

The Promise (and Perils) of Open Collaboration by Andrea Gabor

from **strategy+business** issue 56, Autumn 2009

reprint number 09202

The Promise (and Perils) of Open Collaboration

Companies like IBM and P&G have prospered by opening their borders, but there are cautionary lessons from the quality movement of the 1980s.

by **Andrea Gabor**

The open source movement has become a force for widespread renewal and change in corporate management over the last decade. During its brief lifetime, open source has produced top-quality software, such as Mozilla's Firefox Web browser and the Eclipse Foundation's family of open source software projects, which serve as platforms for many of IBM's products. The open source movement has encouraged a range of companies, from high-tech startups to technology giants, to try their hand at collaborative software development. It also has provided a model for the "open innovation" movement at such companies as Procter & Gamble Company, which have advanced their market positions by using social networks and data sharing to improve and expand product development and streamline their supply chains.

For many managers, embracing the open source movement can feel a bit unsettling, because that movement is based on a culture that is antithetical to many mainstream corporate practices. Collaborators

share ideas and improvements freely even with those outside the company, a practice that flies in the face of the conventional approach of holding intellectual capital closely within the corporation. In open source, the votes of key contributors count the most in decision making; voting power is not determined by title or hierarchical position. And product quality and integrity, not profit margins or corporate deadlines, determine the most critical development decisions. As a consequence, a number of companies that have become involved with open source software development — most famously IBM — have also been drawn inexorably toward a more open model of management and away from a culture of secrecy and strict hierarchies.

As companies outside the computer industry adopt the collaborative precepts of open source to improve their research and development efforts, they too undergo some major management shifts. P&G, for example, once known as an obsessively secretive organization, has thrown open its laboratory doors and invited outside collaborators to help develop new technolo-



gies and products, and at the same time is sharing some of its own intellectual property freely.

Whether a business is developing software or consumer products, the promise and challenge of what we will refer to collectively as the open collaboration movement is the same: It serves as a dynamic knowledge exchange, encouraging outside ideas to cross company borders, and empowering employees to work extensively in outside networks and collaborations.

Although it's easy to get caught up in the enthusiasm for open collaboration, advocates should remember that many companies have

ment also enabled U.S. automakers, especially Ford Motor Company, to thrive for a time. At many companies, the quality movement began as an intriguing possibility for breakthrough performance; it then became a force for management reform, then a must-have management fad.

But the quality movement of the 1980s also had many failures. Under such names as “statistical process control,” “Six Sigma,” or “total quality management,” the practice of quality-oriented management was frequently misunderstood, misapplied, and eventually abandoned, often at the expense

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been here before. In its potential to improve corporate growth and customer satisfaction, as well as in its underlying principles, open collaboration resembles the quality movement that was prevalent in North American and European companies in the 1980s.

Corporate leaders who are considering embracing the open collaboration movement can learn much from the complex history of the quality movement. At its best, it greatly benefited some companies. The Toyota Motor Corporation, for example, became the world's preeminent automaker by adopting and maintaining a comprehensive quality philosophy that spanned everything from engineering and production to marketing and strategic planning. The quality move-

of customers, employees, and shareholders. Today, many companies that once embraced the concept — for example, some manufacturers of cell phones and appliances — are being challenged by Korean companies that have borrowed more successfully from Toyota's quality playbook. And therein lies a cautionary tale for those who hope to make the most of open collaboration.

Two Movements in Time

Both quality management and open source were developed outside the corporate mainstream by pioneers who couched their missions in ethical and economic terms — as vehicles for simultaneous improvement of the integrity of the company and its bottom line. W. Edwards Deming, the leading exponent of the

quality movement, was a self-employed statistician and a consultant. Deming inspired reverence among workers and engineers, but he often evoked impatience — even rage — among executives by publicly criticizing corporate practices. Nonetheless, his precepts were adopted by key members of the

example, relies on sophisticated social networking systems designed to make connections between in-house and outside sources of expertise. The collaborative model has enabled P&G to dramatically expand the number of its partnerships, licensing agreements, and technology purchases, which has

Practitioners of open source are picking up where quality left off to rethink their organizational structures and systems.

establishment, because they produced results. Deming's followers included former Ford CEO Donald Petersen, who based the automaker's turnaround during the early 1980s on Deming's teachings.

