fast-forward to today, we recently harnessed continued improvements in storage cost and machine learning to create Google Photos, which

lets everyone in the world safely keep, and search through, a lifetime of photos and videos.

The increasing power of computation extends well beyond the Internet. One example close to my heart is our self-driving car project. The goal is to make cars capable of driving themselves entirely without human intervention. We hope to make roadways far safer and transportation far more affordable and accessible to those who can't drive.

To do this, we can now rely on immense processing power and advanced sensors that would not have been possible only a few years ago. And while it will still take time before we see self-driving cars everywhere on our streets, over a million auto fatalities per year worldwide make this a risk worth taking. As I write, our cars have just crossed 1 million miles of autonomous driving, and our fully self-driving vehicle prototype is about to begin testing in our hometown.

This project and others like it are very challenging, and the outcomes are far from certain. But, just like when we started nearly two decades ago, it is possible to create the technology that allows people to lead healthier, happier lives. And, along with our incredibly passionate employees, I am humbled and excited to try.

A handwritten signature in black ink that reads "Sergey Brin". The signature is written in a cursive, flowing style.

Sergey Brin

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2015 Founders' Letter

Larry Page, CEO, Alphabet

In August, I announced Alphabet and our new structure and shared my thoughts on how we were thinking about the future of our business. (It is reprinted [here](#) in case you missed it, as it seems to apply just as much today). I'm really pleased with how Alphabet is going. I am also very pleased with Sundar's performance as our new Google CEO. Since the majority of our big bets are in Google, I wanted to give him most of the bully-pulpit here to reflect on Google's accomplishments and share his vision. In the future, you should expect that Sundar, Sergey and I will use this space to give you a good personal overview of where we are and where we are going.

Sundar Pichai, CEO, Google

When Larry and Sergey founded Google in 1998, there were about 300 million people online. By and large, they were sitting in a chair, logging on to a desktop machine, typing searches on a big keyboard connected to a big, bulky monitor. Today, that number is around 3 billion people, many of them searching for information on tiny devices they carry with them wherever they go.

In many ways, the founding mission of Google back in '98 — “to organize the world's information and make it universally accessible and useful” — is even truer and more important to tackle today, in a world where people look to their devices to help organize their day, get them from one place to another, and keep in touch. The mobile phone really has become the remote control for our daily lives, and we're communicating, consuming, educating, and entertaining ourselves, on our phones, in ways unimaginable just a few years ago.

Knowledge for everyone: search and assistance

As we said when we announced Alphabet, “the new structure will allow us to keep tremendous focus on the extraordinary opportunities we have inside of Google.” Those opportunities live within our mission, and today we are about one thing above all else: making information and knowledge available for everyone.

This of course brings us to Search — the very core of this company. It's easy to take Search for granted after so many years, but it's amazing to think just how far it has come and still has to go. I still remember the days when 10 bare blue links on a desktop page helped you navigate to different parts of the Internet. Contrast that to today, where the majority of our searches come from mobile, and an increasing number of them via voice. These queries get harder and harder with each passing year — people want more local, more context-specific information, and they want it at their fingertips. So we've made it possible for you to search for [Leonardo diCaprio movies] or [Zika virus] and get a rich panel of facts and visuals. You can also get answers via Google Now — like the weather in your upcoming vacation spot, or when you should leave for the airport — without you even needing to ask the question.

Helping you find information that gets you through your day extends well beyond the classic search query. Think, for example, of the number of photos you and your family have taken throughout your life, all of your memories. Collectively, people will take 1 trillion photos this year with their devices. So we launched Google Photos to make it easier for people to organize their photos and videos, keep them safe, and be able to find them when they want to, on whatever device they are using. Photos launched less than a year ago and already has more than 100 million monthly active users. Or take Google Maps. When you ask us about a location, you don't just want to know how to get from point A to point B. Depending on the context, you may want to know what time is best to avoid the crowds, whether the store you're looking for is open right now, or what the best things to do are in a destination you're visiting for the first time.

