Chapter 12

Strategic Experimentation with IT[1]

The role of IT is changing. According to Smith and McKeen (2006), it is bifurcating into separate roles: commodity service and competitive differentiation. Seemingly schizophrenic, these dual perspectives simply reflect the fact that organizations need to balance their bottom-line focus with their top-line focus—that is, they need to take the costs out of the business while growing revenues through IT-enhanced products and services. Although IT is experienced at reducing internal costs, a top-line focus is new and different. It requires a customercentric orientation. Developing systems for employees is not the same as for real customers who lack allegiance, skill, and/or patience. A top-line focus also requires experimentation with new products and services that are predominantly technology enabled. Such experimentation (e.g., trying new offerings) is well established in most organizations, but it is new terrain for the IT function. It means new collaborations (e.g., marketing, business development, research and development), and it entails new skills and roles (e.g., forecasting, marketing timing). The upshot is to put IT front and center. With services Web enabled and products downloadable, most of what customers know and think about an organization is now based on its Internet presence. As an anonymous CEO quipped to a group of IT executives, "Welcome to the world of consumer behavior."

This chapter explores how IT is being used for strategic IT experiments (e.g., where IT is being used to drive a new business venture), as opposed to "experiments with new IT" (e.g., where promising new technologies are examined). It is clear that strategic IT experimentation cannot be examined in isolation. In most firms, strategic experimentation occurs within a larger organizational framework of innovation—an organization's need to reinvent its products and services and occasionally itself—and, as a result, is best understood within this context. Therefore, in the next section we describe the nature of innovation and the role of strategic experimentation. Following this, we present a typical innovation life cycle and show where experimentation fits within this model. In the final section of this chapter, we offer advice for managing strategic IT experiments.

[1]McKeen, J. D., and H. A. Smith. "Strategic Experimentation with IT." *Communications of the Association for Information Systems* 19, article 8 (January 2007): 132-41. Reproduced by permission of the Association for Information Systems.

INNOVATION AND STRATEGIC EXPERIMENTATION

The need to innovate is well established as necessary for long-term organizational survival (Christensen and Raynor 2003; Hamel and Välikangas 2003). According to Christensen (1997), there are two types of innovation: sustaining and disruptive. *Sustaining* innovation improves an existing product or enhances an existing service for an existing customer. In contrast, *disruptive* innovation targets noncustomers and delivers a product or service that fundamentally differs from the current product portfolio. Sustaining innovation leaves organizations in their comfort zone of established markets, known customers, and realizable business models. Disruptive technologies enjoy none of these benefits. To be successful for the initiating organization, the disruptive innovation must meet two basic requirements: it must create value as perceived by customers, and it must enact mechanisms to appropriate or capture a fair share of this new value (Henderson et al. 2003). For other organizations and particularly dominant players, disruptive innovation can be devastating. Christensen (1997) refers to this as "the innovator's dilemma." For an excellent discussion of disruptive technologies and a review of six leading theories of innovation, see Denning (2005).

Innovation comes about through organizational change, and here, too, we see two dominant forms: continuous change versus punctuated equilibrium. Brown and Eisenhardt (1997) describe *continuous change* as "frequent, relentless, and perhaps endemic to the firm," whereas the *punctuated equilibrium* model of change "assumes that long periods of small, incremental change are interrupted by brief periods of discontinuous, radical change." In this latter case, change is primarily seen as "rare, risky, and episodic." Although it is tempting to equate sustaining innovation with continuous change and disruptive innovation with punctuated equilibrium, it is not so simple. In fact, Brown and Eisenhardt (1997) as well as Meyer (1997) cite examples of firms that have successfully reinvented themselves through continuous change as opposed to abrupt, punctuated change. In fact, these authors suggest that "in firms undergoing continuous change, innovation is intimately related to broader organization change."

Innovation frequently involves experimentation (Govindarajan and Trimble 2004). Experimentation invokes the notion of testing or trying something new. Learning is paramount; whether the experiment succeeds or fails is secondary to what is learned during the conduct of the experiment. Experiments also conjure up a sense of the unknown, trying something that no one has actually tried before. The juxtaposition of the word *strategic* with *experiment* introduces direction, purpose, importance, and future criticality for the organization. Strategic experiments are not happenstance. Although distinctions are sometimes fuzzy, many authors differentiate strategic experiments from process and product innovations that tend to be narrower and more focused on existing offerings. Nicholls-Nixon et al. (2000) define *strategic experimentation* as:

> a series of trial-and-error changes pursued along various dimensions of strategy, over a relatively short period of time, in an effort to identify and establish a viable basis for competing.

Govindarajan and Trimble (2004) further highlight the inherent risky nature of strategic experiments, which they characterize as:

> a multiyear bet within a poorly defined industry that has no clear formula for making a profit. Potential customers are mere possibilities. Value propositions are guesses. And activities that lead to profitable outcomes are unclear.

As such, strategic experiments represent a rather unique management challenge. According to Govindarajan and Trimble (2005), strategic experiments constitute the "highest-risk, highest-return category of innovation and require a unique managerial approach." Where the goal is learning, results are vastly different from those normally monitored and measured within organizations. Even expectations take on altered meaning—sometimes heretical—where failure is tolerated and perhaps even expected. There is also a strong element of trying to manage the unmanageable. Strategic experiments benefit from none of the controls easily imposed in a laboratory setting; for instance, control groups may not be available, results may be ambiguous, it may not be possible to shield experiments from outside influences, experiments may not be repeatable and/or verifiable. Furthermore, attempts to manage these experiments may destroy them. Management is a delicate balance where:

> successful multiple-product innovation blends limited structure around responsibilities and priorities with extensive communication and design freedom to create improvisation within current projects. This combination is neither so structured that change cannot occur nor so unstructured that chaos ensues. (Brown and Eisenhardt 1997)

Of interest for our purposes is the fact that IT often plays a key role in innovation and change. In fact, many recent innovative products (e.g., Blackberries, iPods) and services (e.g., eBay, VoIP) are clearly enabled by information technology. One pundit suggests that innovation and transformation are becoming the new *I* and *T* in IT (Slofstra 2006). The term *strategic IT experimentation* focuses on the subset of strategic experiments that are based on information technology similar to the above examples. Interestingly, very little attention has been paid to strategic IT experimentation. Henderson et al. (2003) introduce the concept of "platforms" (e.g., technology platforms, capability platforms, and business platforms) as enabling conditions offered by IT to support innovation. Sambamurthy et al. (2003) suggest a role for IT as a "digital options generator." Both of these studies look at IT from the standpoint of its role as a facilitator and/or enabler of innovation and agility. In this chapter we examine the management issues and challenges involved with actually conducting strategic IT experimentation. To do so, we first describe the innovation life cycle as the context for strategic IT experimentation.

STRATEGIC EXPERIMENTATION WITHIN THE INNOVATION PROCESS

Organizations typically do not assign responsibility for strategic experiments to individual departments. In fact, few organizations even use the term *strategic experiment*. Instead, organizations commit resources (space, funds, and people), build infrastructure, articulate procedures, and provide incentives, all in an effort to instill a culture of innovation. We refer to this collection of activities as the *innovation process*. Strategic IT experiments exist within such a process and must be understood in this context. Two examples of how companies incorporate strategic experimentation into their innovation processes are as follows:

- Oilco challenged its lines of business to use IT as a source of innovation. Because the rate of change is so much faster with IT as compared to other forms of technology, Oilco realized that its traditional approaches for assessing and adopting new

technology wouldn't work. As a result, the company created an abbreviated innovation process. New ideas/opportunities (arising from employees, suppliers, universities, partners, and/or venture capitalists) must now pass three filters: (1) relevance, (2) technical readiness, and (3) economical viability. Once passed, a line of business must then be willing to sponsor an experimental pilot. If this is successful, the idea/opportunity becomes part of an "upscale pilot," which greatly expands its range and reach. Success here leads to adoption by a line of business. The whole process, from idea to adoption, happens within a year.

In this process strategic IT experimentation begins with business sponsorship of the experimental pilot and continues into the upscale pilot (as various features of the innovation are tried). Often experiments involve Oilco's partners. In essence, Oilco "provides the business milieu within which its technology partners can hold large-scale, real-life experiments" (Smith 2006).

- Telco has a somewhat different innovation process centered on the fact that all its products and services involve technology. It consists of four stages:

1. *Idea.* Ideas are generated through informal processes (e.g., brainstorming sessions or competition activity) as well as formal processes (e.g., market research or industry trend analysis), and the sources of ideas are varied (e.g., vendors, peers, product and marketing, customers, laboratories). Ideas must meet certain requirements to pass to the next stage, including specific and targeted objectives that address "pain points" or core business offerings, technical measurement, and identification of business sponsors and champions. On an annual basis, about forty to fifty ideas are approved for the next stage.
2. *Proof of concept.* At this stage, teams are assigned to specific ideas in order to conduct the proof of concept. Testing is done within a formal or informal laboratory setting using typical controlled experimentation. The process is very agile and adaptive, and the original idea can morph substantially. The team is highly focused and intentionally kept small. The entire proof-of-concept stage occurs over one to four weeks. Of the forty to fifty original ideas, only five to ten make it successfully through this stage. Requirements for passage to the next stage include addressing issues of intellectual property protection as well as providing a service description for the new idea.
3. *Trial or pilot stage.* This stage is described by the firm as "contained production exposure" as the idea is exposed to the market in a limited and measured way. A market segment is defined, and certain customers (who may be employees) are offered the chance to experiment with the product or service. Measurements are taken to reveal the marketing/branding issues, the financial "price points," and the operational impacts. The trial/pilot occurs within a window of four to twelve weeks, but occasionally it is extended. In addition to favorable results (i.e., marketing, financial, and operational), requirements for the next stage include complete product designs and business and system requirements. Many ideas are killed at this stage.
4. *Transition stage.* This stage is the "go to market" stage, and the idea now enters the full system development life cycle to ensure that the product or service is "industrial strength." Many shortcuts (i.e., "duct tape" solutions), which served well enough for the pilot, must now be engineered to meet production standards. It is interesting to note that IT has some unique opportunities and