Similarly, the earliest open source projects, such as Linux, were launched outside the corporate realm by thousands of self-organized engineers and computer science academics with a passion for collaboration and free software. Some of them, explicitly styling themselves as software iconoclasts and hackers, rebelled against the idea of proprietary intellectual property and the corporate profit motive. Then, in the mid-1990s, open source was embraced by such companies as IBM, which recognized it as a means of achieving unprecedented product quality and productivity increases. Thus began IBM's transformation from a symbol of buttoned-up inwardness to champion of outward collaboration.

The open collaboration movement still draws directly on the open source values of knowledge sharing. Procter & Gamble, for

in turn helped it unleash a steady stream of profitable innovations — with success rates up to three times as high as in the past.

Today, practitioners of open collaboration are picking up, in some ways, where the quality movement left off. They are working to tap the knowledge and creativity of a broad range of constituents, including employees and suppliers. In the process they are also rethinking their organizational structures and systems. Most important, at the core of both the quality and open collaboration movements (and sometimes it's unclear where one leaves off and the other begins) are the values of trial-and-error learning, open communication, and systems thinking. Both movements recognized that employees — given the right tools, training, and management environment — are in the best position to do the analysis needed for meaningful improvement and innovation.

Open collaboration is already facing the same formidable barriers that held back the quality movement, especially in traditional com-

panies. The persistence of hierarchical thinking, particularly a reliance on experts rather than the expertise of knowledgeable employees at all levels, can undermine any open collaboration effort. Also, although much of the publicity around the movement has focused on finding outside ideas through joint ventures and partnerships, it can be far more difficult, and more important, to cultivate and tap in-house creativity. Executives in many Western companies have never been comfortable soliciting the opinions of employees — especially rank-and-file workers — in any systematic way. And few companies have been willing to make the long-term commitment that quality management entails, including the training of both employees and suppliers in such areas as statistical methods and problem solving. The same is likely to be true for open collaboration.

Perhaps if we can learn from history, we won't be condemned to repeat it. Here are seven key strategies that the pioneers of open collaboration have used to succeed in facing these obstacles, along with relevant perspectives from the quality movement.

1. Craft a leadership message.

At a time when responsibility for quality improvement was ghettoized in manufacturing, W. Edwards Deming insisted that quality was the job of the CEO, and he typically refused to work for a company unless the CEO met with him regularly and developed a company-wide quality strategy. In addition to Ford's Petersen (CEO from 1985 to 1990), Deming maintained a close relationship with Toyota senior management from the 1950s until his death in 1993.

The best CEOs articulate a

leadership message that is both universal and of immediate relevance to a company's strategic needs. In 2000, A.G. Lafley, CEO of P&G, established "Connect + Develop," the company's open collaboration strategy that deliberately fostered information sharing and joint project relationships with external innovators, even including some competitors. With the "50 percent rule," P&G decreed that half of new product development should come from outside the company. Lafley has described P&G's efforts in detail, both in *The Game-Changer: How You Can Drive Revenue and Profit Growth with Innovation*, co-authored with Ram Charan (Crown Business, 2008), and in interviews and articles. (See "P&G's Innovation Culture," *s+b*, Autumn 2008.) Every account of the project makes it clear that the senior executives at P&G are closely involved.

To Lafley, open collaboration is a social process that extends far beyond R&D and entails encouraging collaborative behavior and risk taking, spreading the message, and rewarding early adopters. Driving culture change, as Lafley writes in his book, also involves changing the "hard stuff"; thus, he has pushed open innovation via P&G's organizational structures, work systems, and performance metrics.

2. Collaborate with your customers. The idea that quality is defined by the customer became a mantra of the quality movement. In response, companies beefed up consumer research, service options, and customer-service hotlines. Those strategies worked for a while. But keeping abreast of the changing needs of consumers in a global marketplace is a tall order, and too few companies kept continuously

improving their approaches to gaining customer insights.

One of the hallmarks of open collaboration is that it provides new ways to incorporate customers' ideas into new product development. MIT's Eric von Hippel has observed that in specialized industries as varied as scientific and surgical instruments and sporting equipment, so-called lead users generate more than half of all innovations. Today companies like the Lego Group and Pitney Bowes Inc. are putting that lesson to work, using social networking and open collaboration models to redefine what it means to be close to their customers.

After Lego's patents expired in 1988, the legendary Danish toy-maker fought off copycat products, as well as the onslaught of electronic games, by allowing consumers to download software from Lego's Web site in order to design their own toys. Lego stages competitions for the best designs. Today, Lego aficionados around the world use the Web site to custom design 3-D toys using virtual elements manufactured by the company, to purchase those toys online, and to chat with other Lego fans and share design ideas. (See "The Promise of Private-label Media," by Matthew Egol, Leslie H. Moeller, and Christopher Vollmer, *s+b*, Summer 2009.)

