can speed up Roche's overall efforts. The Zeiss machine ultimately has led to changes in the entire research process.

### Change Everything—One Piece at a Time

Genomics could dramatically change things at Roche: In Palo Alto, researcher Gary Peltz built a computerized model of the mouse genome that allows him to simulate classical lab studies in a matter of minutes. In Iceland, Roche teamed up with Decode, a company which researches Icelandic genealogical records. Decode used the data it had collected to identify and locate genes that are associated with stroke and schizophrenia. In Nutley, genomic data is being used to size up a drug's side effects before embarking on lengthy animal experiments.

Each of these initiatives runs on a different timeline. Some parts of Roche will see dramatic business changes in a year or two, while others will not see changes for much longer "This isn't just a matter of turning on a light switch," says Klaus Lindpaintner, Roche's global head of genetics research.

### Discussion Questions

1. How does the business strategy affect information systems and organizational decisions?

2. What generic strategy does Roche appear to be using based on this case? Provide a rationale for your response.

3. Apply the hypercompetition model to Roche. Which of the 7 Ss are demonstrated in this case?

4. How do information systems support Roche's business strategy?

Source: Excerpted from G. Anders, "Fresh Start 2002: Roche's New Scientific Method," *Fast Company* (January 2002), available at http://www.fastcompany.com/online/54/roche.html.

## CASE STUDY 1-2

## GOOGLE

Started in the late 1990s, Google grew rapidly to become one of the leading companies in the world. Google's mission is "to organize the world's information and make it universally accessible and useful." It is operating on a simple but innovative business model of attracting Internet users to its free search services and earning revenue from targeted advertising. In the winner-takes-all business of Internet search, Google has captured considerably more market share than its next highest rival, Yahoo!. This has turned Google's Web pages into the Web's most valuable real (virtual) estate. Through its two flagship programs, AdWords and AdSense, Google has capitalized on this leadership position to capture the lion's share in advertisement spending. AdWords enables businesses to place ads on Google and its network of publishing partners for as low as 25 cents per thousand impressions. On the other hand, it uses AdSense to push advertisements on publishing partners' Web sites targeting specific audience and share ad revenue with the publishing partner. This creates a win–win situation for both advertisers and publishers and developed Google into one giant sucking machine for ad revenue.

Even as a large company, Google continues to take risks and expand into new markets. It currently offers over 120 products or services. Sergey Brin and Larry Page, the founders, declared in Google's IPO prospectus, "We would fund projects that have a 10 percent 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. As the ratio of reward to risk increases, we will accept projects further outside our normal areas, especially when the initial investment is small."

Google promotes a culture of creativity and innovation in a number of ways. It encourages innovation in all employees by allowing them to spend 20 percent of their time on a project of their own choosing. In addition, it offers benefits such as free meals, on-site gym, on-site dentist, and even washing machines at the company for busy employees.

Despite open and free work culture, a rigid and procedure-filled structure is imposed for making timely decisions and executing plans. For example, when designing new features, the team and senior managers meet in a large conference room. They use the right side of the conference room walls to digitally project new features and the left side to project any transcribed critique with a timer clock giving everyone 10 minutes to lay out ideas and finalize features. Thus, Google utilizes rigorous, data-driven procedures for evaluating new ideas in the midst of a chaotic innovation process.

Google's vice president for search products and user experience, Marissa Mayer, outlines nine notions of innovations embedded in the organizational culture, processes, and structure of Google (from *BusinessWeek* article, "Champions of Innovation")

1. Ideas come from everywhere: Google expects everyone to innovate, even the finance team.

2. Share everything you can: Every idea, every project, every deadline—it's all accessible to everyone on the intranet.

3. You're brilliant, we're hiring: Founders Larry Page and Sergey Brin approve hires. They favor intelligence over experience.

4. A license to pursue dreams: Employees get a "free" day a week. Half of new launches come from this "20% time."

5. Innovation, not instant perfection: Google launches early and often in small beta tests, before releasing new features widely.

6. Don't politic, use data: Mayer discourages the use of "I like" in meetings, pushing staffers to use metrics

7. Creativity loves restraint: Give people a vision, rules about how to get there, and deadlines.

8. Worry about usage and users, not money: Provide something simple to use and easy to love. The money will follow.

9. Don't kill projects—morph them: There's always a kernel of something good that can be salvaged.

Keeping up with the organizational strategy of Google, its IT department provides free and open access to IT for all employees. Rather than keeping tight control, Google allows employees to choose from several options for computer and operating systems, download software themselves, and maintain official and unofficial blog sites. Google's intranet provides employees information about every piece of work at any part of Google. In this way employees can find and join hands with others working on similar technologies or features.

In building the necessary IT infrastr[...] and making its own software depending [...] example, it uses Oracle's accounting soft[...] management (CRM) software, which it th[...] open source projects both by extensively u[...] and by paying college students to contri[...] Code. In addition, Google also develops [...] internal and external use.

Given the nature of business, securit[...] For instance, its master search algorithm [...] than Coca-Cola's. However, rather than in[...] preventive policy controls, Google puts se[...] detective and corrective controls. Its netw[...] 150 security engineers constantly look for [...] traffic patterns associated with intrusion.

### Discussion Questions

1. How is Google's mission statement rel[...]

2. How does Google's information system[...]

3. How does Google's organizational strat[...]

4. Which of Porter's three generic strategi[...] case? Provide a rationale for your respo[...]

5. Using D'Aveni's Hypercompetitive Fra[...] of market disruption it has created.

In building the necessary IT infrastructure, Google's IT department balances buying and making its own software depending on its needs and off-the-shelf availability. For example, it uses Oracle's accounting software, whereas it built its own customer relationship management (CRM) software, which it then integrated with its ad systems. It also supports open source projects both by extensively using open source software within the organization and by paying college students to contribute to them through programs like Summer of Code. In addition, Google also develops generic applications such as GoogleApps for both internal and external use.

Given the nature of business, security of information resources is critical for Google. For instance, its master search algorithm is considered a more valuable secret formula than Coca-Cola's. However, rather than improving IT security by stifling freedom through preventive policy controls, Google puts security in the infrastructure and focuses more on detective and corrective controls. Its network management software tools combined with 150 security engineers constantly look for viruses and spyware, as well as strange network traffic patterns associated with intrusion.

## Discussion Questions

1. How is Google's mission statement related to its business strategy?
2. How does Google's information systems strategy support its business strategy?
3. How does Google's organizational strategy support its business strategy?
4. Which of Porter's three generic strategies does Google appear to be using based on this case? Provide a rationale for your response.
5. Using D'Aveni's Hypercompetitive Framework, analyze Google's strategy and the type of market disruption it has created.

Source: Excerpted from: *"Champions of Innovation"* by Michelle Colin, *Business Week*, June 19, 2006, Issue 3989, pp.18–26; and "Pleasing Google's Tech-Savvy Staff" by Vauhini Vara, *Wall Street Journal*, March 18, 2008, p.B6.