But all of this is just a start. There is still much work to be done to make Search and our Google services more helpful to you throughout your day. You should be able to move seamlessly across Google services in a natural way, and get assistance that understands your context, situation, and needs — all while respecting your privacy and protecting your data. The average parent has different needs than the average college student. Similarly, a user wants different help when in the car versus the living room. Smart assistance should understand all of these things and be helpful at the right time, in the right way.

The power of machine learning and artificial intelligence

A key driver behind all of this work has been our long-term investment in machine learning and AI. It's what allows you to use your voice to search for information, to translate the web from one language to another, to filter the spam from your inbox, to search for “hugs” in your photos and actually pull up pictures of people hugging ... to solve many of the problems we encounter in daily life. It's what has allowed us

to build products that get better over time, making them increasingly useful and helpful.

We've been building the best AI team and tools for years, and recent breakthroughs will allow us to do even more. This past March, DeepMind's AlphaGo took on Lee Sedol, a legendary Go master, becoming the first program to beat a professional at the most complex game mankind ever devised. The implications for this victory are, literally, game changing — and the ultimate winner is humanity. This is another important step toward creating artificial intelligence that can help us in everything from accomplishing our daily tasks and travels, to eventually tackling even bigger challenges like climate change and cancer diagnosis.

More great content, in more places

In the early days of the Internet, people thought of information primarily in terms of web pages. Our focus on our core mission has led us to many efforts over the years to improve discovery, creation, and monetization of content — from indexing images, video, and the news, to building platforms like Google Play and YouTube. And with the migration to mobile, people are watching more videos, playing more games, listening to more music, reading more books, and using more apps than ever before.

That's why we have worked hard to make YouTube and Google Play useful platforms for discovering and delivering great content from creators and developers to our users, when they want it, on whatever screen is in front of them. Google Play reaches more than 1 billion Android users. And YouTube is the number-one destination for video — over 1 billion users per month visit the site — and ranks among the year's most downloaded mobile apps. In fact, the amount of time people spend watching videos on YouTube continues to grow rapidly — and more than half of this watchtime now happens on mobile. As we look to the future, we aim to provide more choice to YouTube fans — more ways for them to engage with creators and each other, and more ways for them to get great content. We've started down this journey with specialized apps like YouTube Kids, as well as through our YouTube Red subscription service, which allows fans to get all of YouTube without ads, a premium YouTube Music experience and exclusive access to new original series and movies from top YouTube creators like PewDiePie and Lilly Singh.

We also continue to invest in the mobile web — which is a vital source of traffic for the vast majority of websites. Over this past year, Google has worked closely with publishers, developers, and others in the ecosystem to help make the mobile web a smoother, faster experience for users. A good example is the Accelerated Mobile

Pages (AMP) project, which we launched as an open-source initiative in partnership with news publishers, to help them create mobile-optimized content that loads instantly everywhere. The other example is Progressive Web Apps (PWA), which combine the best of the web and the best of apps—allowing companies to build mobile sites that load quickly, send push notifications, have home screen icons, and much more. And finally, we continue to invest in improving Chrome on mobile — in the four short years since launch, it has just passed 1 billion monthly active users on mobile.

Of course, great content requires investment. Whether you're talking about Google's web search, or a compelling news article you read in The New York Times or The Guardian, or watching a video on YouTube, advertising helps fund content for millions and millions of people. So we work hard to build great ad products that people find useful — and that give revenue back to creators and publishers.

Powerful computing platforms

Just a decade ago, computing was still synonymous with big computers that sat on our desks. Then, over just a few years, the keys to powerful computing — processors and sensors — became so small and cheap that they allowed for the proliferation of supercomputers that fit into our pockets: mobile phones. Android has helped drive this scale: it has more than 1.4 billion 30-day-active devices — and growing.