3. Build a culture of trust and open communication. In the past, as now, one of the biggest challenges facing companies committed to quality improvement was restoring trust — among customers who were fed up with shoddy goods, suppliers who were being relentlessly squeezed, and employees who often were blamed for management's mistakes. Trust is needed to win the participation of employees

and suppliers in collaborative improvement efforts.

John O. Whitney, professor emeritus of management and former executive director of the W. Edwards Deming Center for Quality, Productivity, and Competitiveness at Columbia Business School, has estimated that more than half

of a traditional organization's activities, including use of the time clocks that monitor workers and marketing campaigns designed to win back disappointed customers, are needed only because of mistrust.

The success of open source software is predicated on an unprecedented degree of trust.

Yet the success of open source software is predicated on an unprecedented degree of trust — or at least a widespread willingness to suspend mistrust. As IBM plunged into the open source world, for example, it had to redefine both its mind-set and its workflows. The traditional development process, which was costly and time-consuming, involved laboring in secret on a prototype before getting feedback from a customer and then returning to the lab to labor some more. "It used to be very rigid at the engineering level," says Rod Smith, vice president of emerging technology at IBM Software Group. "You were allowed to talk only to engineers at [your] level. You had to earn the right to speak to engineers above you. Each product had its own little closet, and if you stepped out of the closet a ruler smacked your hand."

Today, in contrast, IBM fosters forums, wikis, and other networks that give developers an early con-

nection to a range of constituents. The company is involved with hundreds of open source projects that include customers, competitors, and other interested designers from outside the firm. Each project is aimed at bringing the brainpower of a huge open source community together to help vendors share the

development expense for what is, in essence, commodity software. This more trusting environment has brought a remarkable degree of transparency to IBM.

4. Cultivate continuous improvement. As the quality movement waned, companies became impatient with the slow progress of some quality efforts. Fast-paced, fast-track executives began to regard continuous improvement with scorn as an incremental, bureaucratic, and process-driven function detached from the pressures of line management. In a major departure from the Deming approach, General Electric Company's Six Sigma effort introduced the idea of cost-benefit analysis for improvement efforts. Over the years, however, companies that gave short shrift to continuous improvement fell behind competitors that made it an essential part of operations.

Open collaboration has given the idea of continuous improvement a new respectability as a process that often leads to innovation, which P&G's Lafley describes as "the conversion of a new idea into revenues and profits."

Releases of beta versions of soft-

ware represent a classic example of continuous improvement. In open source, it is fundamental to release software early and often, so that initial users can test it and suggest (or make) refinements. Many developers believe this process leads to products with higher quality and performance than those produced by “closed organizations.” And because complex software applications require technology that cuts across product lines, frequent release dates “facilitate the customization of each product line,” explains Doug Gaff, a senior engineering manager at Wind River Systems Inc. Wind River is an Alameda, Calif., company that develops software — much of it on open source platforms — for optimizing electronic devices as varied as mobile phones and the Mars exploration rovers.

This early-release-and-fix process also parallels advances in supply chain management, such as the just-in-time inventory methods that were key to the quality movement and that have become much more than a way to get inventory costs off a company’s balance sheet. Rather, for products with short life cycles, such as cell phones, just-in-time methods help ensure that parts inventories aren’t out of date by the time new product iterations occur.

At its best, continuous improvement leads to real innovation, as the experience of SSM St. Joseph Health Center, a hospital in St. Louis, demonstrates. About six years ago, St. Joseph began to experiment with a new approach to monitoring and treating the glucose levels of patients in intensive care as a way to reduce the number of costly — and potentially deadly — infections. The method, which required hourly glucose monitoring, cut the number

of infections among postsurgical patients in the ICU to almost zero. It also led to substantial organizational change and increased the workload of nurses, but they embraced the new procedure because of the staff-wide commitment to continuous improvement. The process has since been adopted as a standard of care by many hospitals.

5. Build a flexible innovation infrastructure. At many companies, the responsibility for quality improvement became vested in a quality department run by staff experts in reengineering or Six Sigma, rather than being pushed throughout the organization by executive and line management. Although the functional experts understood quality techniques, they had little appreciation for the interpersonal connections that made such improvements work, and they often failed to align quality objectives with business goals.