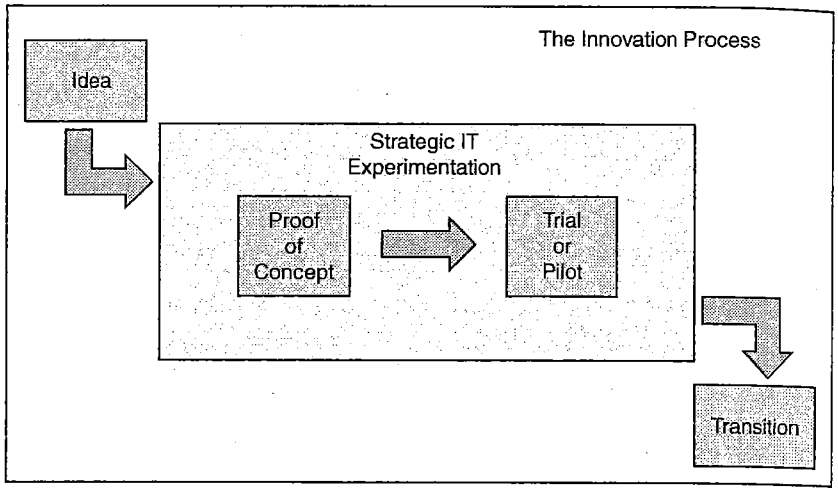

FIGURE 12.1 Strategic Experimentation Is Part of the Innovation Process

dangers when transitioning from an experiment to a full-fledged offering. One Telco manager suggested that "you can sometimes go too fast from concept to the one you actually drive."

In both these innovation processes, strategic experimentation begins *after* an idea has been vetted and deemed relevant and *before* it is transitioned into a full component of the business—whether product, service, new technology, or new process. Thus, strategic IT experimentation begins at the proof-of-concept stage (corresponding with Oilco's experimental pilot) and continues through the trial/pilot stage (corresponding with Oilco's upscale pilot). A feedback loop may be involved at the trial or pilot stage (see Figure 12.1).

STRATEGIES FOR SUCCESSFUL IT EXPERIMENTATION

Three conditions are necessary for strategic IT experimentation to be successful: (1) motivation, (2) support, and (3) direction. As one manager stated, "Without motivation, little will happen; without support, little can happen; and without direction, anything can happen." The focus group's recommendations to others seeking to improve strategic IT experimentation include the following:

1. *Motivate: Establish rewards for strategic IT experimentation.* Although many individuals are naturally drawn to experimentation, the demands of everyday work often drive this interest and inclination into remission. Furthermore, experimentation is risky, and not all people are willing to risk their reputations. As a result, experimentation and innovation do not flourish without intervention. According to focus group members, the way to create an innovation-enabled organization is twofold: provide incentives and rewards to support experimentation and risk taking, and make it everyone's job. Good ideas are good ideas, and experience

shows that they are as apt to originate at the customer interface as they are within the laboratory or the executive ranks.

Taking this a step further, one company has made innovation a component of everyone's annual performance measurement. In addition, it also offers five specific types of formal rewards for innovation ranging from patentable ideas to emerging business opportunities. Not all rewards need be formal. One firm uses a system of frequent informal rewards (e.g., books, tickets, cards, recognition days, and executive citations) to recognize innovative IT ideas and encourage and reward strategic experimentation with IT. Another company discovered that the best reward for IT personnel is simply the opportunity to work and play with new technology! In this company enterprising IT personnel win the right to experiment with new technology without the need for champions or sponsors. According to the manager involved, this activity is funded by "skunkworks" and "beg and grovel."

Support: Create infrastructure to support experimentation. Offering rewards for experimentation sends employees the signal that experimentation and innovation are encouraged and will be recognized. This provides the motivation for individuals to experiment, but organizations need to provide support for such experimentation if they want it to happen. Over time, the combination of recognition and support builds a culture of innovation.

However, notwithstanding this, many firms believe it is also necessary to build some infrastructure around IT innovation and experimentation. One company, for instance, created the position of "chief scientist" and provided that office with a budget and resources. This was the organization's "way to signal to everyone that the lifeblood of the organization is discovery . . . not just innovation," said the manager involved. At this company, "innovation is a given" and expected in all parts of the business. "Discovery," however, conveys a sense of urgency as well as the notion that the company needs to continually reinvent itself to survive in the marketplace.

Many companies have formal centers (or laboratories) to support innovation and experimentation. Depending on the firm, the roles of these centers vary from "new product introduction" to "new technology introduction" to "business venturing" to "incubation centers." Where IT is considered a key business driver, they usually focus almost exclusively on strategic IT experimentation. The critical aspect of their creation is the provision of support and infrastructure to enable idea review and experimentation. Most centers are formally entrenched within the organization with ongoing funding, permanent staffing, and well-developed procedures and processes to encourage, guide, and support innovation. According to one manager, the key element is "to link sponsorship to innovation," reflecting the fact that "good ideas don't make it on their own."

Companies in the group reached consensus on the mandate for innovation centers, but they disagreed about their governance. Two distinct strategies surfaced:

- *Insulate.* This strategy creates innovation centers as places where "all lines of business can come together to address common problems." According to proponents, the key benefit of this approach is the ability to foster synergies across the business in the belief that innovation is best "nurtured away from the mainstream business."

- *Incubate.* Those following this strategy place their innovation centers within specific lines of business (LOBs). Proponents suggested that forcing innovation to be housed within a single LOB leads to IT experimentation focused on "real" problems and opportunities and committed local ownership.

The innovation infrastructure that was common to virtually all organizations in the group was the maintenance of an intranet for launching ideas. These sites are considered to be effective for soliciting, vetting, and sharing ideas and/or opportunities. According to one manager, an intranet's chief value is that "anyone can input and everyone gets access" to build on ideas. In firms with innovation centers, intranets are effective "feeder" systems. In organizations lacking the formal support of an innovation center, ideas identified on the intranet require a sponsor to marshal support to turn them into realizable products and/or services.

A common form of financial support is the establishment of internal venture funds. In about half of the participating organizations, funding mechanisms had been set up to support IT experimentation. Typically, such funds are made available on a competitive basis with an oversight committee in place to award resources and to monitor progress and completion.

3. *Direct: Manage innovation strategically.* One manager pointed out that "experimentation never fails as long as there has been learning." Strictly speaking, the focus group agreed *but* felt that "any such learning would have to be strategically important for the organization" for it to be considered successful. According to the group, learning for the sake of learning was "an activity enjoyed by academics"—much to our chagrin! They suggested that providing motivation and support for individuals to experiment freely would be a recipe for disaster. Organizations must provide *direction* for these activities. Strategic IT experimentation does not occur by happenstance. Some participant suggestions for directing IT experimentation in order to ensure that it was strategically relevant include the following:
   a. *Link experimentation and innovation to customer value.* A simple yet effective way to accomplish this is to focus on emerging pain points. At one company all new ideas had to articulate the specific customer pain point (CPP) that would be addressed. This requirement, in and of itself, produced results. As the manager involved related, "The identification and surfacing of CPPs stimulated considerable and sometimes heated discussion. Many people were surprised to learn of CPPs, and many potential solutions emerged. It was a case of 'if only I had known.'" Unfortunately, failure to articulate business value to the customer is a common phenomenon.
   b. *Link experimentation to core business processes.* The opposite approach focuses IT experimentation internally on core business functions. One participant, whose organization is "currently reluctant to experiment in the market," focuses all its experiments on core business activities. "Our belief is that IT experimentation is strategic only if it produces significant efficiencies for internal operations in a way that can be captured on the bottom line," she said.
   c. *Use venture funds to guide strategic initiatives.* Although establishing venture funding for IT experimentation is a form of support (see above), the governance of such funds can be instrumental in achieving strategic alignment. Venture funds are typically given for initiatives that do the following:

- Make greater use of innovation resources
- Focus on new business models
- Explore new/disruptive technologies
- Focus on penetrating new markets
- Leverage cross-organizational capabilities
- Streamline decision making
- Focus on opportunities that can be scaled.

FROM EXPERIMENTATION TO INNOVATION: LESSONS LEARNED

Focus group members shared examples of both successful and unsuccessful IT experiments. Of the three dramatic failures mentioned, all involved not the experiment itself but, rather, the transition from successful experiment to broader practice or to the marketplace. Since the goal of a successful experiment is to ultimately become an innovation from which the business derives value, navigating the transition from experiment to innovation is especially important. Although three is a small sample on which to draw conclusions, these failures had several elements that were common. From these experiences, the group reached consensus about how to approach this critical transition point:

- *Focus on achievable targets.* Strategic IT experiments should be manageable and targeted but, at the same time, built so they can scale up easily. According to one manager, "It is far easier to ramp up a proven venture than to plan, build, and deliver a winner." At one company an experiment involved a "proof of concept" for a new technology involving six sites. Management then rapidly decided to expand the experiment to three hundred sites! This action literally ended experimentation, and the task immediately became one of a large-scale implementation.
- *Don't rush to market.* Positive results from an experiment should be viewed as justification for further experimentation, not as a "license to launch." At one company, a decision to go to market based on very favorable results from a strategic IT experiment quickly ran into difficulty. The customers involved in the experiment turned out to be unrepresentative of the overall customer base, and the uptake in the market plummeted as the rollout broadened its base.
- *Be careful with "cool" technology.* Because IT experimentation deals with technology, it is sometimes easy to be misled by cool technology. The buying public may not understand what the technology does (e.g., it's an Internet pen), may have no need for the things that the technology does (e.g., it tracks unvisited sites), and/or may not find the technology appealing (e.g., it's a mouse with arms and hands). On the other hand, this same technology may become the item that every teenager on the planet must have! Therefore, exercise caution.
- *Learn by design.* The goal of an experiment is to learn. The group provided several examples of experiments where nothing was learned. In these cases insufficient controls were designed into the experiment to enable the organization to ascertain after the fact what had happened. Was failure due to product features or due to functioning? A lack of effective marketing? The price point? Thus, the first step in a strategic IT experiment should be to identify the critical questions that need to be answered, then to design these into the experiment.

