

Learning to Innovate

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Total quality management, reengineering, e-business: Each has left an indelible mark on the modern business organization. But none of these movements has prepared companies for today's knowledge economy, where information and human capability are as much required raw capital resources as land and machinery were during the agricultural and industrial ages. The most critical business art remains elusive: the art of continuous innovation. The ability to constantly discover, create, capture, and exploit remains the province of a very small number of organizations. As the pace of change and expanse of international and Internet competition make exploration of new opportunities increasingly vital for business success, innovations that renew organizations, products, and services have taken a place at the center of modern competition.

What drives innovation? Although the isolated and completely unexpected epiphanies are welcome precursors to successful innovations, these are rare and unpredictable. Research by the Cap Gemini Ernst & Young Center for Business Innovation suggests that the most reliable source of innovative new ideas is the recombination of existing thinking achieved by the interaction of people with diverse knowledge, disciplines, experiences, and values. This research also indicates that the best way to move an existing enterprise forward on the path toward innovation includes continuous sharing of new knowledge within an organization. Thus, at the heart of most innovations lie both collaboration and learning.

Network-based collaboration—such as the development that led to the Linux operating system—is one of the most remarkable developments of the still-dawning Internet age. When a group of independent programmers came together over the Internet to test theories and exchange code that would later become famous as the Linux operating system, no one labeled the activity in real time as networked learning, but that's what it was—an e-based educational experience that created a market-making product.

Keeping pace with the networked movement, adult learning strategies have evolved from carbon copies of childhood classroom experiences to case-based, instructor-led training to real-time mind-stretching experiences. With the revolution of the e-learning movement and the advent of new technologies and experiential learning methods it has ushered in, companies have been able to gain greater value from their expenditures for business education, growing their organizational competencies and contributing to retention strategies for high performers. But thus far, most have stopped short of leveraging their investments and current capabilities in training and networks to drive innovation and longer-term value. Based on the handful of “happy knowledge” accidents that do just that, there is ample evidence of real upside potential for the businesses that can tap into such learning power.

The following sections explore the aspects of learning, networking, and value creation that companies like Cisco and Adobe are harnessing to their and their customers' benefits.

Successfully marrying the processes of learning and innovation, these initiatives point the way to a new approach that realizes the promise of e-learning in driving business value creation.

Adding the “e” to Corporate Learning

Corporate learning initiatives have a long history, with the first corporate training departments appearing in the 1920s. Some call General Motors Engineering and Management Institute, founded in 1927, the first “corporate university,” though the term didn’t gain general currency until the 1980s. In the early years, most training was done internally. Gradually, corporations also took advantage of external training providers, academics, and institutions to meet the learning requirements of their employees. To this day, the most common method of education remains based on classroom learning strategies that date back to the 12th century.¹

Despite limited advancements in delivery or approach, corporate learning programs have proven effective in teaching job skills, on-boarding employees, assisting in career planning, and even—as in the case with General Electric’s famed programs—in developing effective leaders. There is evidence that money spent on corporate learning also has a bottom-line impact as well. According to a study sponsored by Saba and the American Society for Training and Development, companies that invest above-average amounts in training outperform the market in the year following that investment by an average of 45 percent.²

In recent years, there has been a greater drive among corporations to improve the overall value proposition for training investments. Focusing on the cost side of the value equation, corporations have invested heavily in training programs conducted by electronic means, or “e-learning,” as a means of improving efficiencies and lowering the high costs of face-to-face training expenditures. Given its cost and efficiency benefits for companies constantly working to improve prof-

itability, revenues from corporate e-learning are expected to increase from \$550 million in 1999 to \$11.4 billion in 2003, an 83 percent compound annual growth rate, according to International Data Corp (IDC).³ Unlike its traditional classroom counterpart, e-learning leverages computer and Internet technology to offer many new educational opportunities—from self-paced asynchronous courses to virtual classes to vast knowledge systems and networks—with the convenience, scale, and attractive cost benefits of ensuring that neither the educators nor the students ever need leave their respective offices.

"It is becoming clear that one reason we are not more successful at educating our work force, despite no lack of effort on our part, is because we are working hard to educate a new generation in old ways, using tools that have ceased to be effective."

—Marc Prensky, CEO and founder, Games2Train

Aside from cost and human development pressures, researchers at Cisco point to “relentless market drivers,” such as the rapid obsolescence of knowledge and the need for real-time delivery, as the fuel for this expansion.⁴ Thus, e-learning is expected to continue to claim a growing share of total education spending in the years to come. The flexibility afforded by online delivery can reap additional savings; content may be tailored more to the individual, thus more effectively using an employee’s time and a firm’s resources.⁵

E-learning has achieved mixed results in practice, however. Dropout rates are significantly higher than in traditional learning programs. Research conducted by both *The Chronicle of Higher Education* and Corporate University Xchange found that e-learning dropout rates are as high as 50 percent, due largely to shortcomings in management oversight, course design, and the technology itself.⁶ There is also a widespread perception that lack of contact with instructors and other students also drives e-learning attrition. Thus, increasingly, e-learning is viewed as a second-tier alternative to traditional learning—not “as good as,” but perhaps “good enough” given barriers of cost, time, or distance.

"It's a sad fact of life, but the shelf life of a Twinkie is usually a whole lot longer than the shelf life of today's corporate knowledge."

—The Heller Report, June 2001

Paradoxically, disillusionment with current e-learning methods coincides with the appearance of exciting new examples of how people are using networks to experiment, learn, and innovate. Rather than precipitating a move away from

e-based methods, the networked movement warrants businesses to take another look at the opportunity to derive value from their learning investments beyond the cost side of the equation and seek to leverage these technologies and methods to drive innovation, service improvement, and ultimately, revenue growth.

