

HIGH TECH

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The next step in **open innovation**

The creation of knowledge, products, and services by online communities of companies and consumers is still in its earliest stages. Who knows where it will lead?

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**Article
at a
glance**

The Internet and new social-networking technologies are allowing companies and their customers to interact with unprecedented levels of richness. Some leading organizations are using this opportunity to draw customers into the heart of the product-development process.

Cocreating products and services with customers, however, is uncertain territory, fraught with challenges and questions—for instance, who owns the resulting intellectual property? Nonetheless, smart companies are now beginning to encourage their customers to help them develop the products and services consumers really want.

For most companies, innovation is a proprietary activity conducted largely inside the organization in a series of closely managed steps. Over the last decade, however, a few consumer product, fashion, and technology businesses have been opening up the product-development process to new ideas hatched outside their walls—from suppliers, independent inventors, and university labs.

Executives in a number of companies are now considering the next step in this trend toward more open innovation.¹ For one thing, they are looking at ways to delegate more of the management of innovation to networks of suppliers and independent specialists that interact with each other to cocreate products and services. They also hope to get their customers into the act. If a company could use technology to link these outsiders into its development projects, could it come up with better ideas for new products and develop those ideas more quickly and cheaply than it can today? Suppose that a wireless carrier, say, were to orchestrate the design of a new generation of mobile devices through an open network of interested customers, software engineers, and component suppliers, all working interactively with one another.

This is the model of innovation as a convergence of like-minded parties. Increasing numbers of organizations are now taking that approach: distributed cocreation, to use its technical name. LEGO, for instance, famously invited customers to suggest new models interactively and then financially rewarded the people whose ideas proved marketable. The shirt retailer Threadless sells merchandise online—and now in a physical store, in Chicago—that is designed interactively with the company’s customer base. In the software sector, open-source platforms developed through distributed cocreation, such as the “LAMP” stack (for Linux, Apache, MySQL, and PHP/Perl/Python), have become standard components of the IT infrastructure at many corporations. What facilitates this new approach to innovation is the rise of the Web as a participatory platform. What will drive its adoption by an increasing number of companies is the growing competitive need to uncover many more good ideas for products and to make better and faster use of those ideas.

Distributed cocreation is too new for us to draw definitive conclusions about whether and how companies should implement it. But our research into these online communities and our work with a number of open-innovation pioneers show that it isn’t too soon for senior executives to start seriously examining the possibilities for distributed cocreation or to identify the challenges, such as the ownership of intellectual property and increased operational risk, they face in adopting it.

The new face of innovation

In nearly every sector, many of the ideas and technologies that generate products emerge from a number of participants in the value chain. Boeing designs its aircraft,

but suppliers make (and own the intellectual property for) many of the components. Likewise, HP's computers and Apple's iPod include hundreds of parts invented and manufactured by companies in more than two dozen countries. In many sectors, suppliers understand the technology and manufacturability of their pieces of the end product better than the OEMs do. Eli Lilly licenses and sells products that other companies develop; high-technology and media giants continually scan the horizon for innovations developed by start-ups and try to acquire whatever seems promising.

The benefits of specialization and collaboration seem obvious today. Clearly, an automaker's suppliers can make better headlights at lower cost than the OEM can, because specialization promotes focus and innovation. Many companies participate in joint ventures for individual products or marketing packages and collaborate with university labs or specialists. Businesses are increasingly open to insights and ideas gleaned from any source—especially their customers, through call centers, retail data, and focus groups. Collaboration extends in many directions: when companies pursue a new product, many of them consult with contract specialists and suppliers and test prototypes with their customers.

But collaboration looks very different on Wikipedia, the online encyclopedia that represents a true phenomenon on the Internet. Wikipedia is created entirely by its users, not by a corporate-development staff in California. It is a living and continually expanding global reference work, which has expanded in less than seven years to offer more than six million articles in over 250 languages.²

The example of Wikipedia suggests that companies can take even greater advantage of specialization by ceding more control over decisions about the content of products to networks of participants (suppliers, customers, or both) who interact with one another. Does this seem far-fetched? IBM apparently doesn't think so: it has adopted the open operating system Linux for some of its computer products and systems, drawing on a core code base that is continually improved and enhanced by a massive global community of software developers, only a small fraction of whom work for IBM. In software, open-source packages are gaining such favor that they are cutting into profit margins and drawing market share from proprietary software brands.