Open collaboration relies on social networking systems and the rapid flow of intellectual property among the company’s people and its

company’s best-known effort, of course, is Connect + Develop, which has dramatically expanded the number of innovations. As P&G’s Connect + Develop support organizations search for new ideas — some generated by a network of retired scientists, others by a team of 70 technology entrepreneurs who roam the globe looking for new ideas or pockets of excellence — they are driven by clearly identified consumer needs and operational goals. For example, multifunctional Connect + Develop teams are embedded with specific business franchise areas such as oral hygiene (Crest and Oral-B) to better understand the needs of the units and to tailor external search activities to those needs.

6. Prepare your organization for the new skill sets. One of the greatest challenges for the quality movement was the fact that it demanded a range of new technical and social skills — from statistical process control to collaborative problem solving — that employees at all levels had to learn.

Releases of beta versions of software are a classic example of continuous improvement.

outside partners. These systems also have to enable quick decisions about which new ideas to embrace and which to discard. That mandates integrating the company’s open collaboration efforts into every aspect of the business.

At P&G, open collaboration is reflected in everything from the budget-setting process to quarterly management reviews to the way product development is done. The

Because effectiveness equals influence in open source, IBM says it has to pay closer attention to employee development and communication skills. Participation in virtual communities is a communications-intensive business, and the most successful participants are those who know how to navigate the unique culture of each community and articulate their views — usually in writing.

Engineers who want to become involved have to build their credibility gradually, by answering news-group questions or cleaning up software bugs. They also have to develop a thick skin to handle immediate feedback. Without layers of customer support and sales shielding developers, “the bugs and support questions come right into you,” says Ian Skerrett, director of marketing for the Eclipse Foundation, the governance organization for the eponymous open source community founded by IBM. “You

7. Align evaluations and rewards. The most controversial tenet of Deming’s philosophy was his belief in intrinsic motivation as a key driver of individual performance and his conviction that differentiated pay and bonuses can hurt companies because these shorter-term incentives undermine long-term goals and teamwork.

Open collaboration communities are meritocracies that offer feedback and rewards entirely outside the boundaries of the company, raising new questions about the

influence,” he notes. As a result, people have to stick with projects longer, and managers need to find ways to keep them interested and motivated. “The care and feeding of these individuals is very important,” Frye says.

Realizing the Potential

As these seven strategies suggest, open collaboration is a complex — indeed, all-embracing — process, requiring genuine commitment from corporate leaders, a willingness to abandon many venerable corporate customs, and an appetite for unleashing and managing disruptive change across the organization. Some companies, notably IBM and P&G, are likely to recognize this, to continue to develop their approach to open collaboration, and to reap the rewards.

But the widespread adoption of open collaboration is not at all a foregone conclusion. Not since the quality movement of the 1980s has a management trend had such potential for widespread transformation of the way companies do business. The biggest obstacle to both movements is that they require deep changes in the way knowledge is controlled and shared — changes that have the potential to alter relationships both within a company and with its outside constituents. With open collaboration, as with the quality movement, an incremental approach is likely to lead to short-lived improvements and eventual failure. But if the experience of the quality movement is any guide, the companies that successfully master open collaboration will command an enormous and lasting edge over rivals that do not. +

Reprint No. 09302

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have to have writing skills and the patience to collaborate.”

That is why IBM has established a set of best practices for new engineers joining an open source project. First, employees are required to “lurk” in a community for 30 or 60 days “to observe, to learn how it works” before they can participate, says Daniel Frye, vice president of open systems development. “Every open source community is different, and you have to adapt to the style and level of interaction.”

Procter & Gamble is also honing its employees’ communications skills. The company has developed more than 40 guides on a range of topics, including work processes, negotiating, and alliance management. Training also includes role-playing and videotaping different scenarios that might crop up with a partner, and then critiquing the participants.

effectiveness of pay incentives and traditional employee evaluations. Software engineers, for example, get many benefits from their open source contributions, but few are directly related to pay. “It’s an extremely wide aperture,” says IBM’s Smith. “People develop opinions about you based on your body of work. That’s very liberating in terms of [gaining] control over your own career.”

The tension between open source values and corporate pay incentives plays out every day at IBM, which remains committed to individualized incentives and evaluations by supervisors. Frye concedes that in open source, more than in the development of proprietary software, companies have to think about personnel management from a longer-term perspective. “A developer with three to five years of experience will carry more weight, more

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is published by Booz & Company Inc.
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