Today's proliferation of “screens” goes well beyond phones, desktops, and tablets. Already, there are exciting developments as screens extend to your car, like Android Auto, or your wrist, like Android Wear. Virtual reality is also showing incredible promise — Google Cardboard has introduced more than 5 million people to the incredible, immersive and educational possibilities of VR.

Looking to the future, the next big step will be for the very concept of the “device” to fade away. Over time, the computer itself — whatever its form factor — will be an intelligent assistant helping you through your day. We will move from mobile first to an AI first world.

Enterprise

Most of these computing experiences are very likely to be built in the cloud. The cloud is more secure, more cost effective, and it provides the ability to easily take advantage of the latest technology advances, be it more automated operations, machine learning, or more intelligent office productivity tools.

Google started in the cloud and has been investing in infrastructure, data management, analytics, and AI from the very beginning. We now have a broad and growing set of enterprise offerings: Google Cloud Platform (GCP), Google Apps, Chromebooks, Android, image recognition, speech translation, maps, machine learning for customers' proprietary data sets, and more. Our customers like Whirlpool, Land O'Lakes and Spotify are transforming their businesses by using our enterprise productivity suite of Google Apps and Google Cloud Platform services.

As we look to our long-term investments in our productivity tools supported by our machine learning and artificial intelligence efforts, we see huge opportunities to dramatically improve how people work. Your phone should proactively bring up the right documents, schedule and map your meetings, let people know if you are late, suggest responses to messages, handle your payments and expenses, etc.

Building for everyone

Whether it's a developer using Google Cloud Platform to power their new application, or a creator finding new income and viewers via YouTube, we believe in leveling the playing field for everyone. The Internet is one of the world's most powerful equalizers, and we see it as our job to make it available to as many people as possible.

This belief has been a core Google principle from the very start — remember that Google Search was in the hands of millions long before the idea for Google advertising was born. We work on advertising because it's what allows us to make our services free; Google Search works the same for anyone with an Internet connection, whether it is in a modern high-rise or a rural schoolhouse.

Making this possible is a lot more complicated than simply translating a product or launching a local country domain. Poor infrastructure keeps billions of people around the world locked out of all of the possibilities the web may offer them. That's why we make it possible for there to be a \$50 Android phone, or a \$100 Chromebook. It's why this year we launched Maps with turn-by-turn navigation that works even without an Internet connection, and made it possible for people to get faster-loading, streamlined Google Search if they are on a slower network. We want to make sure that no matter who you are or where you are or how advanced the device you are using ... Google works for you.

In all we do, Google will continue to strive to make sure that remains true — to build technology for everyone. Farmers in Kenya use Google Search to keep up with crop prices and make sure they can make a good living. A classroom in Wisconsin can take a field trip to the Sistine Chapel ... just by holding a pair of Cardboard goggles.

People everywhere can use their voices to share new perspectives, and connect with others, by creating and watching videos on YouTube. Information can be shared — knowledge can flow — from anyone, to anywhere. In 17 years, it's remarkable to me the degree to which the company has stayed true to our original vision for what Google should do, and what we should become.

For us, technology is not about the devices or the products we build. Those aren't the end-goals. Technology is a democratizing force, empowering people through information. Google is an information company. It was when it was founded, and it is today. And it's what people do with that information that amazes and inspires me every day.

A handwritten signature in black ink, appearing to be 'S. Pichai', with a horizontal line extending to the right from the end of the signature.

Sundar Pichai
CEO, Google

Larry's Alphabet Letter

G is for Google.

As Sergey and I wrote in the original founders letter 11 years ago, “Google is not a conventional company. We do not intend to become one.” As part of that, we also said that you could expect us to make “smaller bets in areas that might seem very speculative or even strange when compared to our current businesses.” From the start, we've always strived to do more, and to do important and meaningful things with the resources we have.

We did a lot of things that seemed crazy at the time. Many of those crazy things now have over a billion users, like Google Maps, YouTube, Chrome, and Android. And we haven't stopped there. We are still trying to do things other people think are crazy but we are super excited about.