Many other examples of cocreation are now under way. One of them, participatory marketing, which encourages customers to help create marketing campaigns, is sometimes more than just a new tactic to attract attention. Approached in the right way, it is also an opportunity to start cocreating products with them. Last year, for instance, Peugeot invited people to submit car designs online and attracted four million page views on its site. The company built a demonstration model of the winning design to exhibit at automotive marketing events and partnered with

software developers to get it included in a video game. Even business-to-business companies are starting to cocreate with customers: corporate users of SugarCRM's customer-relationship-management software customize it to meet the specific needs of their industries.

Companies have three ways to win by adopting distributed cocreation. First, they can capture value from the cocreated product or service itself, as LEGO and Threadless have, by merchandising good ideas gleaned from the network. (In South Korea, the cocreated cosmetic brand Missha has seized a 40 percent market share in its segment.) Second, companies can capture value by providing a complementary product or service. Red Hat, for instance, sells a host of technology services to users of Linux. Third, they can benefit indirectly from the cocreation process—for example, through an enhanced brand or strategic position.

Hurdles ahead

While distributed cocreation does seem promising, it isn't entirely clear what capabilities companies will need (or how they will organize those capabilities) to make the most of it. Many of the answers will become clear as companies gain greater experience with various open-innovation approaches, including distributed cocreation. But a few challenges are already apparent.

Attracting and motivating cocreators

Since companies must provide the right incentives to the right participants, they should understand what talented contributors find valuable about interacting with a community. Financial incentives may be necessary in some instances, but other participants can be inspired to cocreate by mechanisms like community recognition. Companies will also have to spot hurdles to participation—such as the ease or difficulty of contributing and the time needed to do so—and take steps to minimize any problems. In addition, they may need to implement well-structured paths to coax participants to move from lower to higher levels of participation. Wikipedia, for instance, now has 500 participating administrators who have earned special privileges to prevent edits on certain articles, usually to stop vandals who have targeted them.

Structuring problems for participation

To make it possible for many contributors to participate effectively in a cocreation community, problems should be broken down to let contributors work in parallel on different pieces. Otherwise, it will be impossible for a critical mass of participants to cocreate effectively. A global team of more than 2,000 scientists, for example, participated in the design of the ATLAS particle detector, a complex scientific instrument that will be used to detect and measure subatomic particles in high-energy physics. The effort was disaggregated into many different components

and distributed across 165 working groups, which used Internet-based tools to help coordinate the work.³

Governance mechanisms to facilitate cocreation

Communities are productive when they have clear rules, clear leadership, and transparent processes for setting goals and resolving conflicts among members. Sun Microsystems, for instance, developed its Solaris operating system, cocreated with a global community of software developers, in the early 1990s. The company established a board, including two Sun employees and a third member from the larger software community, charged with loosely overseeing the project's progress. Even then, by the way, the community wanted Sun to relinquish more control.

The leadership must also maintain a cohesive vision, since there is always a risk that community members will “fork” intellectual property and use it to develop their own cocreated product or service. Mozilla, the online application suite distributed by the Mozilla Foundation, was cocreated by a software community.⁴ As the programs were being developed, two contributing engineers, dissatisfied with the project's direction, used the Mozilla code to create the Firefox Web browser. Community leaders eventually made it the primary supported browser.

Maintaining quality

Many cocreating online communities assume that “crowds”⁵ know more than individuals do and can therefore create better products; as the open-source-software expert Eric S. Raymond has said, “Given enough eyeballs, all bugs are shallow.”⁶ It is far too early to know with certainty if this idea holds true across all kinds of products, but a growing consensus maintains that in software development, at least, distributed cocreation is a ticket to quality. A study published in the *European Journal of Information Systems* in 2000, for instance, noted that “open-source software often attains quality that outperforms commercial proprietary” approaches.⁷ What's more, a December 2005 study published in the scientific journal *Nature* concluded that Wikipedia's entries on scientific subjects were generally as accurate as those in the *Encyclopædia Britannica*.⁸ Still, some have questioned these conclusions and the accuracy or insights of the entries on which they were based.