Conclusion

Stressing top-line growth brings IT into the mainstream of product and service innovation, which, in turn, means that the IT function must become more customercentric, assimilate new skills, and work collaboratively with the business development arm of the organization. It also leads a company into the realm of strategic IT experimentation. This reflects the ubiquitous nature of information technology and represents a new and exciting role for IT. This chapter has outlined some of the issues and challenges IT managers are experiencing as they begin to move into the uncharted waters of innovation. At present, in most organizations, strategic experimentation is merely a collection of activities and procedures for testing out new ideas. As managers become more experienced in this area, however, it can be expected that many of the practices outlined above will become better understood and IT will be able to use strategic experimentation more effectively to successfully spin good ideas into innovation gold.

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Chapter 13

Enabling Collaboration with IT[1]

Our increasing connectedness is driving new ways of working together to deliver business value. Globalizing organizations, outsourcing, mobile work, innovation, interorganizational teams, innovation, and reaching out to suppliers and customers are driving today's need to improve collaboration within firms. And, of course, IT is at the center of these trends. A study on what makes widely dispersed virtual teams effective found that, contrary to expectations, technology was a significant factor in facilitating their success (Majchrzak et al. 2004). However, literally hundreds of software packages are being promoted for improving collaboration. These technologies, such as virtual worlds, Web 2.0 applications, social networking, content management, and new ways of communicating (e.g., blogs, wikis, instant messages, tweets) appear almost daily and are being adopted and adapted rapidly in the wider society. They are challenging many of the traditional conventions of how work is done and the role of IT functions themselves.

As the menu of available technologies widens, becomes virtually free, and employees clamor to use them anywhere, anyplace, and anytime, IT managers are asking many questions including these:

- What is the business value of these technologies?
- What is the best way to assess them and make decisions about their use?
- How can these technologies best be managed and adapted for organizational purposes?

Furthermore, as new technologies appear, businesses are experimenting with different types of collaboration, such as those listed above, and IT functions are often expected to make collaboration happen through the implementation of technology, even though technologies are only one piece of any collaboration initiative. Certainly IT functions provide the "heavy lifting," such as connectivity and information integrity, without which most collaboration efforts would not be effective, and a well-designed IT architecture is a key enabler of collaboration (Johansen 2007). And, at the most basic level, IT also protects the privacy and security of information and users. But how new applications are implemented is often as important as the

[1] Smith, H. A., and J. D. McKeen. "Enabling Collaboration with IT." *Communications of the Association for Information Systems* 28, article 16 (March 2011): 243–254. Reproduced by permission of the Association for Information Systems.

technology itself in delivering business value. As one IT manager stated, "We sometimes jump directly to the tool without thinking through the strategy and tactics involved." As a result, IT managers can sometimes feel that the deployment of collaboration is less than optimal.

This chapter explores IT's role in enabling collaboration in organizations, and at the same time what IT's role should not be (i.e., what responsibilities and accountabilities should properly be the function of the business). It accomplishes this by identifying the principal forms of collaboration used and the primary business drivers involved in them, how business value is measured, and the roles of IT and the business in enabling collaboration. The chapter first looks at some of the reasons why collaboration is becoming so important in organizations and the business value it enables. Next it examines some of the different characteristics of collaboration in various organizations. Focus then switches to the key components of a collaboration program, how these influence its effectiveness, and IT's role in promoting collaboration. The chapter concludes with a series of recommendations for IT managers to use as a guide for how they can best facilitate collaboration in their organizations.

WHY COLLABORATE?

There is no doubt that information and communications technologies are enabling different ways of working—within organizations and between them. Who could imagine life without e-mail? Without Google? Without cell phones? These technologies and others have changed forever how we interact with others both personally and professionally, how we share information, and where work gets done. Thus, it should be no surprise that there's strong interest in collaboration among business practitioners and academics alike. A simple Internet search on this topic yields literally thousands of articles. And it is no secret that what we are seeing now is just the tip of the technology iceberg. Whether we do or do not yet actually use the next generation of collaboration/social networking technologies in our work, everyone has heard about them, including instant messaging, Twitter, Facebook, webcams, and others, and no one is a stranger to speculation about how these technologies are going to change the face of organizations yet again.

Almost any business or IT journal these days contains speculative "think pieces" or case studies about how essential it will be to collaborate (in various ways) in the future and how failing to do this will result in the organization becoming a dinosaur (Amabile and Khaire 2008; Lynch 2007; Romano et al. 2007). And it is certainly without question that hundreds of new technologies—including hardware, software, applications, and services—are currently being promoted to businesses as enabling collaboration and all of the benefits it will bring. Yet business and IT managers are struggling to cut through the hype to get at the real value collaboration will bring. They have seen this before in both the "Internet bubble" and the knowledge management fad and know from bitter experience with previous generations of groupware, knowledge management, and collaboration investments that achieving positive results is not as easy as plugging in a piece of technology (Iandoli 2009a). Many have a long history of deploying collaboration technology and seeing it gather dust (McAfee 2006).

It is therefore no surprise that the focus group reported a great deal of conflicting feelings in their organizations about collaboration, from wildly enthusiastic to highly skeptical. One company has invested substantial amounts of time and money in collaboration technologies and in adapting its organizational culture and behaviors

accordingly and believes that they have become more productive, effective, and successful as a result. On the other hand, another manager reported his company's senior executives were grumbling that no one has yet given them a real business need for collaboration. Some members reported that there's a lack of business push for collaboration in their organization, and others stated that their business units were "coming around in some areas because they feel they need to be where their customers are." Most agreed that virtual interaction is becoming increasingly commonplace and that the percentage of time employees work virtually (and therefore need collaboration technology) is increasing (Drakos et al. 2009; Romano et al. 2007). One study found that spending on collaborative software represents one-fifth of most organizations' technology budgets, but business leaders are still uncertain if these investments are improving either collaboration or the quality of work (Cross et al. 2005). This sentiment was reflected by most of the focus group participants. "We're still experimenting with collaboration," explained one. "We don't have a business project, but we're developing a collaboration strategy."

Because collaboration is evolving so rapidly, it's difficult to definitively articulate the business drivers and benefits involved. However, there appear to be five main categories of potential business value:

1. *Top-line value.* A great deal has been written about the importance of collaboration in improving and/or increasing creativity and innovation in organizations. One study found that collaboration technologies play a critical role in improving knowledge creating and sharing practices and in developing new processes, products, and services (Fink 2007). Another noted "great ideas can come from anywhere and IT has dramatically reduced the cost of accessing them" (Pisano and Verganti 2008). The expectation is that collaboration both across an organization and with customers, suppliers, and other third parties, will strengthen an organization's ability to identify new business opportunities and formulate creative solutions (Fink 2007). The goal is "real time, rich, location independent collaboration" by creative teams that can rapidly process and assimilate knowledge from many different sources and apply it in practical ways (Gordon et al. 2008). This type of value is especially important in highly dynamic and competitive industries where the generation of a large number of new, good ideas is critical to competitive advantage. Within the focus group, most organizations were just beginning to recognize how technology, collaboration, and innovation could be harnessed to change their business models, products, and services. "We're beginning to see our executives more open to these concepts and how changing how we work together and with our customers can make a difference," said one. One firm has included collaboration and innovation in its performance review criteria. Nevertheless, these appear to be the exceptions, and focus group managers mainly commented that their business leaders were not yet really thinking about how technology could help them in this area.
2. *Cost savings.* In a number of focus group companies, collaboration is seen as having real cost savings potential in such ways as reducing travel costs through virtual meetings, improving communications, and enabling remote access to documents. Participants noted that collaborative technology facilitates the work of global and virtual teams by compressing work flow, reducing development costs, increasing communication, minimizing misunderstandings, improving coordination between groups, and enabling linkages with vendors, suppliers, and customers that speed up the supply chain and other work processes.

3. *Effectiveness.* There is wide recognition that collaboration technology, used properly, can make group work more effective. This is particularly true for virtual teams. For example, one focus group company uses social networking technologies (behind its firewall) to enable team members from around the world to learn about each other, have fun events, and understand each others' customs and culture. "This has been really useful for us in building strong global teams," said the manager involved. Collaboration technology, particularly unified communications, is especially useful in integrating remote and mobile workers seamlessly into team or project activities. It enables them to "touch down" in an office and plug into the applications and information they need, wherever they are in the world. Increasingly, too, for many professionals, whose work consists of participation in a number of ad hoc projects, collaboration technology enables them to more effectively juggle a variety of commitments. One firm uses it extensively for its multidisciplinary projects, such as pandemic planning. Finally, online education is a big application of this technology, allowing employees to participate from a variety of locations, have virtual and real-time discussions, and incorporate learning into the demands of their workday.
4. *Accessibility of people.* A key feature of collaboration and its associated technology is that it provides a company with access to a much broader range of skills, capabilities, resources and services than have been traditionally available. Collaboration technology significantly expands the number of potential partners and expertise available to a company (Pisano and Verganti 2008), and in recent years different types of interorganizational alliances—from supply chain integration to design coordination to innovative partnerships—have become commonplace (Attaran 2007). However, it is the ability to access internal expertise that is currently of most interest to the focus group companies. Only one firm had successfully implemented a comprehensive enterprise directory, including phone book, expertise location anywhere in the organization, reporting structures, and connection with social networking information. Yet even this firm recognized how difficult building such a capability can be. "Over the years, it has been a huge stumbling block for us," one focus group member said. Other members were envious. "We're trying to build this facility," said one, "because right now it's really hard for us to find people in our organization." Ideally, this type of accessibility also enables the development of communities of interest within the organization—either work focused or built around personal interests. In our virtual, networked world that is rapidly losing the "human touch" and is characterized by "ephemeral relationships," these communities can help build staff morale and create a sense of belonging (Tebbutt 2009; Thomas and Bostrom 2008).
5. *Accessibility of information.* One of the biggest benefits of collaboration and its associated technology is that it makes information much more accessible than in the past. Information repositories, such as the intranet, enable the management and sharing of digital content on an as needed basis (Chin et al. 2008). Other technologies, such as wikis, support the creation of new content and its publication. These tools enable information and knowledge sharing across time and space in ways that were unheard of a mere decade ago (Fink 2007). Many focus group members believe that portal and content management applications will be the biggest value of collaboration. But they also feel it will take a lot of work to get

there. "Our intranet is just a garbage scow of information," sighed one manager. "The same document can exist in literally hundreds of places." Another noted, "While our corporate level content is well managed, it gets messier and messier the lower down in the organization you go. We need much more information management and filtering to make our Intranet really useful." Finally, although everyone agrees that collaboration will only be successful if more information is made more widely available, there is still a great deal of fear that "someone will do something bad with it," which explains why in many organizations the default position is not to share.