We've long believed that over time companies tend to get comfortable doing the same thing, just making incremental changes. But in the technology industry, where revolutionary ideas drive the next big growth areas, you need to be a bit uncomfortable to stay relevant.

Our company is operating well today, but we think we can make it cleaner and more accountable. So we are creating a new company, called **Alphabet**. I am really excited to be running Alphabet as CEO with help from my capable partner, Sergey, as President.

What is Alphabet? Alphabet is mostly a collection of companies. The largest of which, of course, is Google. This newer Google is a bit slimmed down, with the companies that are pretty far afield of our main internet products contained in Alphabet instead. What do we mean by far afield? Good examples are our health efforts: Life Sciences (that works on the glucose-sensing contact lens), and **Calico** (focused on longevity). Fundamentally, we believe this allows us more management scale, as we can run things independently that aren't very related.

Alphabet is about businesses prospering through strong leaders and independence. In general, our model is to have a strong CEO who runs each business, with Sergey and me in service to them as needed. We will rigorously handle capital allocation and work to make sure each business is executing well. We'll also make sure we have a great CEO for each business, and we'll determine their compensation. In addition, with this new structure we plan to implement segment reporting for our Q4 results, where Google financials will be provided separately than those for the rest of Alphabet businesses as a whole.

This new structure will allow us to keep tremendous focus on the extraordinary opportunities we have inside of Google. A key part of this is Sundar Pichai. Sundar has been saying the things I would have said (and sometimes better!) for quite some time now, and I've been tremendously enjoying our work together. He has really stepped up since October of last year, when he took on product and engineering responsibility for our internet businesses. Sergey and I have been super excited about his progress and dedication to the company. And it is clear to us and our board that it is time for Sundar to be CEO of Google. I feel very fortunate to have someone as talented as he is to run the slightly slimmed down Google and this frees up time for me to continue to scale our aspirations. I have been spending quite a bit of time with Sundar, helping him and the company in any way I can, and I will of course continue to do that. Google itself is also making all sorts of new products, and I know Sundar will always be focused on innovation—continuing to stretch boundaries. I know he deeply cares that we can continue to make big strides on our core mission to organize the world's information. Recent launches like Google Photos and Google Now using machine learning are amazing progress. Google also has some services that are run with their own identity, like YouTube. Susan is doing a great job as CEO, running a strong brand and driving incredible growth.

Sergey and I are seriously in the business of starting new things. Alphabet will also include our X lab, which incubates new efforts like Wing, our drone delivery effort. We are also stoked about growing our investment arms, Ventures and Capital, as part of this new structure.

Alphabet Inc. will replace Google Inc. as the publicly-traded entity and all shares of Google will automatically convert into the same number of shares of Alphabet, with all of the same rights. Google will become a wholly-owned subsidiary of Alphabet. Our two classes of shares will continue to trade on Nasdaq as GOOGL and GOOG.

For Sergey and me this is a very exciting new chapter in the life of Google—the birth of Alphabet. We liked the name Alphabet because it means a collection of letters that represent language, one of humanity’s most important innovations, and is the core of how we index with Google search! We also like that it means alpha-bet (Alpha is investment return above benchmark), which we strive for! I should add that we are not intending for this to be a big consumer brand with related products—the whole point is that Alphabet companies should have independence and develop their own brands.

We are excited about...

- Getting more ambitious things done.
- Taking the long-term view.
- Empowering great entrepreneurs and companies to flourish.
- Investing at the scale of the opportunities and resources we see.
- Improving the transparency and oversight of what we’re doing.
- Making Google even better through greater focus.
- And hopefully... as a result of all this, improving the lives of as many people as we can.

What could be better? No wonder we are excited to get to work with everyone in the Alphabet family. Don’t worry, we’re still getting used to the name too!

A handwritten signature in black ink that reads "Larry Page". The signature is written in a cursive, flowing style.

