Chapter 8
E–Collaboration Tools and Technologies for Creativity and Innovation Enhancement

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ABSTRACT
IT–endowed collaboration within and between groups will catalyze creativity that, in turn, will facilitate organizational innovation and reduce barriers and inefficiencies amongst people working together. This chapter describes the challenges of supporting creativity and innovation through e-collaboration technologies and tools and proposes how future technologies and tools can help to mitigate issues arising from working virtually. The authors discuss how future advancements in communications and information sharing technologies will help to make virtual team location transparent, while improving access to common work processes and information repositories. They call for technology design researchers to include evaluation of how collaboration environments will be used by virtual teams in extant individual, team, organizational and cultural contexts. In this way, the implications of a technological advance on the creativity and innovation resulting from virtual teamwork can be assessed and understood, and generalized to appropriate settings.

INTRODUCTION
The use of technology to enhance individual or team creativity and innovation has become a popular topic among business practitioners and academic researchers. Discussions of creativity and innovation usually take on one of two flavors: either they develop out of a need to “improve” the work processes or output of a team or organization, or they reflect a new technological advance whose designers purport will change the way individuals or organizations operate. Attempts to connect the
two are rare: designers are more likely to assume than evaluate how a technology or tool might effectively address the way things are, or could, or should, be accomplished in organizations.

These new technologies are endemic to virtual teams, whether because of the demands of the global economy or because new technologies enable them to work at higher levels of efficiency and effectiveness. In this chapter, we reflect on the nature of creativity and innovation in today’s organizations, and focus on how collaboration technologies could and should be developed to assist virtual teams in their work.

**CREATIVITY AND INNOVATION**

Incremental change and adaptation are no longer sufficient for achieving growth in today’s world, nor are they good enough to ensure a company’s survival. Product, process and relational innovation are necessary for companies wishing to compete in the global economy. Organizational innovation depends on a company’s ability to produce creative ideas that lead to breakthroughs in what they sell or how they sell. Successful innovation is hard, and companies invest heavily in training, technology and other means to support working arrangements that encourage and reward creative and innovative employees (Ford and Gioa, 1995). Researchers and practitioners still struggle to better understand how to enable, manage and measure creativity and innovation, even though both creativity and innovation have been the subject of organizational study for decades (Amabile, 1982; Burns and Stalker, 1961; Isaksen, et al., 1993).

Reacting to the need for better technology-based resources to support organizational innovation, information systems researchers have also explored how to design software for influencing creativity. The importance of creativity support systems is evident in the fact that the lead article in the first issue of *Information Systems Research* proposed and tested design guidelines for systems to support user creativity (Elam and Mead, 1990). More recent work on how collaborative environments support creativity and innovation marries elements of organization theory with information systems design (Laudel, 2001).

Both creativity and innovation are difficult concepts to define. Innovation can result from creativity, but the two are not interchangeable. Many organizational researchers agree that creative ideas must be novel, and they must produce value (Ford, 1995). An innovation results from creativity plus successful implementation of the creative idea (von Stamm, 2003). Creativity can be seen as the first step in an innovation process (West, Sacramento and Fay, 2006) and can be considered a precondition linked to human talent (Yusuf, 2009). Innovation may pertain to new products, services, relationships with partners, or production and administrative processes, or it may enable a company to reach the marketplace more quickly than its competition (Damanpour, 1995; Moore, 1998). In simple terms, creativity is a necessary but not sufficient condition for innovation.

Organizations innovate; individuals create. In modern organizations, individuals rarely produce creative ideas in seclusion (Yusuf, 2009). Instead, individuals contribute to work groups or teams. The modern organization is challenged to provide a supportive working environment and reward structure to work groups so that they are more likely to produce ideas leading to competitive innovations. Individual success becomes measured by the success of the projects worked on, and employees soon learn the value of their own intellectual capital as a key component of career success (Ford and Gioa, 1995). It is up to the organization to determine the best team makeup and supporting infrastructure that will lead to both creative ideas and successful innovations.

In many cases, the most creative or innovative ideas are generated when a mix of internal and external team members combine their complemen-
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