6. *Flexibility.* The world is becoming increasingly volatile, uncertain, complex, and ambiguous and this is creating a highly dynamic business environment for many companies (Johansen 2007). Flatter, more networked, and collaborative structures create the right work and leadership environment, facilitating fluid workforces and speedy decision making and providing transparency of information and capabilities while retaining clarity around the organization's beliefs, values, and responsibilities (Reeves et al. 2008). A networked organization, with situational leadership, less structure, and the ability to create new capabilities through its networks, will be much more able to cope with these challenges. Flexibility will involve space, technology, and protocols for working in networks and will exist at the intersection of real estate, HR, and IT (Johansen 2007). Flexibility underlies many of the reasons why focus group members are interested in collaboration. Although most are still seeing this as a need within a more traditional, hierarchical organizational structure, some recognize that their structure and governance practices will have to change substantially.

CHARACTERISTICS OF COLLABORATION

Although there is much talk about the benefits of collaboration and the need for more of it in organizations, clarity is significantly lacking about what collaboration actually is. As one focus group member put it, "If you asked a hundred people to describe collaboration, you would get a hundred different answers. There's a huge disparity in understanding about this topic." There is also significant confusion about collaboration, which is a human activity, and collaboration technology, which is the hardware, software, and applications that enable the work of collaboration (Camarinha-Matos et al. 2009). Finally, the group noted that collaboration is often used interchangeably with such terms as networking, social networking, and cooperation. It is therefore important to be clear about the range and scope of collaboration in organizations these days, including who is involved in collaboration, what type of work is being done, and where it is being done since these have a direct bearing on how the IT function can best support collaboration with technology (see Figure 13.1).

- *Who is collaborating?* At its simplest, *collaboration* describes work that is done jointly with others (Wikipedia 2011). In modern organizations, this covers a lot of territory. Sometimes, collaboration can be as basic as two people working together to achieve a goal, but it also refers to a wide spectrum of different types of collaborative participants. In organizations, there can be collaboration within teams (both formal and ad hoc), between business units, and within communities of interest.

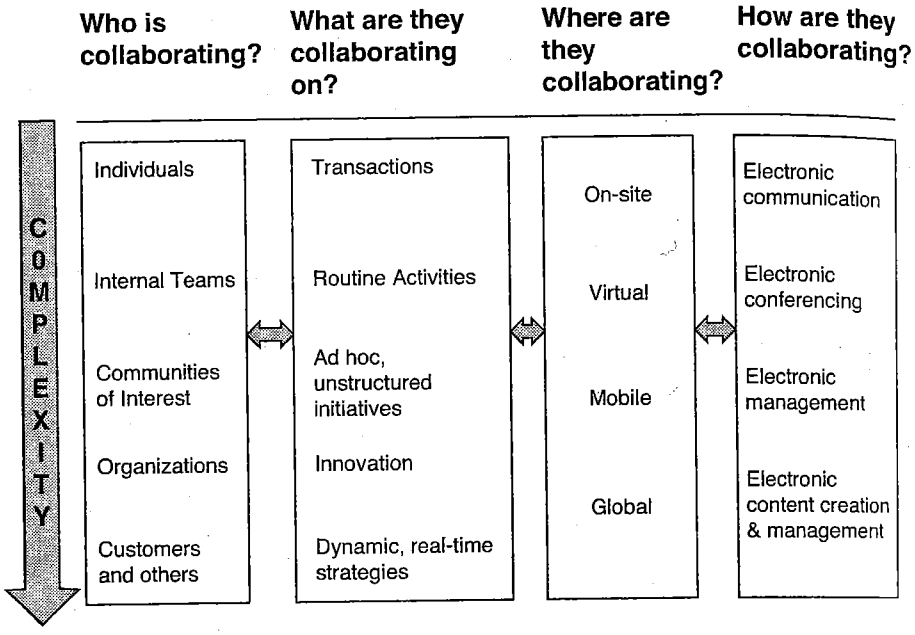

FIGURE 13.1 The Range and Scope of Collaboration

Collaboration can also occur beyond a firm's boundaries, including between an organization and its customers, between one or more organizations (as in a supply chain or an innovative partnership), and, as we are beginning to see, with the world at large (also known as "mass collaboration"). As organizations have become more comfortable with collaborative work, they are extending it in new ways and to more and more types of participants. Most focus group organizations still focus on internal collaboration, yet there was general agreement that the trend is toward opening up collaboration beyond organizational boundaries. At present, most organizations are fairly "locked down" but have practices in place to enable key suppliers and trusted third parties to access internal company data and to work collaboratively with internal participants.

- *What are they collaborating on?* Collaboration can take many forms. The early wins in organizations, according to the focus group, were simple transactions. These included e-mails, conferencing, extranets with partners, and basic workflow. Next came collaboration around routine activities, such as access to information and its reuse, ease of information creation and publishing; coordination of experts to solve common problems and to reduce the work involved in mundane tasks, such as coordination and planning (Cross et al. 2005; Edmonston 2008; Fedorwicz et al. 2008). Most organizations in the focus group have substantial initiatives in this area, although they believe there's more work to be done, especially in such matters as improving content management and creating enterprise directories. A third type of collaboration is more unstructured in nature and includes the development of communities for various purposes, creating collaborative work environments where innovation can occur, and collaboration for issue and infor-

mation management. Most focus group members had only just begun to understand how best to leverage this type of collaboration, and their efforts in this area are still mainly experimental. However, one firm has created a new technology adoption environment, where any technology innovation can be shared and where others can use and provide feedback about its utility and effectiveness. The most challenging form of collaboration is probably best epitomized at present by the online gaming community. Here, various participants work together in real time to achieve structured goals under rapidly changing conditions. Dynamic collaboration is characterized by speed of decision making with incomplete information, the ability to modify decisions in response to changing conditions, trial and error, the continual need to address and deal with risk, hyper-transparency of information, and situational leadership (Reeves et al. 2008). None of the organizations in the focus group had achieved this type of collaboration, but all recognized that this is increasingly the way members of the younger generation expect to work and also felt that, as business challenges become more complex, organizations will have to find better ways of collaborating in this way.

- *Where are they collaborating?* Increasingly, collaboration needs to take place on an anywhere, anytime basis. Inside organizations, members noted the need for more meeting spaces and meeting rooms as well as "touch down" areas where contractors and outside staff can temporarily set up office. Almost all focus group organizations already support virtual and mobile work, at least to some extent. Several members of the focus group also routinely utilize international or global teams where collaboration takes place across time zones, national boundaries, cultures, and language groups. Some were also beginning to experiment with different forms of collaboration with individuals and enterprises beyond their organizational boundaries, which requires dealing with different organizational cultures, practices, processes, systems, and data.
- *How are they collaborating?* Collaborative technology comprises the tools that are used to facilitate the work of collaboration. These fall into four main categories: electronic communication (such as e-mail, instant messaging, blogs), electronic conferencing (e.g., video conferencing, meeting software), electronic management (e.g., file sharing, activity assignment, task management), and electronic content creation and management (e.g., publishing tools, enterprise directories). However, newer collaborative technologies, such as social networking applications, tend to fall into multiple categories depending on how they are used (e.g., for communication or information creation). As a result, the boundaries between the categories are blurring with the rapid evolution of this technology.

COMPONENTS OF SUCCESSFUL COLLABORATION

Understanding what collaboration and its potential benefits are is important to achieving an awareness of how collaboration can be effectively used in an organization, but the high failure of collaboration projects suggests that successful collaboration requires mastering how to implement and manage it (Schuh et al. 2008). The key challenges for managers (both business and IT) are to create a supportive working environment and motivational conditions and to develop the skills and organizational arrangements within which collaboration can flourish (Fedorwicz et al. 2008; Thomas et al. 2007).

Four components of collaboration must work together to ensure successful collaboration of any type (MacCormack and Forbath 2008):

1. *People.* Collaborative work requires different skills than more traditional forms of work. In particular, strong communication skills are essential. This is especially true the more work is mediated through technology, virtual, and across organizational and cultural boundaries (Romano et al. 2007). Cultural differences around social expectations, the need for more openness, flexibility, and interdependence in work assignments; the need to develop trust in an "opaque" environment (i.e., one that lacks many traditional social cues); and differences in organizational practices all add up to a requirement for managers to rethink how people will work together in this new world of work (Evans and Wolf 2005; Fiore et al. 2008). Inexperienced teams, lack of management attention, and different expectations of partners are some of the major reasons why collaboration initiatives can fail (Schuh et al. 2008). Thus when implementing collaboration, managers should be aware that it is not "business as usual" and should pay more attention to the social and behavioral changes that will be necessary (Edmonston 2008; Thomas and Bostrom 2008). One focus group manager noted, "You cannot overemphasize the importance of culture. It will make or break you." Finally, as the complexity of the tasks involving coordination increases, so does the need for management attention to coordination (Schuh et al. 2008). In short, creating the working environment within which collaboration occurs becomes the primary role of the manager, rather than monitoring individual productivity or performance. Signs that these efforts have been successful are engaged, satisfied, and committed staff who fully participate in collaborative processes (Nohria et al. 2008). Conversely, managers who cultivate a fear of failure or who do not protect their staff from what is often a larger, hostile corporate environment, are likely to see collaborative initiatives fail (Amabile and Khaire 2008).
2. *Program.* Collaboration needs to be part of a coherent program to create and capture value, not a series of stand-alone efforts (Schuh et al. 2008). It is highly unlikely that collaboration initiatives will achieve an organization's goals unless they are managed holistically (MacCormack and Forbath 2008). Furthermore, it is essential that managers understand the strategic trade-offs involved in collaboration and make conscious decisions about how to structure and govern it. This is especially true when external partners are involved (Pisano and Verganti 2008). Most important, organizations need to understand comprehensively how to use their knowledge and information assets. Focus group members stressed that well-organized, searchable information is the foundation for any type of collaboration, and that resource requires a significant investment to develop and maintain. As a result, many companies are working primarily on content management strategies. In addition, high-level decisions need to be made about how to develop new collaborative capabilities, determine what types of collaboration the organization seeks to engage in, what policies are needed, and how to create an environment where the desired collaboration can thrive. Two key principles of any collaboration program are emergence (i.e., the recognition that we don't always know who will make the greatest contribution to a problem in advance) and planned serendipity (i.e., designing a working environment where underexplored relationships between people, ideas, and applications can become visible) (Majchrzak 2009).