Larry Page
CEO, Alphabet

2016 Founders' Letter

A is for Alphabet

Hard to believe we are about a quarter short of two years of announcing Alphabet. It's been busy! I certainly feel Alphabet is working well, and as intended (see the original "G is for Google" announcement). At the time, I wrote that "Alphabet is about businesses prospering through strong leaders and independence." The new structure has helped entrepreneurs build and run companies with the autonomy and speed they need.

Sergey and I are working well together on the overall Alphabet direction and providing guidance to the companies. Sundar is doing great as Google CEO. It's certainly a big job and we are very lucky to have him. He'll probably write this letter again in the future as he has in the past, so I won't speak too much for him on the Google related topics in this one. But, I'm excited about how he is leading the company with a focus on machine learning and AI. We took a big step in that direction with the Google Assistant, and built it into a new family of hardware devices like the Pixel and Google Home. There's a lot more to come.

We've had a number of significant things happen on the Alphabet side since I last wrote. A number of our projects became companies, with more autonomy and dedicated leadership.

Waymo is the new self-driving car company formed from Project Chauffeur at X. John Krafcik is the new CEO and brings significant auto industry experience. I love the name and I love even more the excitement you can see when you visit with them! They also formed a partnership with Fiat Chrysler around their new plug-in hybrid Pacifica minivan which I see driving around the Waymo offices with lots of sensors on it. I can't wait until Waymo launches.

Verily Life Sciences launched in December 2015 with Andy Conrad as founding CEO, also coming out of X. They have launched myriad efforts and raised \$800M from Temasek, who joined their board and will help with Asian expansion. I'm very fond of their Debug project, which aims to stop mosquitoes in their tracks. It has

been running for a while, showing some good foresight because it was started before Zika became a big concern.

In June 2016, Marwan Fawaz became CEO of Nest. He has been doing great against their plan, and we have really been enjoying working with him! I recommend you buy all their excellent products including indoor and outdoor cameras, learning thermostats, and smoke alarms.

Very recently Greg McCray started as CEO of Google Fiber. I've been enjoying working with him and his team and he has rapidly been getting up to speed. He visited all of our Fiber cities so quickly that I think he was still a bit out of breath when he got back to Mountain View! We have made significant investments in bringing gigabit fiber internet to lots of happy customers and I'm excited about our opportunities to do it better.

We have many other efforts within Alphabet. Calico CEO Art Levinson, former CEO of Genentech, is building an amazing research and development company focused on aging. We also have newly branded investment arms, GV (formerly Google Ventures), and CapitalG (formerly Google Capital) which are doing well. Sergey is continuing to spend time working with the X moonshot factory. They have a number of efforts like Wing, which is doing drone delivery. I also can't wait for them to launch!

With the change to Alphabet, oversight has been easier because of increased visibility. We have streamlined efforts where it made sense and in other areas we have seen places to double down. I also think we have learned a lot about how to set up new companies with a structure for success. Our recent launch of Waymo was a great example of our learnings. In general we are taking a patient approach to investing our capital, especially significant uses. We're not going to invest if we don't see great opportunities and we feel like our track record for picking some important efforts long before others is pretty good. Machine learning and all the efforts around Google Brain and DeepMind are good examples. Google Cloud led by Diane Greene is doing a fabulous job of getting our machine learning hardware and software out to everyone. We were early in machine learning and are already seeing significant dividends coming out. Many of the Alphabet companies are already using this technology and are planning to use it even more.

So in conclusion, Sergey and I are having a good time looking for new opportunities and managing and scaling our existing efforts. I still see amazing opportunities that just aren't quite fully developed yet—and helping making them real is what I get excited about.

Larry Page

Larry Page
CEO, Alphabet

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There are several factors at play in this boom of computing. First, of course, is the steady hum of Moore's Law, although some of the traditional measures such as transistor counts, density, and clock frequencies have slowed. The second factor is greater demand, stemming from advanced graphics in gaming and, surprisingly, from the GPU-friendly proof-of-work algorithms found in some of today's leading cryptocurrencies, such as Ethereum. However, the third and most important factor is the profound revolution in machine learning that has been building over the past decade. It is both made possible by these increasingly powerful processors and is also the major impetus for developing them further.