A number of cocreated products have crossed a quality threshold to become widely adopted. A survey by Netcraft, an Internet research firm, showed that the cocreated open-source Web-server program Apache runs more than half of all Web sites and that eight of the ten most reliable Internet hosting companies run Linux. While the general thesis that cocreated products are higher in quality is difficult to prove, companies are increasingly willing to rely on them for mission-critical business processes.

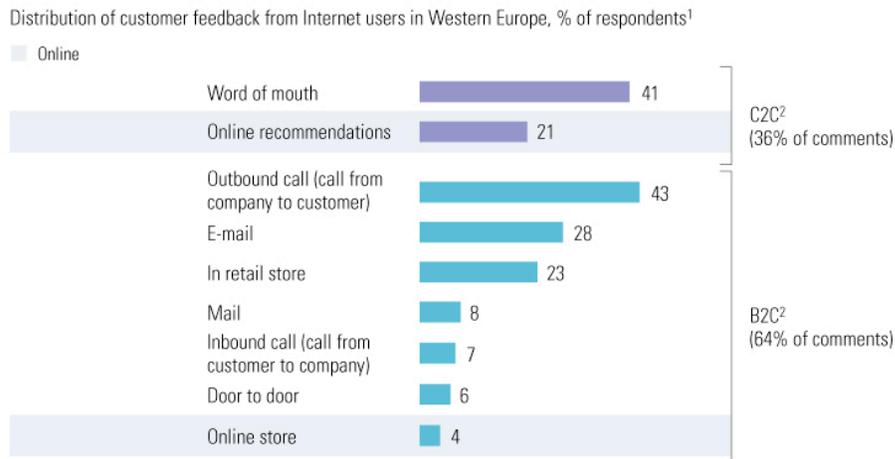
Lessons from communities

Although it is still too early to develop useful frameworks for success with cocreation, they will no doubt emerge over the next few years. Meanwhile, some lessons about how to proceed are coming out of both the consumer and the professional online communities.

Participative media supply some of these lessons. Our research suggests that 25 percent of Western Europe’s Internet users now post comments and reviews about consumer products of all kinds (exhibit). User-generated media sites are growing in numbers of visitors and participants by 100 percent a year, traditional sites by perhaps 20 to 30 percent.

EXHIBIT

Wired feedback



¹Respondents were allowed to select more than 1 answer.

²C2C = consumer to consumer; B2C = business to consumer.

Source: InSites November 2007 cross-industry survey, which received more than 2,000 responses across 8 product categories, (automotive, banking, consumer electronics, insurance, over-the-counter drugs, software, telecom and media, and travel and hotels); McKinsey analysis

These numbers suggest that people are more and more willing to participate with companies online and that companies can tap into that willingness today. To give an example, in the online environment Second Life, where participants assume three-dimensional likenesses called avatars and interact digitally with each other, approximately one participant in ten is cocreating with companies—for example, testing prototypes or helping to design new products and services. We expect that percentage to rise. At present, Second Life has few brands (virtual destinations, within the site, created by companies well known in the offline world), and

participants generally don't know how to interact with them. In fact, during our recent research on the behavior of Second Life participants, we found that only four in ten members know about the possibility of cocreating with their favorite brands. When they do become aware of this, 60 percent of them say they would be willing to experiment with cocreation.

Research that we and others have conducted on consumers participating in online communities demonstrates that most cocreators recognize that the brand—not they—will own the resulting intellectual property. Why then do they get involved? Rewards and fame were certainly motivators, but participants are largely interested in making a contribution and seeing it become a reality. An important factor we've found in our Second Life study is the extent to which participants are willing to trust brands. In choosing between competing ones, brand affinity is the most important factor for users willing to cocreate, and 40 percent of would-be cocreators will refuse to cocreate with companies they don't like or trust.⁹

Our research also suggests that companies will need a combination of incentives to encourage consumer participation. In a recent analysis of user-generated video sites,¹⁰ we found that participants had various nonfinancial motives, such as fame, fun, and altruism. This insight has been confirmed by the Second Life research, which found that only one-third of the users who cocreate with brands do so for a financial reward. Furthermore, people who seek to increase their online fame often expend considerable effort enlisting others to join their networks in hopes of increasing the size of the audience, thereby helping to create a larger pool of participants for cocreation itself. One key seems to be attracting participants with as many kinds of motives as possible, so that they reinforce each other. Of course, incentives might have to evolve if cocreation reached the limits of individual “volunteerism.” Communities could, for instance, start paying participants for their contributions or actively promote their reputations outside the community—say, in marketing campaigns.