Networks and the New Learning Dynamic

Entire fields of study exist with a rich understanding of different ways that learning occurs: with the aid of language, by implication, by association, or intertwined with emotion. Research by Global Learning Partners indicates that adults learn best when they feel respected and when their learning relates to life experiences and has immediate usefulness. Global Learning Partners' studies indicate that students retain 20 percent of what they hear, 40 percent of what they hear and see, and 80 percent of what they do and discover for themselves. Not surprisingly, a key focus of the corporate education community over the past decade has been on experiential or situational learning programs that advocate "learning by doing."

A growing body of knowledge also exists around the notion of collaborative or group learning, from whence the term "learning communities" surfaced in the late 1980s as a part of reform efforts in some educational institutions. Educators thought it was an awfully good idea to allow students and faculty from diverse disciplines to mingle and influence each other. Thus, in some circles, the focus on the experiential aspects of learning expanded to include concentration on shared experience.

Enter the era of the *networked movement*.

Some researchers believe that the network revolution is indeed a "historic event, comparable in its economic and social importance to the agricultural and industrial revolutions. Its main manifestation is the migration of commercial

"Imagine a world where everyone was constantly learning, a world where what you wondered was more interesting than what you knew, and curiosity counted for more than certain knowledge."

— *The Cluetrain Manifesto*, 1999

and social activity, from the physical world to interactive digital networks based on open standards (such as the Internet, some online services, and some interactive television systems).⁷⁷ Whether you believe this or not, the new dynamics in our networked world go far beyond the massive volumes of data transacted, and offer potentialities far beyond the communications networks of yesteryear. And if Metcalfe's Law (which states that the value of a network increases as the square of the number of users connected to it) holds, this revolution is likely to continue to grow with radical nonlinear effects.

In 1999's *The Cluetrain Manifesto*, Rick Levine, Christopher Locke, Doc Searls, David Weinberger, and others codified the power of the Internet as a massive means of facilitating powerful human connections with the potential to create and destroy ideas, companies, and markets. Their "95 Theses" about the network economy speculate that the real power of the Internet rests in the ability to explore its capabilities to connect people freely to "indulge their curiosity, to debate, to disagree, to laugh at themselves, to compare visions, to learn, to create new art, new knowledge. . . to generate new ways of looking at problems. . . spawning new perspectives, new tools, and a new kind of intellectual bravery. The result is not just new things learned but a vastly enhanced ability to learn things."⁸

Now, enter the era of *networked learning*.

"The ethos of the network economy is diametrically opposed to that of social democracy and much more in tune with the tradition of self-help."⁹

—"Content and Commerce-Driven Strategies in Global Networks: Building the Network Economy in Europe," the European Commission and Cap Gemini Ernst & Young, 1999

Networked Learning: Creating Value via Connectivity

Networked learning is the ability to build upon knowledge via an interactive learning process, enabled by appropriate technologies and sustained by contributions among distributed, networked participants.

Victor Hugo once remarked that we have gone from a world in which everything was divided, disconnected, and static to a world in which everything is alive, related, and connected. His observations could easily apply to the Internet generation, but in the 1880s, Hugo was referring to the impact of railroads. What's different now is that we are not physically constrained. It's not the flow of exotic spices or the best linens from afar—what flows through the channel is information. With available technologies it's possible to leapfrog barriers to the flow of information, knowledge, and ideas. Those possibilities are at the heart of networked learning.

By its very nature, networked learning breaks the mold of classic training and goes beyond conventional e-learning to drive innovation and value creation. Neither content (the information) nor connectivity (the channel) alone are sufficient for learning. The Massachusetts Institute of Technology's (MIT) new "open courseware" policy is a case in point. MIT intends to provide free Internet access to materials for nearly all its courses over the next 10 years. By lowering the cost of access to course material, MIT's open courseware advocates believe that they will raise the quality of education worldwide. MIT's curricula may even become the industry standard, and all this could only help in continuing to attract the best and brightest students and faculty to its campus.

While this strategy has advantages, it has more to do with access to information than it does with learning or with producing work. "There is a big difference between education and courseware," says MIT Sloan School of Management Professor S.P. Kothari, a member of the task force whose work led to MIT's open courseware policy. Theirs is a smart

move that may raise the quality of education and MIT's stature in the world, but an open virtual textbook at no cost is hardly a platform for active learning. The public is connected to information, but the information flow is only one-way. E-based for-profit curricula with two-way interaction offer greater promise for an educational experience by

virtue of their networked connections among participants; Stanford and the University of Phoenix are among the pioneers in this space.

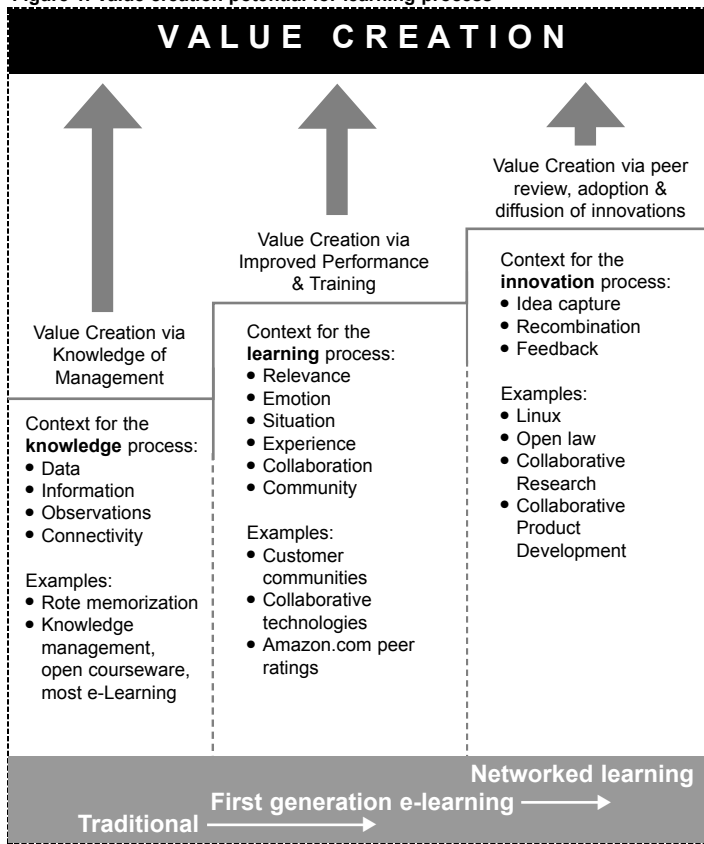
Brian Mueller, chief operating officer of the University of Phoenix, knows that one of the keys to retention is creating a highly social online experience. In the Phoenix MBA program, for example, the same students progress through all their classes together. The university currently boasts a 70 percent retention rate for people who start the program.¹⁰

But even the most successful e-based educational curricula suffer from an

Achilles' heel when compared to face-to-face interaction. Even as they help develop skills, an entirely electronic platform stops slightly short of the potential to directly drive fundamental business results. They can also cost as much as their classroom counterparts, as the investment in technology infrastructure and in faculty training for electronic curricula delivery can be substantial.