The Spring of Hope

The new spring in artificial intelligence is the most significant development in computing in my lifetime. When we started the company, neural networks were a forgotten footnote in computer science; a remnant of the AI winter of the 1980's. Yet today, this broad brush of technology has found an astounding number of applications. We now use it to:

- understand images in Google Photos;
- enable Waymo cars to recognize and distinguish objects safely;
- significantly improve sound and camera quality in our hardware;
- understand and produce speech for Google Home;
- translate over 100 languages in Google Translate;
- caption over a billion videos in 10 languages on YouTube;
- improve the efficiency of our data centers;
- suggest short replies to emails;
- help doctors diagnose diseases, such as diabetic retinopathy;
- discover new planetary systems;
- create better neural networks (AutoML);
- ... and much more.

Every month, there are stunning new applications and transformative new techniques. In this sense, we are truly in a technology renaissance, an exciting time where we can see applications across nearly every segment of modern society.

However, such powerful tools also bring with them new questions and responsibilities. How will they affect employment across different sectors? How can we understand what they are doing under the hood? What about measures of fairness? How might they manipulate people? Are they safe?

There is serious thought and research going into all of these issues. Most notably, safety spans a wide range of concerns from the fears of sci-fi style sentience to the

more near-term questions such as validating the performance of self-driving cars. A few of our noteworthy initiatives on AI safety are as follows:

- [Bringing Precision to the AI Safety Discussion](#)
- [DeepMind Ethics & Society](#)
- [PAIR: People+AI Research Initiative](#)
- [Partnership on AI](#)

I expect machine learning technology to continue to evolve rapidly and for Alphabet to continue to be a leader — in both the technological and ethical evolution of the field.

G is for Google

Roughly three years ago, we restructured the company as Alphabet, with Google as a subsidiary (albeit far larger than the rest). As I write this, Google is in its 20th year of existence and continues to serve ever more people with information and technology products and services. Over one billion people now use Search, YouTube, Maps, Play, Gmail, Android, and Chrome every month.

This widespread adoption of technology creates new opportunities, but also new responsibilities as the social fabric of the world is increasingly intertwined.

Expectations about technology can differ significantly based on nationality, cultural background, and political affiliation. Therefore, Google must evolve its products with ever more care and thoughtfulness.

The purpose of Alphabet has been to allow new applications of technology to thrive with greater independence. While it is too early to declare the strategy a success, I am cautiously optimistic. Just a few months ago, the Onduo joint venture between Verily and Sanofi launched their first offering to help people with diabetes manage the disease. Waymo has begun operating fully self-driving cars on public roads and has crossed 5 million miles of testing. Sidewalk Labs has begun a large development project in Toronto. And Project Wing has performed some of the earliest drone deliveries in Australia.

There remains a high level of collaboration. Most notably, our two machine learning centers of excellence — Google Brain (an X graduate) and DeepMind — continue to bring their expertise to projects throughout Alphabet and the world. And the Nest subsidiary has now officially rejoined Google to form a more robust hardware group.

The Epoch of Belief and the Epoch of Incredulity

Technology companies have historically been wide-eyed and idealistic about the opportunities that their innovations create. And for the overwhelming part, the arc of history shows that these advances, including the Internet and mobile devices, have created opportunities and dramatically improved the quality of life for billions of people. However, there are very legitimate and pertinent issues being raised, across the globe, about the implications and impacts of these advances. This is an important discussion to have. While I am optimistic about the potential to bring technology to bear on the greatest problems in the world, we are on a path that we must tread with deep responsibility, care, and humility. That is Alphabet's goal.

A handwritten signature in black ink that reads "Sergey Brin". The signature is fluid and cursive, with the first letter of each word being capitalized and larger than the others.

Sergey Brin
President, Alphabet

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