In professional online communities, trust and affinity are important. At the Myelin Repair Foundation (MRF), for example, scientists from five universities have accepted a complex IP-sharing agreement that will let MRF retain the rights to license discoveries to pharmaceutical companies. This novel medical-research model is based on cocreation among a closed group of researchers who aim to develop a drug that will treat multiple sclerosis (MS) by promoting the repair of myelin, the coating surrounding the nerve fibers that MS affects. MRF hopes to complete its work within five years—75 percent faster than the time required by current research models—and half of the royalties will be put back into the foundation to finance future projects. Since the researchers started work, in 2004, they have identified ten targets and three therapeutic candidates, developed 11 tools to study Myelin, and published nearly 20 scientific articles.

Cocreation through evolution

Companies do not have to reconceive their business systems to start experimenting with distributed cocreation. In many cases, the first step is to identify where it may already have spouted within the company. At LEGO, for example, the executive team recognized the possibilities in part because of the success of a product launched in 1998: Mindstorms, programmable bricks originally developed as an educational tool through a partnership with the MIT Media Lab. A remarkable community of Mindstorms enthusiasts—adults as well as children—embraced the product and began to share designs online. This success prompted LEGO’s executives to consider how the company could use its online LEGO Gallery to harness the creative efforts of customers to develop ideas or products in its main toy-brick business.

Companies have other ways as well to experiment with cocreation by using existing systems or resources. When the telecom operator BT decided to allow third-party software developers to create applications for BT’s network (a variant approach to cocreation), it could take advantage of the fact that its internal software developers were already familiar with the practices of open-source software and were designing standardized Web interfaces for many of its existing business applications.

Even the most advanced businesses are just taking the first few steps on a long path toward distributed cocreation. Companies should experiment with this new approach to learn both how to use it successfully and more about its long-term significance. Pioneers may have ideas about opportunities to capture value from distributed cocreation, but fresh ones will appear. To benefit from them, companies should be flexible about all aspects of these experiments. 

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Notes

¹A number of books and articles discuss how companies are adopting open innovation. Four particularly useful sources are C. K. Prahalad and M. S. Krishnan, *The New Age of Innovation: Driving Co-created Value through Global Networks*, McGraw-Hill, 2008; Henry Chesbrough, *Open Innovation: The New Imperative for Creating and Profiting from Technology*, Boston: Harvard Business School Press, 2003; Henry Chesbrough, *Open Business Models: How to Thrive in the New Innovation Landscape*, Boston: Harvard Business School Press, 2006; and Eric von Hippel, *Democratizing Innovation*, Cambridge, MA: MIT Press, 2005.

²The English-language version recently passed two million articles, compared with only 120,000 for the *Encyclopædia Britannica*.

³We researched the design project in collaboration with the Oxford Internet Institute. For more information, see Philipp Tuertscher, “*The ATLAS Collaboration: A Distributed Problem-Solving Network in Big Science*,” <http://www.oii.ox.ac.uk>, 2007.

⁴See Lenny T. Mendonca and Robert Sutton, “Succeeding at open-source innovation: An interview with Mozilla’s Mitchell Baker,” mckinseyquarterly.com, January 2008.

⁵See Renée Dye, “The promise of prediction markets: A roundtable,” mckinseyquarterly.com, April 2008.

⁶Eric S. Raymond, *The Cathedral & the Bazaar: Musings on Linux and Open Source by an Accidental Revolutionary*, Sebastopol, CA: O’Reilly, 1999.

⁷Jan Ljungberg, “Open source movements as a model for organising,” *European Journal of Information Systems*, 2000, Volume 9, Number 4, pp. 208–16.

⁸Jim Giles, “Internet encyclopaedias go head to head,” *Nature*, 2005, Volume 438, Number 7070, pp. 900–1.

⁹Paul Alpar and Steffen Blaschke, *Web 2.0 - Eine empirische Bestandsaufnahme*, Wiesbaden, Germany: Vieweg+Teubner, 2008.

¹⁰Jacques R. Bughin, “How companies can make the most of user-generated content,” mckinseyquarterly.com, August 2007.

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