Optimum networked learning solutions will marry the soul of the classroom experience with the speed and freedom of e-learning technologies. They will include face-to-face interaction that provides people with the opportunity to explore with one another in a safe environment, while simultaneously facilitating rapid access to and transfer of information, and helping develop long-term connections.

Figure 1. Value creation potential for learning process



Most importantly, they will improve business impact as well as build capabilities. This combination of attributes and drive toward tangible outcomes is at the heart of the networked learning revolution.

When connectivity is at work alongside the elements of collaboration, community, and technological capabilities, the possibilities are limited only by the imagination. As Table 1 depicts, networked learning goes beyond knowledge man-

"We polled MIT students on various ways of learning, from large lectures to small classes to textbooks to independent reading to informal discussions among students. From 12 ways to learn, what do you think ranked highest? It was the peer discussions. And what do you think ranked lowest? The large lecture."

—Richard Larson, director of MIT's Center for Advanced Educational Services

agement. The biggest “bang for the buck” comes from collaborative learning and innovation. The data, information, and observations that serve as raw input to knowledge come alive through connectivity in a learning process that is relevant, situated, experiential, and collaborative.

Networked learning relies on the use of participatory tech-

nologies and teaching techniques to be successful. It balances an open, collaborative environment with a clearly defined structure and firmly established objectives. Instruction of networked learning courses is typically more akin to coaching than traditional “teacher–student.” The primary role of the networked learning instructor is not to impart wisdom, but to guide the participants to discover and to advance what they collectively know and can learn together in order to achieve a shared objective.

Learning for learning's sake and innovation without market uptake are like superheroes in Utopia—clever actions and bright ideas amount to little until they make a bottom-line difference. Shareholder value creation and market acceptance are useful yardsticks for this effect. Networked learning drives toward these tangible outcomes: sustaining an innovation through peer-review and then adoption and diffusion into the marketplace. (See Figure 1.)

Value creation, however, is not extant only when accounted for on a balance sheet. “Products” of networked learning can range from a method of bringing customers into a product development process, to new business models—which all may be elusive to traditional financial accounting.

Ongoing research at the CGE&Y Center for Business Innovation, however, reveals that financial metrics only explain a portion of a bigger phenomenon. Drivers of corpo-

Traditional Classroom Learning	First-Generation E-Learning	Networked-Learning
Value derived from . . .		
Maintaining status quo Learning Content	Cost savings Knowledge Connectivity	Value creation Innovation Collaboration
Participant dynamics . . .		
Group Instructor-led One-way	Individual Instructorless One-way	Community Instructor-facilitated Multiple feedback
Environment		
Synchronous Dynamic Technology as add-on	Asynchronous Controlled Technology as constraint	Asynchronous Dynamic Technology as enabler

Table 1. Shifts in value, dynamics, and environment among learning models.

Cisco: Breaking Down the Barriers Between Companies and Consumers

Cisco maintains a dominant market share in the routers and switches that keep the Internet humming and that power the local area networks within most large corporations. They have achieved fame over the years from driving billions of dollars through its business-to-business web site. But what most people don't know is how much of Cisco's success in doing business over the Internet rests on its commitment to building community networks among its customers.

In 1994, Doug Allred, vice president for customer advocacy, saw how fast sales of internetworking routers were ramping up. He was concerned about the company's ability to provide adequate technical support for all of these new customers. Plotting the growth rate for the company's sales, Allred calculated the number of technical support engineers he'd need to service all those customers in the coming years. He quickly realized that if Cisco were to maintain its existing level of support, his staff of a few hundred support engineers would need to grow to more than 10,000. In effect, he would have to hire every network engineer west of the Mississippi.

Allred found a solution to the technical support engineer gap. He decided to let customers, all Cisco certified network engineers, help each other. In the Cisco website called Cisco Connection Online (CCO), Cisco customers, channel partners, and employees gathered to help one another solve problems. Thousands of technical questions were answered every week in CCO's Open Forum, and those Q&A's were polished and added to the company's growing technical knowledge base.

In 2000, Cisco launched an expanded version of the Open Forum called the Networking Professionals Connection. On this site, network engineers can still pose a question or answer one in the open discussion forums. But they can also register for and attend live webcasts hosted by Cisco experts in a variety of areas, from firewalls to virtual private networks. Cisco experts present concepts and discuss their experiences, and attendees can ask questions via text-based input. Questions that are not answered live are responded to within 24 hours of the webcast. The site also features two-week seminars on networking topics. Experts prepare seminar content and then make themselves available for two weeks to answer questions. Although a recognized expert in the topic leads each session, discussions are free form, with attendees asking questions as well as commenting on questions offered by others.

rate value lie in capabilities such as management credibility, the ability to attract talented employees, research leadership, and innovation.¹¹ In the next sections we will explore how early adopters have used networked learning to command these key abilities to drive value creation.

From Chaos to Value: Networked Paths to ROI

We've already seen networks generate unwarranted frenzy (Blair Witch Project), share concerns (Planetfeed-back.com), and break down corporate walls (Napster). More enterprising companies, like Cisco (see "Cisco: Breaking Down the Barriers Between Companies and Consumers"), have channeled this chaotic energy into valuable learning that breaks down barriers and drives results.

