

Information Technology and Virtual Communities

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INTRODUCTION AND BACKGROUND

Information technologies have made virtual communities possible. A community is a gathering of individuals who share something—be it knowledge, shared interests, a common purpose, or similar geographic surroundings. Traditionally, most communities are bound by time and space such that interaction and communication takes place in a same-time, same-place setting (Johansen, Sibbet, Benson, Martin, Mittman, & Saffo, 1991; Moffitt, 1999). The ready availability, high performance, and rapid diffusion of information technologies that enable communication across time, geography, and formal organizations now permits the development of communities that exist solely in the interaction activities made possible by IT (Igbaria, 1999). In essence, the community exists “virtually” through communication over the Internet (e.g., in cyberspace, as per Lee, Vogel, & Limayem, 2003) rather than taking on physical form at a specific time and in a specific geographic location.

There is little consensus among scholars and practitioners on a single definition of a virtual commu-

nity (Lee et al., 2003), and several different terms are often used to label aspects of this phenomenon: online communities, communities of practice, virtual teams, e-learning, asynchronous learning networks, virtual classrooms, virtual learning, video-based information networks, discussion groups, and online forums. Table 1 provides representative sources for many of these alternative categorizations. However, shared characteristics of virtual communities are the following.

- Communication and interaction are primary activities of the community.
- Community interaction occurs through computer-mediated or computer-based communication.
- The content and process of the interaction is controlled by the community members.
- The community space is not geography or time bound, but is located in cyberspace through the networks and computers of individuals and the Internet.

Table 1. Virtual community examples

Type of Virtual Community	Source
community health and education	Gurstein (2000) Kodama (2001)
e-learning, asynchronous learning networks, virtual classrooms, virtual learning, learning community, online learning environment	DeSanctis, Fayard, Roach, & Jiang (2003) DeSanctis, Wright, & Jiang (2001) Hardaker & Smith (2002) Haynes & Holmervik (2001) Hiltz (1994) Hiltz & Wellman (1997) Holmervik & Haynes (2000) Piccoli, Ahmad, & Ives (2001)
online communities, communities of practice, virtual community	Blanchard & Markus (2004) Gurstein (2000) Rheingold (2000) Werry & Mowbray (2001) Williams & Cothrel (2000)
virtual teams	Lipnack & Stamps (2000) Powell, Piccoli, & Ives (2004) Townsend, DeMarie, & Hendrickson (1998)

This article will provide an overview of both the information technologies commonly used to sustain the virtual communities and representative examples of several kinds of virtual communities. Critical issues regarding the virtual-community phenomenon will also be presented.

INFORMATION TECHNOLOGIES

There is no single information technology but rather a convergence of several information technologies, the expansion of technology capacities, and human ingenuity in applying the burgeoning technological capabilities toward organizational and interpersonal uses that has precipitated the popularity of virtual communities. A virtual community exists because of the Internet and networks that enable the transmission and receipt of messages among people using computers for communication purposes. The most important technological components of a virtual community are (a) the Internet and the World Wide Web (WWW); (b) telecommunications and network hardware, software, and services; and (c) personal-computing hardware and software.

The Internet and the World Wide Web have evolved from specialized applications for scientists and researchers to a global information infrastructure easily accessed by the general public (Leiner et al., 2002). The Internet as we know it today owes its origins to ARPANET (wide-area network developed for the U.S. Defence Advanced Research Project Agency) and 1960s network researchers who were intent on proving the viability of connecting computers together to enable social interaction and communication (Leiner et al.). Today's Internet is a foundational "network of networks" that easily connects people worldwide with computing and communications technologies. The World Wide Web, in contrast, is a global hypertext system that uses the Internet as a means of providing information. Tim Berners-Lee (1998), inventor of the WWW concept and the first browser client and server in 1990, explains the difference between the Internet and the Web as follows:

The Web exists because of programs which communicate between computers on the Net. The Web could not be without the Net. The Web made the

Net useful because people are really interested in information (not to mention knowledge and wisdom!) and don't really want to have to know about computers and cables.

Telecommunications and network hardware, software, and services provide the link between individual computers and the larger Internet capabilities¹. Telecommunications and network hardware include routers and gateways that connect different networks and permit interoperability between different computers (Rowe, 2001). Advances in hardware capacities and capabilities (e.g., ready availability of broadband connections to the Internet) have facilitated the rapid diffusion of software applications that permit the sharing of data, voice, images, and video across the Internet. U.S. research shows that the number of broadband subscribers continues to increase over time (Webre, 2004), with asynchronous digital-subscriber-line (ADSL) connections growing at a rate comparable to cable modem connections (Federal Communications Commission, 2003). From a telecommunications services perspective, the growth of Internet service providers for the individual consumer and the expansion of networking groups within IT departments in organizations speak to the continuing importance of the network connection to the Internet.

Together with the network connections, ownership of personal-computing technologies continues to grow at a positive rate (Shiffler, 2004), which influences one's ability to join virtual communities. Current personal computers (PCs) now come equipped with more main memory, disk space, bus capacity, and processor speed than the largest mainframe computers used by network researchers in the 1960s (Laudon & Laudon, 2004). The PC's graphical user interface contributes to an individual's navigation of the operating system and software applications (Laudon & Laudon). Both the rate of PC ownership and the higher performance capacities of the PC units add to the increasing interest in virtual communities (Igbaria, 1999; Lee et al., 2003; Werry & Mowbray, 2001). PC software such as electronic mail and instant messaging also permit greater communication between individuals in cyberspace.

Virtual communities rely upon the reliable availability of the Internet, networking components, and personal-computing technologies to provide the space for individuals to congregate for a specific purpose.

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