3. *Processes.* Within a strategic and holistic approach to collaboration, it is important to develop processes that support or help manage this type of work. Since collaboration is a moving target in the modern enterprise, managers need ways to rapidly learn what is working and what isn't and to make changes as the work unfolds (Edmonston 2008). Managers also need a process to take advantage of successful innovations and a way of recognizing failures and killing them off quickly (Amabile and Khaire 2008). Effective processes are also required to support collaborative teams and partnerships, to help them know what they know and coordinate their thinking (Johansen 2007). Specific processes that the focus group identified as being supportive of collaboration include administrative practices that recognize the convergence of many different types of communication (the management of which is often separated), content management processes, the ability to identify a "single source of truth" (i.e., the official documents pertaining to any topic), and the creation of parameters to help staff understand how and under what conditions they can collaborate. Conversely, a siloed focus and an emphasis on process efficiency above all else will likely stifle collaboration (Kleinbaum and Tushman 2008).
4. *Platforms.* These are the tools, technologies, and standards that enable people to share data and to work together seamlessly from a variety of locations. The advent of cheap connectivity has been the driving force behind many new ways of collaborating in recent years (Smith and McKeen 2008), yet efforts to promote collaboration have focused largely on connectivity with little recognition of the other factors that make it effective (Cross et al. 2005). Technology is a key resource in enabling collaboration, but it must be designed to achieve the organization's goals and fit with its culture and practices. As with the other components of collaboration, the objective of a platform is to create an environment within which collaboration can take place, rather than the traditional systems approach of hardwiring specific information and work processes (Iandoli 2009b). An effective technology platform should support plug-and-play communications, provide access to information, and enable the transformation of information into knowledge. It should also provide tools for the rapid creation of communities, teams, and networks, be based on open standards, and be flexible and adaptive (Camarinha-Matos et al. 2009; Iandoli 2009b). However, most focus group organizations are nowhere near creating such a platform. Most are still questioning whether they should invest in collaborative technologies rather than look for ways to coherently manage a set of business tools for collaborative work (Drakos et al. 2009).

THE ROLE OF IT IN COLLABORATION

Clearly, the IT function alone cannot make collaboration happen, even if it provides robust collaboration technology. The business plays a critical role in determining its strategy and creating processes and a working environment that make it possible to collaborate for business value. That said, there is still no answer to where an organization's collaboration strategy "belongs." In most, IT still owns it and, as a result, the whole field of collaboration is an opportunity for IT managers to demonstrate real business leadership (Lynch 2007; Mann 2008). CIOs can work with business executives to identify and orchestrate collaborative capabilities, coordinate enterprise services, and educate leaders about opportunities and possibilities.

In addition, IT leaders have some very specific technology responsibilities that must be put in place to enable collaborative work to occur. At present, four major tech-

nology areas must be addressed iteratively and concurrently. These are merely the fundamentals, however. Since this field is evolving rapidly, IT leaders must be prepared to continually reassess all aspects of collaboration technology, its governance, and policies and to rebalance these as necessary (Smith et al. 2007).

1. *Communication.* A significant and growing area of collaborative technology is enabling a wide spectrum of communications options, from voice mail to video and everything in between. "Users increasingly see communications and collaboration not as separate activities but as a smooth continuum of modalities where the difference between talking on the phone and posting on a wiki becomes a matter of choice and preference" (Mann and Elliot 2007). As such unified communications become a technological reality, IT leaders will need to develop an architecture that supports them as a single technology spectrum rather than as separate components. Gartner Group predicts that phone directories, e-mail, voicemail, instant messaging, presence awareness, computer telephony, and conferencing technologies will increasingly converge over the next five years, leading to serious organizational challenges in how these services are managed (Mann and Elliot 2007). However, other types of communication and collaboration software, such as voice, call centers, mobile, team workspaces, and social software will not be part of this convergence and will have to be appropriately managed as they too evolve. Ultimately, communications technology will be embedded in all business applications and will need to be ubiquitous, reliable, secure, and integrated (Andriole 2006).
2. *Information Access and Management.* Developing an improved information processing capability, including accurate and visible information, manipulability, exchangeability, and ease of information transfer is a primary goal for all IT functions in supporting collaboration. One focus group member explained his mandate as follows: "We want to make it easy for anyone to share information via the intranet, to support collaboration with information, and to link people to documents and vice versa." To accomplish this goal, it is important for organizations to reduce the number of databases and data management platforms they maintain and to develop the intranet into a robust information sharing platform. Typically, organizations also need a document management system with proper versioning and access controls, although these systems are notoriously difficult to integrate with other information management tools. We're finding it really hard to upload and share documents," said one manager. "It's a big headache for us." Content management, particularly at the business unit and team levels is also challenging as the use of many separate tools tends to replicate information in a relatively unmanaged fashion. At present in most companies, attention needs to be paid to integrating fragmented information resources, improving information visibility, filtering and navigation, and establishing principles for information access (Cain 2008; Thomas et al. 2007).

   Several focus group companies commented that perception is still widespread in their organizations that if information is made more widely available "bad things will happen." "We instinctively don't want to share," said one manager. Managing the tension between the need for information availability to facilitate collaboration and protecting the organization from the associated risks is an area where IT managers should be working proactively to ensure they deliver the optimal value (Gordon et al. 2008; Smith et al. 2007).

3. *Security and Risk.* It is a primary responsibility of the IT function to protect the integrity of its systems and data. This is becoming increasingly more challenging as both internal and external organizational boundaries break down and new forms of collaboration are introduced (Smith et al. 2007). IT managers recognize that removing the traditional layers of separation between departments and enterprises makes the organization more vulnerable and their job more difficult. Therefore, IT departments can often be viewed as obstacles to collaboration (Gordon et al. 2008). There is no easy answer to this dilemma. Companies need safe and secure communications, but it is no longer possible to use "stovepipe" security to ensure this. Instead, IT functions must improve security architectures and infrastructures and continually assess the balance between the openness required by collaboration and the risks involved. Focus group members noted that security must become more granular and principles based. "We are beginning to develop a policy for how we as a company use social networking tools," said one manager. "The broader the team, the greater the risks involved." Another added, "We need better authentication tools, and we must be clearer about the types of information that can be shared." Others noted that security must be commensurate with the risks involved. "We must use the most appropriate tools for the particular task at hand." Finally, they pointed out that this task is about to get much more difficult as companies begin to open themselves up to collaboration with their end customers. "This is a huge challenge that we have not yet faced up to," said one.
4. *Technology Integration.* The more IT can achieve integration of data, applications, hardware, and software, the easier it will be to provide the information and tools needed to facilitate collaboration. Thus, focus group members recommended the massive simplification and rationalization of applications, databases, and software as a precursor to any significant collaboration initiative. The drive to collaboration is also behind the increasing interest in industry neutral and global IT standards of all types (Chituc et al. 2009). "Technology should be a facilitator of collaboration, not an obstacle," said one manager. "Our users want to plug and play in this area, and we can only achieve this through standardization." Some organizations in the focus group provide "canned" collaboration tools, such as blogs, personal Web sites, team sites, and wikis that allow the rapid formation of ad hoc teams and ease of social networking. These can then be tailored to particular needs requiring just enough information so they can be effectively managed and decommissioned in the longer term.

In addition, centralized and integrated structures within IT for developing enterprisewide communications and collaboration capabilities can facilitate synergistic interactions between these tools and create useful cross-technology opportunities that might not previously have been obvious (Sanders 2007). Focus group organizations varied widely in this area. Some assigned IT a leading role in delivering collaboration technology, and others are implementing it on a more piecemeal basis. All agreed, however, that without centralized support for this technology, it is unlikely to deliver enterprise-level value.

These four collaborative technology building blocks are the most critical elements to which IT should pay attention at present. However, new technologies are already on the horizon, and these will require continual assessment from IT managers as to their usefulness and how they can be integrated into the existing organizational infrastructure and collaboration architecture. Some of these technologies include dynamic model-

ing tools, simulation engines, visualization tools, data reduction and summarization applications, and intelligence gathering tools. In short, IT managers are going to have to remain aware in this very rapidly changing market and be willing to adapt quickly to changing conditions. Paying attention to these four fundamental building blocks now will enable them to do this more easily and effectively in the future.

FIRST STEPS FOR FACILITATING EFFECTIVE COLLABORATION

Given the multifaceted nature of collaboration and its many potential but as yet unproven benefits, IT managers could understandably adopt a wait-and see approach. In fact, this is what many members of the focus group are doing: talking about strategy and planning small pilots to test the waters. However, amid all the confusion, they also had some practical ideas for ways that organizations could begin to approach this complex and dynamic new way of working and using technology.