Cisco's progress from Open Forum to Networking Professionals Connection reveals an important difference in the way companies are helping their customers learn today. In Open Forum, customer-to-customer interactions prevailed. Although Cisco employees participated in the Open Forum, the deep expertise of the company was not truly leveraged into the customer community. Today, visitors find Cisco expertise moved to the forefront. Customers can now learn directly from the company's most experienced expert in a given topic while also interacting with peers. The company launched a learning conversation, and Cisco experts have now taken a formal role in making those conversations rewarding for participants.

"A very successful community creates a special place in a lot of people's hearts. People are what make a community great, not necessarily the administrator or moderators."

—Matt Haughey, proprietor of community site *MetaFilter* (www.metafilter.com), from *Design for Community*

Similarly, software company Adobe incorporates customer expertise in its learning and product development processes (see "Adobe: Bringing Customer Expertise Into the Learning Process").

The notion of customers sharing information is not new,

of course, although it's hard to imagine that this sharing is more difficult today over the Internet than it was 10 years ago. Beyond the mere sharing and some shallow building upon a base of information, a more relevant form of networked learning occurs when consumers actually co-develop knowledge assets and marketable products. The canonical case of this kind of development is Linux open source software.

Learning, Networks, and Value Creation

Often held up as the gold standard in distributed development and almost as frequently disregarded as merely a happy accident, Linux is not the only capability to have emerged from the collective wisdom and actions of networked participants. Despite the ephemeral nature of e-mail communication, this widely accessible technology served as a building block for one of the most successful networked learning projects in history. This convenient yet notoriously unreliable (at best, not fully reliable) communications medium is also the backbone that allowed up to 40,000 developers¹³ to build a product with significant market share (estimates have ranged from 8 percent to 30 percent)¹⁴ within just a few years.

The Linux initiative is responsible for the term “open source” because the operating system's source code, basically its recipe, is open and available for free. Open source in this sense not only means free access, but implies open collaboration. Many companies are clamoring to figure out how they can harness this kind of open collaborative power, and in a later section we will examine several replicable strategies.

Candidates for distributed product development need not have cyber-envy: The notion of “open” product development may be extended beyond the software industry. Extrapolating aspects of the open source process to other product development scenarios, if possible, holds a potentially more powerful way to approach the whole development process. The creators of “Openlaw” provide proof that collaborative value extends well beyond the tech industry (see “Openlaw: Harnessing Unbridled Passion to Reduce Cycle Time and Effectiveness”).

Adobe: Bringing Customer Expertise Into the Learning Process

Adobe's online customer community, known as user-to-user forums, provides a virtual place where Adobe customers with common personal and professional interests can congregate, trade industry gossip and product tips, share ideas, and create a buzz around Adobe products.

According to Wendy Govier, worldwide director of Adobe websites, “When customers buy an Adobe product, they quickly learn they also get access to a whole community of people who can help them.”¹²

Desktop publishers and designers form a strong community of practice, and Adobe's efforts both acknowledge the importance of that community and leverage its assets. The first Adobe online communities were created spontaneously by a group of design and publishing professionals. Without prompting from Adobe, two bulletin board-based chat areas emerged on America Online and CompuServe in the early 1990s. Several experienced Adobe users volunteered to host these forums, and two Adobe employees monitored discussion threads.

Since then the AOL and CompuServe forums have moved to the Web. Today there are about 20 product-based user forums on the company's website, Adobe.com. Each product line has its own user forum (e.g., PageMaker, Acrobat, PhotoShop, etc.) as well as separate forums by platform (e.g. Macintosh, Windows).

Customer expertise is leveraged into the community by means of a community volunteer structure. A total of 28 volunteers participate in the discussion on the site. These volunteers are a special breed: respected professionals in the visual field, often freelance or contract workers, and power users of Adobe products. In addition to hosting the user forums, volunteers help with beta testing. Each works anywhere from four or five hours per week, or in some cases their presence is constant. Volunteers aren't paid for their time, but are given premiums like T-shirts and software.

The annual bill for the user forums currently costs Adobe in the low six figures. Adobe is budgeting for a steeper price tag to enhance the forums with expert chat sessions and seminars, which could cost as much as \$50,000 a month to produce. The last of the old AOL and CompuServe forums were moved to Adobe.com by the end of 1998. So far, measured by usage alone the community appears to be a lively and growing place. Now there are 12,000 to 14,000 unique users per month, accounting for 100,000 messages read or posted. Forum users open about 500,000 pages per month.

Openlaw: Harnessing Unbridled Passion to Reduce Cycle Time and Effectiveness

In an effort to determine if sewing machines could be profitable to his business, former clothing maker James McCall ran experiments that pitted hands against the machine. For three years, McCall ran garment-making races and kept detailed records for his own interest “with no view of being used in this or any other case.” But legal due diligence somehow surfaced these records, and McCall was called on in 1860 to testify for a sewing-machine patent infringement case.¹⁵

In March 2001, volunteers around the country ran hundreds of experiments expressly for the purpose of disproving the Motion Picture Association of America’s claims to quick download times for movies in a case involving the Digital Millennium Copyright Act. Attorneys for the defendants did not commission these experiments, nor did they have to hunt down an obscure clothing maker with a penchant for detailed record-keeping. Dozens of technology professionals, hackers, cryptographers, and open source advocates not only collaborated and learned about the legal proceedings online, but several legal briefs, expert witnesses, and official rule-making comments have emerged from the Openlaw¹⁶ initiative.

Created in 1998 under the auspices of the Berkman Center for Internet & Society, Openlaw conscientiously taps into the resources of the Internet community. It is an open forum to “develop arguments, draft pleadings, and edit briefs online,” working from the hypothesis that an open development process best harnesses the distributed resources of the Internet community. What they have found, says project lead Wendy Seltzer, is that the tech-savvy online community is of great help to lawyers in understanding and responding to digital copyright and intellectual property lawsuits. In short, copyright control meas-

ures outrage the open source community and the technologists are eager for an opportunity to respond. With Openlaw, the techies and the lawyers educate each other very quickly about their respective fields.

