GOOGLING GOOGLE

Most of us know that Google is a **search engine.** (And we all use it, right? All the time.) When Larry Page and Sergey Brin launched the company in 1998, it was just that. But now? Here's a look at some of the **many ways Google uses Big Data to help us**—and itself—today.

GOOGLE.COM

50% of all Internet users worldwide use Google **every day**

7.2 billion
page views per day

20 petabytes
of data processed daily
(That's 20 billion megabytes!)

OCTOPUS ELEPHANTIS GOOGLEPLEXUS

has its tentacles in everything and forgets nothing. (But it doesn't want to know your name.)

GOOGLE EARTH

Lets you take a virtual journey to any location on Earth, and beyond. You can explore buildings in 3D, dive down into the ocean, explore the moon, see maps of climate change, visit UNESCO cultural landmarks, study historical images of the world, and tour U.S. presidents' birthplaces.

GOOGLE WALLET

An app that enables payment with a phone at the thousands of brick-and-mortar stores that accept it; just tap the phone at the point of sale. It's secure—your credit card numbers are encrypted and never appear on the screen.

YOUTUBE

48 hours
of video are uploaded every minute

4 billion
views per day

Most viewed video:
"Bieber's Baby"
763,684,702
(As of 7/31/12)

PROJECT GLASS

Currently in development, this is a device you wear—a pair of glasses—that can be a still and movie camera recording what you see in front of you; it can also project information onto the lenses, such as maps, email messages, videos, temperatures, and the time. Voice controls let you respond to emails or phone calls, and you can send videos or directions to others, all in real time as you work or play.

GMAIL TAP

The answer to "too many buttons." A device with just two keys for email, a dot and a dash; it's a reinvention of Morse code.

PICASA

Digital photo management: organize, edit, add effects, and share your pictures.

GOOGLE TRANSLATE

63 languages
Free app on iPhone and Android smartphones

GOOGLE MAPS

The ubiquitous web mapping service with street maps, satellite views, and a route planner showing distances and travel time by car, foot, and public transport (with bike times to come).

GMAIL

Along with regular email, you can now call phones from Gmail in
38 languages

GOOGLE TALK

Instant messaging

GOOGLE+

The company is developing the concept of **"presence."** It used to be that we were either "on" (green) or "off" (red). But increasingly, we are always "on"—online or reachable in some way. What that continual presence ought to be, however, is all shades from green to red. We need an algorithm that sorts out who you want to talk to depending on who the caller is, the nature of the call, and the time of day.

Google sees an opportunity here that is similar in scale to that of 15 years ago, with simple searches.

The next generation of human contact being developed is the **management of people's attention:** to give back moments in our lives, to let people choose how to spend their time, to avoid the bombardment of ads at times when they are not useful, and to be served ads when appropriate, not interruptive.

DOUBLECLICK

This is a real-time digital advertising marketplace that connects publishers with agencies, ad networks, and technology providers, allowing companies around the world to create and manage their digital advertising.

GOOGLE VOICE

Typically, voice mail is stuck on the phone that's called, so if someone has a work, home, and mobile phone, that's three messages you have to leave. If you call the person's Google Voice number, the message goes to all three devices. Or, depending on who you are to the person you're calling, your call may be sent only to the work phone, or even be blocked altogether! The service also transcribes the voice message and lets you return a free text quickly.

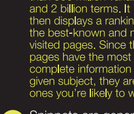
GOOGLE NEWS

Information from
4,500 news sites
is updated every fraction of a second.

WHAT HAPPENS WHEN YOU GOOGLE?

Like most search engines, Google is continually "crawling" through the web, cataloging and storing billions of pages. When you search for something, the system calls up these cached pages so that it can respond to you quickly.

1. You enter a query.



2. It goes to the Google web server …

… a network of more than 3 million computers linked together and connected to the Internet.

3. The query is sent to 1 million index servers.

These servers are like the index in a book: they indicate which pages contain the words that match your query and where those pages are stored in the document servers.

4. The query travels to document servers that retrieve the stored pages.

Using PageRank software (named after Larry Page), the system measures the importance of a page by solving an equation of more than 500 million variables and 2 billion terms. It then displays a ranking of the best-known and most-visited pages. Since these pages have the most complete information on the given subject, they are the ones you're likely to want.

5. Snippets are generated to describe each search result …

6. … which are then returned to you.

7. The whole process takes about half a second.

Information Graphics by Nigel Holmes