1. *Develop a coherent vision.* Effective collaboration requires a multidisciplinary approach and a shared business–IT vision (Lynch 2007). It is essential that such a vision begin with understanding the organization's values, legal requirements, and core intellectual property. From this, a strategic perspective can be developed about what the business wants to accomplish with collaboration and what types of technology would best support it. Focus group members suggested that developing a vision for collaboration must be carefully approached because "the judgment line is shifting rapidly" and our static paradigms of work are rapidly becoming much more dynamic. These factors will change business models and strategies and affect how companies will need to manage the complex business environment of the near future. Ideally, a vision for collaboration should include a unified strategy and business models, tools, and experiments to help the organization gain further insights. The vision's ultimate goal should be to nurture an internal working environment (and in the longer term a broader business ecosystem) that will enable productive collaboration to emerge. At this early stage, both business and IT leaders should play a key role in articulating a collaboration vision and in connecting it to the right people who can make it happen.
2. *Plan for adaptation.* If there's one aspect of collaboration about which everyone agrees, it's that collaboration is evolving and complex and will require significant and ongoing management attention (Schuh et al. 2008). Organizations, and particularly IT functions, therefore need to develop the "flexing skills" needed to cope with the rapid development of collaboration and its associated technologies (Iandoli 2009b). Focus group members noted that their organizations are already becoming flatter and more complex as collaboration and networks emerge. "Business is speeding up, and we will need new skills for coping and adapting rapidly," said one. It is therefore essential that organizations develop processes for learning what is working with collaboration and what isn't and mechanisms for sharing these lessons. Above all, the management of collaboration needs to be multidisciplinary and responsive to change.
3. *Start with specific fundamentals.* Facilitating effective collaboration will take time—both to build a strategy and to get the technology fundamentals in place. Many organizations have specific "pain points" that could be worthwhile places to

start putting energy into collaboration. In the focus group, these were clearly around information management and access. "Our Intranet is unmanaged and not relevant," complained one manager. Another noted that it was very hard finding people in his organization. "We'd love to have a 'blue pages' to enable us to start internal social networking," he said, referring to one firm's internal company directory. In addition, several participants noted that their office space doesn't support collaboration. "We need to have many more collaborative workspaces," she noted. A simple assessment of these gaps and some management attention to them could lead to a great improvement in how people are able to collaborate.

4. *Establish principles of behavior.* As noted above, much of the governance of collaboration is based on principles, rather than rules. The most basic principle is transparency, not only of information but also of behavior (Majchrzak 2009). Some focus group companies have already established a code of conduct to govern electronic communication and collaboration, and others are working on one. A big fear is that providing improved communication will enable employees and customers to post negative comments about the organization. One important way of allaying these fears is to eliminate online anonymity. "Anonymity results in bad behavior," said one manager. "With a clear online identity, negativity is quickly found out and is usually self-policed by others in the community." Another noted, "In a business environment where all posts are traceable, abuse is unlikely." As social networking takes hold in our culture, and organizations explore ways they can use it to connect with their customers, they are realizing that establishing rules of etiquette for how to do this is important. "We have a hard and fast rule that if you are using social networking to do business, you must state your company affiliation," said a manager.

Cultural and behavioral practices are changing as a result of collaboration, and agreement is widespread that these will require serious management attention. For example, as staff become empowered to innovate and make real-time decisions, organizations will need to foster increased psychological safety so people don't fear being penalized if they make a mistake (Edmonston 2008). Similarly, work will need to be done to align work management and human resources practices, as well as incentives, if collaboration is to really make a difference (Cross et al. 2005). Finally, as connectivity becomes more pervasive and global, companies will have to develop policies and practices that enable staff to achieve an effective work–life balance. For example, one global firm has developed a small scheduling application to determine the least invasive time to have a meeting across different time zones. Tools can also be used to assist staff with controlling their accessibility and protecting their privacy (Mann 2008).

5. *Gradually move beyond the firewall.* None of the focus group companies was comfortable as yet extending collaboration beyond their firewalls, unless in very tightly controlled circumstances (e.g., with vendors or third-party service providers). Major concerns about risk, privacy, and corporate liability remain. These issues need to be discussed and managed so that the power of collaboration can be realized. For example, one firm's privacy officer is now involved in determining what information can and cannot be shared. Some initial external target groups will include retirees, clients, and business partners. "We are gradually working through our concerns because of the unbelievable power of these tools," one manager said.

Conclusion

Collaboration is a complex concept with uncertain benefits and requires major organizational change. The drive to adopt collaboration is being accelerated by the possibilities enabled by information technology, which support real-time, global communication and anytime, anywhere access to information. In addition, companies are feeling considerable pressure to adopt collaboration technology because of their increasingly widespread use among individuals, many of whom are becoming their employees. There is no question that collaboration will play a major role in how we work and live in the future. However, as we move into this new era, companies are taking their time to determine how best to take advantage of what collaborative technology has to offer. This chapter has identified the major ways companies might want to collaborate and the benefits that are anticipated from each. It has also explored some of the major characteristics and components of collaboration in order to clarify concepts and to distinguish between the work of collaboration, which is a human activity, and collaboration technology, which facilitates it. It has shown that effective collaboration will not result from simply implementing more collaboration software. Instead, it will require a proactive and holistic strategy that integrates business goals and technology potential. At present, all aspects of collaboration and collaboration technology are in their infancy, so it is understandable that many companies are proceeding cautiously into this new world. Nevertheless, the speed with which both technology and practice are moving suggests strongly that it is time for managers to put some collaborative fundamentals in place. Furthermore, IT managers have an opportunity to provide business leadership around collaboration if they can clearly articulate its business potential and benefits, rather than focusing on the technology itself.

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Chapter 14

Social Computing: How Should It Be Managed?[1]

For the past several decades, large organizations have been in the forefront of deploying new technologies, but in recent years some IT managers have noticed that they are no longer on the leading edge of technology usage. With the mutual maturation of the personal computer and the Internet, the "bleeding edge" has been taken over by individuals who are persistently finding new and different ways to use technology for their personal benefit.

At first, it was just a few "geeks" sharing files with each other, but when Napster burst into public consciousness in the late 1990s, the music industry and others were shocked by the rapidity with which a simple innovation was able to undermine an established commercial business model. Although the industry fought back and Napster is no more, it is clear that peer-to-peer computing (P2P) is a force to be reckoned with (Smith and Konsynski 2004). Today, for example, all branches of the entertainment industry are trying to figure out how to deal with this major threat, which few of them saw coming. And most observers believe that this is just the tip of a huge change that is going to hit many different industries (Hinchcliffe 2006).

The power of P2P file sharing to disrupt the traditional business-to-customer relationship is just one of several changes we are now beginning to see in organizations. IT managers are recognizing that the interpersonal computing applications enabled by P2P and the Internet facilitate new ways of working, learning, and collaborating that are foreign to more conventional practices and that these have considerable strategic potential if they can be effectively managed. Evolving from the relatively anonymous sharing of music files, today's P2P applications have become richer and more interactive to enable sharing of photos, videos, bookmarks, opinions, and profiles and to connect friends. Collectively known as social computing, the early buzz has led to prognostications that this technology will fundamentally rewrite the rules of how many industries work (Mayfield 2008). Yet currently, organizations in general do not appreciate the value and strategic potential of social computing, possibly because they are dominated by a kind of tunnel vision that is fixated on technology and information (Brown and Duguid 2000). As a result, organizations often overlook the other resources available to them, especially those on the social periphery. In fact, many see social computing as an enormous time waster (Lombardi 2008).

[1]Smith, H. A., and J. D. McKeen. "Social Computing: How Should It Be Managed?" *Communications of the Association for Information Systems* 23, article 23 (October 2008): 409–18. Reproduced by permission of the Association for Information Systems.

Is social computing simply a social phenomenon trying to justify its existence? Or will it become the basis of future employee interfaces, new types of relationships with customers and suppliers, new ways of working and learning, and new sources of value and knowledge? To address these questions, this chapter examines our current understanding of social computing in organizations and attempts to describe this somewhat fuzzy concept and to provide a brief introduction to the different types of computing that can be referred to by this label. Next, it looks at some of the factors that are driving the considerable hype that is building around it. The next section describes a view of the future organization in which social computing plays a key role and contrasts it with the reality of how organizations are currently using it. Then it presents the challenges facing IT managers who need to balance two opposing views of how organizations should work, and finally it looks at some ways that IT organizations can prepare for a nebulous future in which social computing is at least part of IT functionality.

WHAT IS SOCIAL COMPUTING?

Social computing is the relatively new and broad term being used to denote the hardware, software, and applications that support any sort of social behavior. It is designed to create or re-create "social conventions and social contexts" (Wikipedia 2008) and enable people to use computing devices to interact with one another or communicate through them (as opposed to with the computer) (Bray and Konsynski 2007; Roush 2005). This definition covers a lot of ground, however. Current estimates are that 48 million different social computing sites are available, connecting millions of people in a wide variety of ways (Knights 2006).

Clearly, the rapidly evolving nature of social computing prohibits a comprehensive classification of its types and functionality. Nevertheless, given the sheer scope of this phenomenon, it is essential to attempt to understand this phenomenon and how it is affecting both individuals and organizations. Given that any description of social computing is therefore bound to be incomplete and out of date as soon as it is written, it is hoped that this discussion will elucidate the concepts associated with this new dimension of computing and highlight some ways in which it could affect organizations over the next two to five years.

Broadly speaking social computing is the result of the interaction of four elements:

1. *Cheap connectivity devices.* The ability to connect to the Internet through a variety of relatively inexpensive and mobile devices (e.g., cellphones, Blackberries, game consoles, iPods, and laptops) has made anywhere/anytime connectivity a reality (Roush 2005; Wikipedia 2008).
2. *P2P communication.* Direct connectivity between two or more users, without the

Some Web 2.0 Applications

- Wikis
- Blogs
- Virtual worlds
- 3D user interface/visualization
- Presence awareness
- Instant messaging
- Social networking communities
- Reputation systems
- Collective intelligence systems
- Authoring
- RSS feeds
- Podcasts
- Massive Multiplayer Online Role-Playing Games
- Mash-ups

mediation of an organizational "middleman," has led to an explosion of file and information sharing (e.g., music, porn, videos, VoIP) and created a layer of disintermediated communication that previously existed only through the telephone or by letter (Smith and Konsynski 2004).