Openlaw has been running as a set of experimental modules. The first case concerned the copyright term extension, and Seltzer admits it was “more of a broadcast than a conversation” although participants did contribute a range of factual examples of works that built upon the public domain.

Fighting the Digital Millennium Copyright Act, DVD cases has been the next big project, and somehow this “really hit a nerve.” Seltzer explains that she would post an outline and it seemed as though almost spontaneously, several pages of a legal brief would be offered. Eventually, a set of resources were developed with various levels of detail, including reasoned discussion of legal background, legal briefs, and educational materials that can be recycled and used to explain the issues to others. Overall, says Seltzer, Openlaw can claim at least four concrete outcomes from their experiment. First, the forum helped create an amicus brief that otherwise would not have been completed and filed in a district court case concerning the DMCA. Second, distributed participants contributed to the “download time” experiment, and one among them actually testified as an expert witness. Third, the group has formally commented, as a whole and on behalf of individuals, on a Library of Congress rulemaking. Finally and perhaps most importantly, the sheer number of individuals and experts available for fact-checking, analyses, and help with educating the legal community meant that the legal team had that many more resources at hand. The combination of these resources did not have to be rationed, and the legal team was free to focus on the most promising arguments.

If innovation occurs when sets of ideas and experiences recombine, a network with contributions from a large set of distributed participants can be its engine. But one could certainly argue that several peculiarities converged in order to rouse tens of thousands of hackers to volunteer their time to develop software that’s distributed for free. As inspiring as it is to imagine individuals from around the world coming together virtually to create an economically viable product in an ad hoc manner, there have indeed been strict rules for contributions to and the use of open source code.¹⁷ Results are generated with a greater degree of structure than is

apparent in a first glance at “open source,” and bear little resemblance to a fictive “open sauce”—where a restaurant is not the better for letting everyone simply dump in their own ingredients.¹⁸

Meaningful products of networked learning, we find, emerge from some sense of community—whether this community is based on a type of governance, a particular technology, or a sense of affinity. When these innovations and member contributions are channeled toward solving problems, building new knowledge, and increasing produc-

tivity, corporations can begin to take advantage of a new learning model.

Networked learning is about taking such advantage. Done right, it can bring good ideas to marketable life, and derive innovation and market value in the process. Cap Gemini Ernst & Young University has indeed evolved a networked learning program to drive bottom-line business benefits across its international organization. The company's first networked learning program, International Business School (IBS), has already delivered more than 300 million euro worth of client business to CGE&Y over the course of the past three years, driven a number of innovations in business operations, and created lasting managerial networks that enable fast navigation across its 60,000-person organization. IBS asks high-potential managers to put themselves in the

"There are a lot of really good reasons to add community features to your site. A thriving community can be a boon for your enterprise. When people feel connected to your site and each other, they'll maintain the kind of bond that marketers and CEOs dream about. They'll help code solutions to your technical problems, become advocates for your site, stick by you in times of trouble, educate each other so you don't have to. They'll spontaneously create content for your site and help their fellow users. I once even witnessed community members composing poetry for a product. It happens."

—Derek M. Powazek, *community Web guru and author*,
Design for Community

shoes of a board member and work in transnational teams to address a real board issue over the course of a six-month working partnership. This all takes place in addition to full-time business obligations. Leveraging a blended approach that combines relatively simple e-based network tools and methods of communication, learning, and knowledge sharing with out-of-the-box live sessions, IBS creates results by establishing and cementing lasting business networks that drive toward the accomplishment of real business goals. The program's success lies not in its ability to employ whiz-bang technologies, but to successfully leverage the early lessons of network dynamics and value creation in the Internet age.

"The emerging skill set required of corporate training staff includes online facilitation, vendor selection and management of potential e-learning partners, marketing and communication of the benefits of e-learning, and—most importantly—management of the organization's intellectual capital. This involves being a consultant, a relationship manager, and a visionary for learning."

—Jeanne Meister, *founder, Corporate University Xchange*

Leveraging the Power of Networked Learning

What makes networked learning compelling to the modern business is not merely its methods, tools, approaches, or technologies, but the output it is designed to generate. At its heart, networked learning is more than an exercise in knowledge transfer. It is also a process for innovating and advancing ideas within an organization.

Implementation of a networked learning solution is a shared responsibility among organizers, leadership, and the participants involved. As a prerequisite, it requires the ability of people to work outside the boundaries of a hierarchy. Everyone involved must accept responsibility for both the process and the results of the interaction. For participants and corporate educators, this means stepping out of the traditional comfort zone of adult education. For the business sponsoring the initiative, it means accepting and working to profit from the consequences of an open and free-forming interaction.

What can companies do today to leverage the power of networked learning? Start by following six principles derived from successful networked communities:

1. Create the right conditions and motivations.

Research by Peter Senge's Society for Organizational Learning—which aims to discover, integrate, and implement learning theories and practices for the development of people and their institutions—builds on the understanding that all human beings possess an innate, lifelong desire and ability to learn, which can be enhanced by all organizations to yield value. This research suggests five steps in particular

that an organization should address to create the drive for learning:¹⁹

- Recognize That Learning Is Social—People learn best from and with one another, and participation in learning communities is vital to their effectiveness, well-being and happiness in any work setting.
- Establish Learning Communities—The capacities and accomplishments of organizations are inseparable from, and dependent on, the capacities of the learning communities that they foster.
- Align With Nature—It is essential that organizations evolve to be in greater harmony with human nature and with the natural world.
- Focus on Core Learning Capabilities—Organizations must develop individual and collective capabilities to understand complex, interdependent issues; engage in reflective, generative conversation; and nurture personal and shared aspirations.
- Create Cross-Organizational Collaboration Opportunities—Learning communities that connect multiple organizations can significantly enhance the capacity for profound individual and organizational change.

Additionally, in harnessing the powers of collaborative development, it is important to note that both the motivation of the developers and the context in which they work must converge for a result. Learning is inexorably linked to the conditions in which it takes place. It's not just that Linux happened, but that it would not have occurred without the right conditions and would not have succeeded sans motivation on the part of the participants. Borrowing lessons learned from the Linux project can be helpful in setting the right parameters for future attempts at large-scale distributed collaboration.²⁰

2. Define and drive interactions toward real business outcomes.

Networked learning methods make a fundamental shift away from the learning paradigm rooted in classic parent-child psychology (“Me, teacher; you, student.”) and create an adult-learning model where teachers and students learn from one another. In networked learning models, the “instructor”

Motivation	Context
<p>1. Scratching your own itch What better way to ensure a demand curve than by letting the customers solve their own problem and do their own product development?</p>	<p>1. Serendipity Leverage tools, and physical and virtual “spaces” to increase the probability of recombining information, ideas, and experiences.</p>
<p>2. Ownership Ownership, or at least a sense of ownership, is part of the ongoing exchange in distributed collaboration. No one “owns” Linux or, actually, everyone does.</p>	<p>2. Redundancy Individual “races” and multiple sets of eyes will put all ideas on the table and to the test. The winners are the ones that are adopted against the most stringent tests of feasibility: the public at large and the marketplace.</p>
<p>3. Real-time feedback Everyone loves positive feedback, especially when it involves money or prestige. “Release early, release often” was the Linux modus operandi dictating that patches to the code would be incorporated up to several times a day. Developers eager for this kind of acceptance remained loyal.</p>	<p>3. Clear leadership and objectives Linux hackers didn't just code and see what came of it—the objectives were clear: Make something like UNIX, but better. This single-mindedness and clear leadership in the style of Linus Torvalds are necessary to command the attention of such a wide constituency of stakeholders.</p>
<p>4. Reputation Clear attribution is an important incentive for further contribution—whether for a sense of acceptance from the community or for economic gains resulting from a good reputation.</p>	<p>4. Transparent and distributed progress Constructive laziness in Eric Raymond's terms: If a good partial solution is out there, why not build on it? This involves a large element of transparency and accessibility so that people can build upon progress and solve problems.</p>
<p>5. Reciprocity Individual contributions are accessible to everyone so that community give-and-take is reciprocal rather than focused on a <i>quid pro quo</i> for each exchange.</p>	<p>5. Universal tools Learning is more a human than a technical experience. All the whiz-bang gadgetry isn't worth the chips it's stored on if human beings cannot or will not use it. Yes, delight your users, but don't let the technology that's meant to facilitate their success hamper it instead.</p>

serves as much as a facilitator as an educator and the students learn as much from one another as they do from their instructors. This active dialogue and exchange creates an environment conducive to idea generation and innovation not inherent in traditional models. But too often corporate learning doesn't "stick" with individuals or organizations because it bears little direct connection to the day-to-day operation of the business.

While a business should refrain from controlling the daily interaction of its networked learning communities, it should ensure that the goals for the learning experience are well defined from the start and that these interactions are generated to drive toward real business outcomes. And while managers should not attempt to drive the interaction, they should make it clear that they support it. For networked learning to succeed, the interaction among the learners should be targeted toward a tangible outcome—whether a group is tasked to derive a new solution to a long-standing problem or to create the next great service offer. The learning experience must be oriented toward a shared deliverable for which all participants can see the reward or the consequences of failing to maintain the interaction—and that risk-reward equation should be rooted in the overarching support of organizational leadership.

3. Leverage technologies made for many-to-many interaction.

One of the real virtues of network learning is scale—the ability to convene very large groups of people to learn together. A related virtue is scope—the ability to cross the barriers of time and distance to connect people working on the same problems. It's instructive to recall that creators of the Internet thought the network would be used primarily for remote access to large applications or databases. To the surprise of the creators, early users were more interested in interacting with one another, a trend that continues to this day.

If we look more closely at the technologies at the heart of networked learning, we see that they represent a genuinely new form of communication. There have been many innovations in one-to-one communication—the telegraph, the telephone, even the development of written language 5,000 years ago. There have been many innovations in one-to-many communication as well—books, newspapers, film, television, etc. What the Internet has brought about is the first

innovation in many-to-many communication. Before now, large groups of people had no tool or medium for interacting with one another, outside of face-to-face meetings.

Many-to-many communication became possible in the early 1970s with the introduction of e-mail distribution lists. Conferencing applications, newsgroups, and computer bulletin boards all appeared by the end of that decade. These relatively simple tools have formed the basis for most of the networked learning that has occurred to date, both inside organizations and out. While no one Web-based technology has emerged as the single standard for enabling communities to interact across global organizations, or among those organizations and their customers, partners, or other constituents, several have emerged as options in the networked learning arsenal:

- Web-based discussion—Early bulletin board technologies have largely been replaced by Web-based forums that offer threaded discussion, integrated member profiles, and more recently e-mail mirroring, which allows users to participate in a Web discussion from any e-mail client.
- User profiles—Understanding the interests, experience, and history of other members is essential in making community interactions vibrant and productive. While user profiles take many forms, they are most useful when they go beyond name, rank, and serial number to address areas of expertise and interest. Individual freedom to modify or add to their profile helps as well.
- User ratings and reviews—Sites like Slashdot.com, which caters to the kind of early-adopter audience that first embraced networked learning, quickly found that the scale and scope of network interactions had a down side—more contributions from less experienced users. Features that allow users to rate and review contributions from their peers enable these networks to maintain their value for experienced users.
- Presence monitoring and instant messaging—Perhaps more than any other technology, instant messaging has broken down the walls between learning communities and the workplace. When workers can have access to distant peers at a moment's notice, they can learn in the process of doing, rather than hours or weeks later.