3. *Web 2.0 Applications.* Not a technology per se, Web 2.0 is a trend in Web design and application development that is specifically focused on how to exploit the connectivity and communication that are available today to facilitate social relationships and sharing among users (Wikipedia 2008). In contrast to Web 1.0 design, which emphasizes transactions and access to information, Web 2.0 design stresses interaction and mass participation (Raskino 2007). Using the Web as the foundation and modular design techniques (representing a subset of SOA), Web 2.0 applications are outward-facing platforms that provide the basis for collaboration, sharing, and conversation (Smith 2006). Thus for example, a wiki enables multiple people to co-author a document in a very easy-to-use fashion, but by itself it does nothing. Similarly, social networking sites, such as MySpace or Facebook, facilitate interpersonal connections but do not create them. A key characteristic of these applications is that they enable emergent structures and try not to impose preconceived ideas about how they should be used (McAfee 2005).
4. *Computing Behavior.* If there's one thing that everyone agrees on, it's that to take advantage of these new technical capabilities, our computing behavior will have to change. "I expect to see a big thematic change in the way people use technology," states Erik Brynjolfsson, director of the MIT Center for Digital Business (Brynjolfsson and McAfee 2007). Forrester Research Group concurs:

> "Web 2.0 is about specific technologies . . . that are relatively easy to adopt and master. Social computing is about the new relationships and power structures that will result. . . . Web 2.0 is the building of the interstate highway system in the 1950s; social computing is about everything that resulted next." (quoted in Hinchcliffe 2006)

Focus group members have already noticed differences in the behavior of the "millennials" (i.e., those born after 1982) now beginning to arrive in the workplace. As one manager observed, "Millennials blend work and their personal lives more seamlessly." "They find it frustrating to be slowed down by a corporate working environment. They want to work wherever and whenever they want."

The promise of social computing is that technology will fit more naturally into our lives because it will adapt more readily to our locations, preferences, and schedules (Roush 2005). The challenge for organizations is to understand how to use social computing effectively—separating hype from reality and using it to deliver business value through opening up their traditional boundaries to the network and to new ways of working and sharing.

WHAT'S DRIVING SOCIAL COMPUTING IN ORGANIZATIONS?

It's easy for jaded IT managers to dismiss social computing as "just another technology fad." Most companies are approaching social computing very cautiously "because they have been fooled in the past by promises of collaboration tools" (Fontana 2007). As Harvard Business School's Andrew McAfee notes, "[T]here is a long history of

deploying collaboration and having it gather dust" (Fontana 2007). One focus group member cynically called it "the second coming of knowledge management (KM)." Although social computing certainly shares some common themes with KM—collaboration, information sharing, social networking—some significant drivers of this new trend differentiate it and need to be understood by organizations making decisions about what to do with it.

A number of factors contribute to the buzz around social computing. Some are changes that are happening now; others are only hints of changes to come:

- *Today's reality.* As noted above, three of the pieces that comprise social computing—cheap devices, anywhere/anytime connectivity, and Web 2.0 applications—are already here and spreading rapidly. Because of its viral nature and network effects (i.e., the more people who are connected, the more effective the result), social computing is leaking daily into organizations in a variety of forms and is already causing huge headaches for IT managers (Fontana 2007). "Managing social computing applications is like playing 'whack a mole,'" said an IT manager in the focus group, referring to the carnival game. "They just keep popping up; you can't kill them. It's a tidal wave."

  These three components have already had and are continuing to make significant impacts in many industries. For example, trends toward globalization and outsourcing are driving new demands for collaboration in global, virtual teams, more complex sourcing connections, and a deeper appreciation for the value of doing business through a network of relationships (Friedman 2005).

  Similarly, a mobile, customer-facing workforce supported by all the technology of a virtual office is increasingly a reality. This is leading to a need to redefine what work is and where it is done, and it is forcing organizations to make information and applications available wherever they are needed. A natural result is an overlap or blurring of our work and personal worlds. Increasingly, work is done where it is needed. E-mail on the golf course, order entry from a car, or a business document prepared at the cottage are all features of life in the new invisible "information field" in which many people now spend their lives (Roush 2005).

  Finally, there is mounting evidence that changes in computing behavior are having an impact on business. What started with the music industry through file sharing has fundamentally changed the entertainment industry and the ripple effects of this are spreading as companies find ways to appropriate new forms of value through the network (e.g., Anderson 2006) and consumers find new ways to subvert traditional business models. Wikis and blogs are rewriting the rules of corporate communication (Mayfield 2008). For example, 88 percent of the top 100 brands now have a Wikipedia entry, Wal-Mart now has paid bloggers, and online gaming is a $55 billion industry (Mayfield 2008; H. A Smith and McKeen 2007a; Weill 2007). And horror stories of the use of social networking tools making the world aware of product inadequacies haunt many companies (Knights 2006).
- *Tomorrow's potential.* What is still unclear is how new computing behaviors and the capabilities enabled by new technology will affect the nature of work and shape consumer behavior. The demand for social computing tools is already here, thanks to their ease of use, flexibility, low cost, and portability. "In many cases, these tools are better than our expensive and elaborate work platforms," said one manager.

Another noted, "We just implemented a simple texting mechanism to schedule our teenaged employees for work. It was junk technically, but it was very successful because it functioned the way they want to interact and not how we wanted them to communicate" (i.e., through corporate e-mail).

However, companies with a youthful workforce and those with a retail presence may already see the possibilities of social computing, but most are still watching developments from the sidelines (Raskino 2007). "We see limited scope for social computing applications so far," said a focus group manager. "The business cases for these applications are extremely hard to make," another pointed out. Despite a growing recognition that social computing represents some sort of "next step" in computing (Brynjolfsson and McAfee 2007), there is no real understanding of what this might mean for the majority of organizations.

There is documented interest in using social computing as a way to engage employees, customers, and suppliers, which may lead to new ways of innovating. IBM is strongly promoting its collaboration tools as an effective way to generate ideas from a wide variety of sources (see www.collaborationjam.com). Eli Lilly uses it to solve problems by tapping into resource talent pools from around the world (see www.innocentive.com). Cambrian House uses social computing technologies to partially outsource both idea generation and product creation for new software products, while acting as middleman and coordinating activities (Brynjolfsson and McAfee 2007).

Finally, there is significant, though nascent, interest in the use of virtual worlds for business purposes. These worlds (e.g., Second Life), which are still miles from having practical business uses, are attracting interest from companies as varied as Adidas, Sun Microsystems, Reuters, and Toyota (Kharif 2006). Potential uses for this technology include to gain early experience of products and services, to create effective distance learning environments, and to make work more fun (O'Driscoll 2007; Smith 2006).

In short, although social computing is a reality—even in organizations today—we are still in the early stages of its evolution. As a result, it is a challenge for most companies to visualize social computing's potential, let alone recognize its potential impact on how they will be doing business in the future.

WHERE IS SOCIAL COMPUTING LEADING US?

Much more than in the past, we can see that today's technology innovations are engendering a set of complementary innovations in how we work and live (Brynjolffson and McAfee 2007). Convergence of technology so that data and applications can be seamlessly moved from device to device was the first step, and most managers have at least some understanding about how this is making work and technology more portable and accessible, enabling virtual work, virtual teams, work at home, and mobile working. What the next changes will be are less obvious. Predictions rely on the experiences of technology and media companies that are smaller and have been the early adopters of social computing for business, extrapolation from what is going on with social computing and individuals, and of course, the ever-present media and vendor "hype."

Bearing these caveats in mind, we can realistically expect to see several changes in organizations over the next two to five years. These will be more apparent in so

firms than in others and will likely affect some aspects of work more than others (Young and Gomolski 2007):

- *More flexible organizational behavior.* Most social computing applications share the following characteristics:
  - Participation through contribution and feedback
  - Openness in a variety of ways, such as voting, feedback, sharing information, and comments
  - Conversation
  - Community building by enabling those with a common interest to connect and communicate effectively (Mayfield 2008).

  As these behaviors become embedded in organizations, business cultures will increasingly adapt to the expectations of 360-degree feedback and sharing across hierarchical, business unit, and organizational boundaries (Austin et al. 2006).
- *New ways to manage digital content.* There is no doubt that the amount of digital content available is growing geometrically in both sheer numbers and type (Smith and McKeen 2007). Social computing applications offer new ways of searching, managing, and effectively utilizing this deluge. For example, 3D visual interfaces enable users to comprehend up to 85 times more information than the 2D text base search systems (e.g., Google) in use at present (Smith and McKeen 2007). A variety of social computing applications are designed for improved information management. RSS feeds, improved search tools, tagging, blogs, personal home pages, and virtual worlds are just some of the tools that will give information context and make it easier to find and use in the future (Bray and Konsynski 2007; Hinchcliffe 2006; Trebutt 2006).
- *New styles of management.* As noted above, this change is already apparent in many working lives. The focus group noted that, although in the past organizations have forbidden the personal use of such technologies as telephones and the Internet and, now, social computing, the trend is toward an environment where we are always available to both our work and personal lives. This will necessitate a change of management style and metrics. As one manager explained, "[W]e need to focus more on people's outputs. We don't live in a clocking-in environment anymore. We should care about what people deliver and their accountabilities." This suggests that employers will have to trust their staff in situations where they are unsupervised and that employees will have to inculcate organizational values and expectations and be expected to apply them appropriately wherever they are (Smith et al., 2004; Trebutt 2006). The focus group also felt that more attention will also be paid to improving work/life balance.
- *Adaptive organizational designs.* The effect of the above changes will mean a shift in how organizations function. No one suggests that traditional command and control hierarchies will be completely eliminated, yet as organizations become more open and flexible, it will be natural that many traditional organizational boundaries will be broken down and that there will be less structure and greater agility in a variety of areas. These will include the roles people play, which will tend to be situational, rather than fixed; flatter structures with fewer layers of control and more reliance on other forms of control (e.g., deliverables, accountabilities,

ethics, and audits); and the breaking down of traditional internal boundaries between business units (Brynjolffson and McAfee 2007; Raskino 2007; Smith and McKeen 2007b). Similarly, participants pointed out a blurring of organizational boundaries as they do more collaborative projects with partners, suppliers, and clients. For some businesses, or some parts of businesses, this new openness will lead to new and continuously evolving business models and sources of value. Learning how to take advantage of the network for business value is still in its infancy, but for those who can adapt to "business in the wild," learn to use collective intelligence and bottom up innovation, and adopt new and less protective approaches to the management of intellectual property, social computing will be a great enabler (Young and Gomolski 2007).