- Question-and-answer technologies—Discussion and messaging applications have a great strength that is also their great weakness: They support any kind of interaction. We are now seeing technologies that focus on enabling a particular type of interaction very well. One example is question-and-answer technologies, in which questions that arise in the community can be automatically routed to people with relevant knowledge and expertise.
- Knowledge banks—The knowledge that exists in a community is greater than—and different from—what resides in document management systems or best practices repositories. Capturing knowledge over time so that it can be accessed and built upon later is critical to making networked learning happen.
- Web conferencing/Web casting—Part of the joy of learning comes from a sense of being part of “something greater.” This sense can be dulled by asynchronous communication, where other users appear as static postings in a forum without the dynamic characteristics of real life. The spread of Web conferencing and Web casting has provided the opportunity for communities to interact in real time.
- Simulations and gaming—Particularly effective for the generations who grew up playing computer games (and many who still do), simulation- and game-based learning takes content to twitch-speed proportions, melding conventional business practices and issues with thrilling graphics, involving quests, and rapid-fire challenges. The spread of mobile technologies has made it possible for this type of Nintendo-learning to be as accessible and affordable to implement as it is fun.

These community technologies are generally readily accessible and affordably priced, although it is possible to spend a small fortune on both Web casting and gaming technologies without trying too hard. Additionally, they can most likely be integrated with your current learning solutions. As most are Web-based, they are generally compatible with one another and with the suite of e-based learning services you might acquire from leading developers and providers of e-learning portals such as Docent.

Such solution flexibility is critical because innovations continue to occur as people experiment with better ways to use technology to enable rich interaction. Perhaps the most recent example is the weblog (the tech community also refers to them as “blogs”). A continuing frustration with the development of the World Wide Web has been the prevailing one-way nature of the communication. Outside of a post to a message board, publishing to the Web has simply been too cumbersome and inconvenient for most users. Weblogs are Web pages that can be easily updated—so easy, in fact, that most people use them to record thoughts or discoveries on a daily basis. Weblogs can be created so that a group of users can all write to the same page, making the site a living record of the group's learning over time. The MIT Media Lab is aggregating “blogs” into Blogdex, creating a powerful way to spot and rate early trends. As a result of early advances such as this, some industry insiders are surmising that blogging could be the application that can overcome some well-founded cynicism about more structured, less interesting, and ultimately less successful enterprise knowledge management applications and learning portals.²¹

Generally, most e-learning platforms are beginning to address the need for interaction among learners, though their efforts are focused on small groups. Companies that have already implemented these solutions should assess their capabilities in light of the functions described above, and look to integrating a complete set of community programs in their e-learning platform and strategies.

4. Hot-house new concepts.

Because it occurs in a collaborative environment and in real time, networked learning is an ideal tool for hot-housing new concepts, testing hypotheses about new products or services, or experimenting with any facet of the business by establishing either a real or hypothetical scenario. Networked learning is a peer-to-peer proposition that matches individuals of like level and skill based on common interest or expertise, and the environment is a free and creative one by design. There are no “bad ideas,” and no penalties for testing or trying something that does not work.

Providing low risk for participants, with potential high return for the business, a company can take real advantage of its networked learning investment by encouraging participants to boldly dismantle a long-standing tenet or by offer-

ing the challenge and the capabilities to create something new. An effective way to kick-start the dialogue is to invite participants in a real-time forum to “rant and rave” about a subject. A “nucleus” for discussion could start with input from a respected member of the internal or external network, or perhaps a provocative opinion expressed on the topic by a lead competitor. Whatever the catalyst, be sure it is one that is anything but “vanilla”—it’s necessary to provoke reaction and discussion.

To keep the dialogue moving, you will want to provide incentives for participants in the form of opportunities or awards based on group and individual outputs. To prevent “mob mentality” or insular thinking, involve external partners or experts in the work at various stages, continually pushing the group to take a market-focused approach toward new solutions.

5. Remember that what's measured gets done.

Frequently, productivity is measured individually or in well-defined teams. The most comprehensive approach to training measurement—and the most widely used today—was devised by Donald Kirkpatrick from the University of Wisconsin. In Kirkpatrick’s approach, evaluation should focus on four levels:

- Reactions: Did the participants like the program?
- Learning: Did the participants learn what they were supposed to learn?
- Behavior: Did the participants apply their learning back on the job?
- Results: Did the training have any measurable business impact?

But the network learning model also promises to change the way companies measure the results of their training efforts. When the classroom model gives way to alternatives that are less structured, and more integrated with the way people work, a number of conventions are challenged. What does it mean to be engaged in learning, in the absence of familiar milestones like registration, class attendance, and examination?

The best way to consider this question is to take the way learning is measured today and see how a networked model might alter it. To help build measures and rewards based on the formation of ad hoc learning groups, we suggest that firms:²²

- Establish individual and team goals
- Develop a feedback process for collaborative work in performance management
- Trigger corrective action at a given performance level
- Measure performance within a time factor for a goal
- Rate the process, not just the product
- Tie results to organizational goals
- Provide tangible rewards
- Benchmark
- Share best practices

6. Foster open community environments-let people out to play with others and drive toward shared experience.

There are two principles of situated, or experiential, learning. The first principle holds that knowledge needs to be presented and learned in an authentic context, that is, in settings and applications that would normally involve that knowledge. E-learning clearly offers an enormous advantage here by allowing the learning experience to occur closer to the place where work is performed. In actuality, however, employees often take advantage of e-learning opportunities on their own time or at home, due to the time constraints they experience during the normal workday. Companies often consider this a bonus from a productivity standpoint, but the productive time gained in this manner may be counterbalanced by the failure to reap the long-term benefits of effective learning.

The second principle of situated learning is that learning requires social interaction and collaboration. It involves

participation in a community of practice—a group of people who share the same set of problems or challenges. In fact, many people believe that learning is best understood as the process of gaining membership into a community of practice.

At the heart of networked learning is community—the potential for individuals to come together on their own to pursue a goal they find meaningful. In a business context, this will seldom occur without a conscious choice on the part of management to allow it to happen. Some believe that the principles of community are undermined by the kind of structure that businesses typically impose. In reality, a community's needs are similar to those of any other form of social organization, including trust, cooperation, and clearly defined objectives and boundaries.

The question is one of control. The role of a business in creating a networked learning community is to help set the parameters, deliver on the rewards, and facilitate what results from the interaction. But the company must relinquish much of the control for monitoring, quality assurance, and the like to the community itself to create business value.

The rationale for ceding control applies to connections between employees and the outside world as well. The trend toward joint ventures and mergers among large providers of adult educational services is a microcosm of what's happening elsewhere. Formal global learning communities are already starting to bubble up around the Net in various forms. Roundtables (free online forums moderated by experts) are working at PlanetIT.com, for example, bringing together IT experts to learn and debate on topics from ASPs to Zero Administration. Similarly, online discussion forums tie the learning together at places like esocrates.net, where

international participants come together to explore the particulars of effective online teaching.

Evidence exists to support the relationship between communities of practice and learning and the value they bring. In his 1998 study of refrigeration repair technicians, for example, Phil Henning writes that students showed markedly different capacities for learning about the intricacies of refrigeration repair. Among those who learned the most in a classroom setting, one commonality existed: Individuals who had some experience working with technicians in the field—no matter how brief—regularly performed better than those who had not. Their exposure to the community of technicians, according to Henning, increased their capacity to learn.²³

As John Seely Brown and Paul Duguid pointed out a decade ago, the concept of community unites three things that are often treated as separate: learning, performance, and innovation.²⁴ It also accomplishes something else—it helps break down the barriers between companies and their customers.

* * *

As we've noted, networked learning relies on openness and convenience. A network for learning must be accessible to people who wish to participate—regardless of where they reside. It must also have relatively permeable borders so that energized new members can join in, and other people can leave if they lose interest or begin to focus on unrelated areas. This kind of flexibility is an anathema to the culture of large corporate organizations in general, but such are the barriers that will have to be crossed if an organization is serious about mastering the art of continuous innovation and driving value in a connected age.

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Endnotes

1. Gotschall, Mary. "E-learning strategies for executive education and corporate training: Revolutionizing Corporate Training and Strategy," *Fortune* Sections, <http://www.timeinc.net/fortune/sections>, May 15, 2000.
2. Bassi, L.J., and McMurrer, D.P. "Do Firms' Investments in Education and Training Pay Off?" January 2001.
3. *The U.S. Corporate eLearning Market Forecast, 1998-2003*, International Data Corp. (IDC #W21323), January 2000.
4. "The 'corporate university' booms in response to global economy demands," Cisco Systems press release, November 15, 2000.
5. Murray, Sarah. "Financial Training: Cheap, Flexible, and No Travel," *The Financial Times*, June 25, 2001.
6. Corporate University Xchange, "Improving e-learning performance: Hype vs. reality," July 2001; *The Chronicle of Higher Education*, Distance Education, <http://chronicle.com/distance>.
7. "Content and Commerce-Driven Strategies in Global Networks: Building the Network Economy in Europe," a European Commission and Cap Gemini Ernst & Young-funded study on the future of e-commerce and interactive content, 1999.
8. Levine, Rick; Locke, Christopher; Searls, David; and Weinberger, David. *The Cluetrain Manifesto*. Perseus Books, Cambridge, Massachusetts, USA, December 1999, ISBN: 0-7382-0244-4.
9. "Content and Commerce-Driven Strategies in Global Networks: Building the Network Economy in Europe," October, 1998. On behalf of the European Commission, CG XIII/E. Gemini Consulting. Office for Official Publications of the European Communities.
10. Interview with Brian Mueller on *The Connection*, WBUR radio, April 11, 2001.
11. Low, Jon; and Siesfeld, Tony. "Measures that Matter," Cap Gemini Ernst & Young Center for Business Innovation, 1999. Available at <http://www.cbi.cgey.com/research/current-work/valuing-intangibles/measures-that-matter.html>.
12. "How Adobe's User-to-User Forums Show the Way", Gartner Group, March 1999.
13. Estimates vary.
14. Gartner Dataquest reports 8.6% of server shipments are Linux based, while IDC estimates for the year 2000 indicate a 27% share of the server market. Further information in ZDNet news, "Battle Brews Over Linux Server Share," June 11, 2001, available at <http://www.zdnet.com/zdnn/stories/news/0,4586,2772060,00.html> (accessed September 13, 2001).
15. Blatchford, Seward, and Griswold trial proceedings, July 31, 1860 (courtesy of MIT Institute Archives and Special Collections).
16. Rules of development and of use are spelled out in the GNU General Public license, which states that the source code should be available to anyone to see, modify, and redistribute, with the restriction that it cannot be incorporated into and/or sold as part of a proprietary package.
17. With thanks and apologies to Joshua Epstein of the Brookings Institution for this quip.
18. Karash, Richard. "Learning Organization." 1998.
19. Some of these have been mentioned in other literature. See, for example, E.S. Raymond, 1999. *The Cathedral and the bazaar: Musings on Linux and open source by an accidental revolutionary*. Sebastopol, Calif.: O'Reilly & Associates, and M.L. Markus, B. Manville, and C.E. Agres, 2000. "What makes a virtual organization work?" *Sloan Management Review*, volume 42, number 1 (Fall), pp. 13-26.
20. Jordan, Joh. "Networked Commerce Update." Cap Gemini Ernst & Young Center for Business Innovation, August 2001.
21. Some of these recommendations are adopted from performance targets for outsourcing relationships. For further discussion in this context please see, Zidar, E. and Hawkins, S., "Setting Performance Targets for Outsourced Services." Research Note 8, June 1998. Gartner Group KA-04-8063.
22. Henning, Phil. "Ways of Learning: An Ethnographic Study of the Work and Situated Learning of a Group of Refrigeration Service Technicians." *Journal of Contemporary Ethnography*, 1998, 27(1): 85-136.
23. Brown, John Seely; and Duguid, Paul. "Organizational Learning and Communities-of-Practice: Toward a Unified View of Working, Learning, and Innovation." *Organization Science*, Vol. 2, No. 1, 1991, pp. 40-57.