It is likely that new organizational designs will combine the best of traditional approaches to management and value generation with new control, accountability, and decision-making mechanisms. For example, social computing tools will enable new and different types of decision-making trade-offs between local and centralized bodies. At Zara Clothes, local store managers now tell the company what items people want to wear, and the company makes them (Brynjolfsson and McAfee 2007). The U.S. military is using the same type of networked technology to ensure that relevant decisions are made by local personnel (Smith and Konsynski 2004). Finally, organizations that want to combine innovation with technology will need to develop a macro-level innovation process that balances formal and informal structures to facilitate learning and information exchange while also ensuring projects and companies are successful (Rizova 2006).

Most of the focus group companies currently have no policies governing the acceptable use of social computing and simply deny their employees access to these tools—a trend corroborated by a recent survey (Lombardi 2008). Also, policies are only the first step as organizations will have to develop social governance and etiquette around how such tools are used (e.g., around gossip, "flaming," what can and cannot be shared, etc.).

Forrester Research suggests that, as a result of social computing, we can expect to see three powerful changes taking place in organizations:

- Innovation will move from a top-down to a bottom-up model.
- Value will move from ownership to experiences.
- Power will shift from institutions to communities (cited in Hinchcliffe 2006).

The first shift is entirely likely given the ability of social computing to tap into collective intelligence (Brynjolfsson and McAfee 2007); the second two shifts will probably be much longer in coming, if at all. What is more likely in the near term is that organizations will develop hybrid designs that will take advantage of both the industrial strength processes and structures created in the past two decades and newer, more flexible forms of organizational action. The focus group agreed with many researchers that, although radical change will remain an option for some, it is much more likely that social computing will first be used in more targeted ways that complement, more than they disrupt, tried and true organizational designs (Young and Gomolski 2007; Brynjolfsson and McAfee 2007).

PULLING IN TWO DIFFERENT DIRECTIONS: THE CHALLENGE FOR IT MANAGERS

As is so often the case with new technologies, IT managers feel torn between their everyday reality and the glamorous and dynamic vision of the future as painted by the proponents of social computing. Participants were not so much skeptical of the capabilities of social computing technologies as concerned for how these would mesh with their everyday responsibilities of managing an efficient and effective IT organization. "Social computing is a challenge in our locked down environment," said one. Another noted, "Our information security principles conflict with social computing. There are some things we don't want hitting the six o'clock news." Table 14.1 summarizes the vision of social computing and contrasts it with the challenges it poses to IT management.

Social computing is often seen as "dangerous but seductive" (Trebutt 2006), and the focus group managers agreed. "We're being pulled in two directions. We need to change," said one, "but we also need to protect our corporate assets. We really need to be developing policies for how to do this." They saw their biggest challenge as security and protecting the reliability of the infrastructure they have built up. "If the security issue was addressed, we'd see social computing as much more acceptable," said another manager.

Some other challenges include the following:

- *Short business horizons.* As has often been the case in the past, business leaders have a much shorter time horizon in their thinking than IT and are often not prepared to anticipate or explore new technologies and their implications. Then, when the technology hits public awareness, they want it yesterday! "We have no active

TABLE 14.1 The Challenge of Social Computing from an IT Manager's Perspective.

The Vision	The IT Manager's Challenge
Blurred boundaries	Firewalls
Collaboration and sharing	Intellectual property and privacy protection
Situational applications	Maintaining transactional applications and operational integrity
Mass participation and accessibility	Authentication and authorization
Transient information	Creating a permanent record
Supports social behavior	Supports business behavior
Innovation and creativity	Efficient use of resources
Viral	Secure
Dynamic	Backup
Situational roles	Regulatory accountabilities
Social governance and etiquette	Organizational governance and policy
Collective intelligence; bottom-up innovation	Top-down business strategy
Emergent value	Defined business value based on a business case
Anywhere/anytime connectivity	Controlled communication
Ad hoc applications	Scalable applications

support for social computing," said one manager. "It's very hard for the business to see its value as yet." Yet, in some cases, business users see IT as holding them back because of security and regulatory considerations. "We need to work together with the business to identify the risks associated with social computing and protect our operational processes," said another. "And we need to make sure the decision makers understand what's involved in becoming more open."

- *Resources.* Social computing is touted as an effective collaboration and innovation tool, but using it for this purpose requires support and facilitation. "Our staff is maxed out at present," said a manager. "If we go down this road, we need to commit resources to doing it properly." Even in those companies that are actively promoting social computing applications, this is a challenge. "When we're stressed, we revert to our old behaviors," explained a participant.
- *Changing the culture.* IT managers recognize that organizational behavior must change if the value of social computing is to be realized. However, changing embedded cultural practices is often extremely difficult. Even where there is a strong emphasis on making information and people more accessible, social computing needs a champion to make sure "we don't slip back into our comfortable ways of behaving," agreed the focus group. Some organizations have tried wikis and blogs but have found that the adoption rate is initially high, but the drop off in participation is equally steep. This is consistent with the challenges KM managers faced, which effectively killed this function in most organizations. The question for many (and which remains unanswered) is whether new social computing tools (or "KM lite") will be able to drive the behavioral and cultural changes needed to make the technology effective (Spanbauer 2006).

PREPARING FOR THE FUTURE

Although most large organizations are not yet ready to embrace social computing, Gartner Group expects it will soon start to exploit the principles on which it is based by adapting them to a corporate context (Raskino 2007). And already key vendors have plans to offer corporate-grade social computing tools to the market (Raskino 2007). As a result, organizations can expect to see the hype growing, and IT functions can expect to see their role as protector of the corporate IT asset challenged (Trebutt 2006). Also, as might be anticipated, there will be a range of appropriate responses from "we should have nothing to do with this technology" to fully embracing it (Young and Gomolski 2007).

Literally no one is claiming to understand how social computing will change organizations. "The fallout is not yet clear," says Forrester Research (cited in Hinchcliffe 2006). "There are no best practices as yet," stated another researcher (Konsynski 2007). "The biggest challenge is to make [these] tools useful for business," explained a third researcher (Knights 2006). Nevertheless, the focus group agreed that this is a phenomenon that is not going away and with which companies must come to terms. Thus, most were taking one or more steps to prepare for what social computing might mean for their organizations, such as the following:

- *Experimentation.* Several companies in the focus group had small-scale social computing experiments ongoing in order to gain experience and better understand their implications. These experiments ranged from internal wikis and blogs to a corporate presence in Second Life to support for instant messaging. Probably the

most widely known strategic experiments are IBM's Innovation Jams. The first, limited to its 50,000 employees over a 72-hour period, created a massive blogging environment and used a combination of software and facilitation to develop a new set of corporate values. "The results were very well received by staff," said a company executive, "because they are truly meaningful to them." This success led to two larger Jams, expanded to include IBM's partners, customers, and suppliers. Again, the results were impressive, according to the executive. "We were shocked at the innovative outcomes. There was a real sense of the power of collaboration" (Smith and McKeen 2007a).

- *Practice evolution.* As noted above, very few companies have developed any policies around how and where social computing should be used, with the exception of forbidding it completely (Lombardi 2008). Many focus group managers felt that one goal of social computing experiments should be to help evolve practices and eventually corporate policies for its use. "We need to do this on a case by case basis," said a manager. "This is the only way we'll figure out how we need to manage it effectively. However, we have to build a box around these applications so that we can protect our other assets." Several firms had already established codes of conduct for Internet usage and felt that these could be adapted to social computing. Adherence to good privacy and security practices were also felt to be foundational components for successful social computing.
- *Vision.* Most of all, it is important to work toward a common vision for social computing in a particular organization. Some of the factors that will affect this vision include the demographics of the workforce and the company's customers; geographic location and mobility of the workforce, company partners, suppliers, and customers; the degree to which the industry is regulated; the importance of creativity and innovation in the business; the organization's capability for change; and management's willingness to champion, source, and support new ways of working (Bradley 2007; Brynjolfsson and McAfee 2007; Knights 2006; Raskino 2007). "To understand how social computing will deliver value, we need to help people do what makes sense for them, without being prescriptive," said a participant. A key component of the vision for social computing will be the role IT will play. Will it simply provide a secure computing platform, tools, backups, and hardware and then get out of the way (Trebutt 2006)? Or will the organization expect social computing to be integrated into its current processes and applications in a more thoughtful way (Spanbauer 2006)? Or will social computing simply be just another set of tools in IT's kit (Brynjolfsson and McAfee 2007)? Each of these approaches will have "regenerative, innovative and destructive potential for today's IT" (Young and Gomolski 2007). A focus group manager pointed out that this is a normal position for IT to be in. "IT is constantly changing. Most IT jobs in our organizations didn't exist a decade ago," he stated. "Right now, we need to get a better handle on how social computing will change IT and what skills and capabilities we will need to support it, and this requires some thoughtful visioning."

The three key questions companies are asking about social computing are these: What is the value of these tools? How can we pick the right ones? What is the management playbook for using them effectively? (Fontana 2007) At present, there are no right answers, so organizations are going to have to find out for themselves through experimentation, practice, and visioning.

Conclusion

Social computing may be "inevitable" according to the focus group, but its use in organizations and its impact on how technology is used to deliver value is still far from clear. The predominant sentiment is probably one of "watchful confusion" as both business and IT managers try to grasp how to adopt and utilize technologies that continue to mutate rapidly and are integral to how a growing segment of our society wants to live and work. Social computing is definitely a powerful set of technologies, tools, and behaviors, but whether or not that power will eventually be perceived as a "good" thing is yet to be seen. What we do know is that, more than ever before, the impact of social computing will result from the deep and close connections that are created by the interaction of humans and technology. It would, therefore, behoove IT managers and other leaders to expand their horizons to include a greater understanding of social psychology. IT managers have been saying for some time that "I[I]t is people, not technology, that are our biggest challenge." Yet, somehow technology is always preeminent. Maybe the advent of social computing will be the catalyst of a more personcentric approach to technology, one in which technology use will eventually become "like wearing eyeglasses; the rims are always visible but the wearer forgets she has them on—even though they're the only things making the world clear" (Roush 2005).

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