Virtual Teams: An Information Age Opportunity for Mobilizing Hidden Manpower

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Introduction
A task force team (TFT) has long been considered one of the most powerful organizational tools for coping with complex, interdependent, and transient tasks in a turbulent and uncertain business environment. There is nothing novel about the idea of assembling a group to work toward the solution of a specific problem, then dismantling it when the task is completed. In fact, task force teams have tackled a variety of diverse organizational problems related to new product development, project management, industrial safety, labor and union relations, external public relations, and so on.

A TFT is commonly used to deal with temporary problems and opportunities that cannot be handled as effectively or efficiently by the existing organizational structure. It is a form of horizontal contact designed to solve problems of multiple departments, made up of representatives from each of the affected departments (Cleland, 1996; Galbraith, 1971). A TFT is usually disbanded once the task is completed.

It is well known that traditional TFTs have several limitations and problems due to organizational and technical causes.

1. A traditional TFT cannot be organized when the members are physically dispersed (Basil & Cook, 1974).
2. The number of participants in a TFT should be limited to reduce the cost and time of meeting (Harper & Harper, 1994).
3. Friction between outsiders and regular members of the TFT occurs (Martin, 1976; Wicksberg & Cronin, 1962).
4. A traditional TFT is vulnerable to security problems because it is based on face-to-face meetings (Ware, 1984).

The virtual task force team is an evolving concept, consisting of a group of people who collaborate closely even though they are separated by space (including national boundaries), time, and organizational barriers. This paper attempts to answer the following questions:

• How can a virtual TFT overcome these limitations and solve the problems of the traditional TFT?
• What types of information systems (IS) or management support systems (MSS) technology can be used to support virtual task force teams?

The Virtual TFT: An Avenue to Overcome Limitations
The virtual TFT is a subset of an evolving concept of the industrial virtual enterprise. According to Hardwick and Bolton (1997), and industrial virtual enterprise is defined as:

A temporary consortium of independent member companies coming together to quickly exploit fast-changing world-wide product manufacturing opportunities. Industrial virtual enterprises assemble themselves based on cost-effectiveness and product uniqueness without regard for organizational sizes, geographic locations, computing environments, technologies deployed, or process implemented. Virtual enterprise companies share costs, skills, and core competencies that collectively enable them to access global markets with world-class solutions their members could not deliver individually.

The virtual TFT is characterized by the following:
• Transcendence — A virtual TFT can tran-
scend time, distance, organization size, and technologies because network technology allows team members to communicate with one another. Recent developments of telecommunication technologies such as the National Industrial Information Infrastructure Protocols (NIIP) will permit manufacturers, suppliers, and sellers to be interconnected so that they can work as if they were part of the same enterprise (Hardwick & Bolton, 1997).

• Infinity — A virtual TFT can have an infinite number of participants. Network technology enables the participants to share information in a data server.

• Anonymity — A virtual TFT enables the members to keep their participation anonymous and even to conceal the existence of the team itself. These characteristics can significantly reduce the limitations and the problems of the traditional TFT.

How Can a Virtual TFT Overcome the Limitations of a Traditional TFT?

(1) Traditional TFTs cannot be organized when the members were physically dispersed. A shortcoming of traditional TFTs includes the necessity of face-to-face meetings with no technology available to support a remote member (Basis & Cook, 1974). Thanks to computer-mediated communication technologies such as e-mail, computer conferencing systems, telewriting systems, multi-media e-mail, and group support systems, a virtual TFT can communicate and get things done regardless of physical location. These virtual teams equipped with information technologies are invalidating the old 50-foot-rule — "If people are more than 50 feet apart they are not very likely to collaborate" (Lipnack & Stamps, 1997). In their latest book, Lipnack and Stamps present case studies to this effect. Sun Microsystems, for example, decided to change their successful culture that had relied on "hero mentality" and create cross-boundary virtual teams. "Sun Teams." The company-wide "Sun Teams" successfully improved customer satisfaction.

(2) The number of participants should be minimized to reduce the cost and time of meetings. Infinity, which is one of the characteristics of network technology, enables virtual organizations to mobilize a large number of employees in a virtual TFT. According to Lipnack and Stamps (1997), NCR Corporation assembled a virtual task team of more than 1,000 people at 17 locations to develop a next-generation computer system. With high-speed telecommunication networks and information systems technologies, the virtual task force team completed the project on budget and ahead of schedule.

(3) The friction between outsiders and regular members of the organization occurs. This problem can be solved by organizing the TFT anonymously. Friction between outsiders and regular members is attributed to the estrangement felt by outsiders. If the outsiders do not know who else is involved in the TFT, or even the existence of the TFT itself, they cannot make any response to the TFT.

(4) A traditional TFT introduces the problem of information security, because it is based on face-to-face meetings. Not only does the face-to-face meeting enable members to share information having no relation to the given task, but it also enables outsiders to have information they should not have. The virtual TFT can keep the confidential information from leading out of the team. Although some confidential information may be exposed to outsiders, it is possible for the server to track the information flow.

Guidelines on Creating Virtual Teams and Virtual Organizations

Several forces are accelerating this trend toward virtual organization. They include the shrinking of product life cycles, increasing global competition, and the need to respond quickly to changing customer demands, among others. The percentage of U.S. companies that have work-at-home programs has more than doubled in the past five years, from 7% in 1988 to 18% in 1994, and New York-based Link Re-sources, which tracks telecommuting and virtual-office trends, has found that 7.6 million Americans now telecommute, a figure that’s expected to swell to 25 million by the year 2000 (Loebbecke & Jelassi, 1997).

Organizing business activities virtually can evolve from a small scale, a virtual team within a company, to a large scale of creating a virtual organization. The first is the telecommuting stage placing employees in remote locations. The next step is the front-line model, which shifts sales location in the field. The last is called the cyber link model, which dynamically links several different organizations such as
manufacturers, suppliers, subcontractors, sellers, and others to achieve the goals of the virtual corporation (Crandall & Wallace, 1997).

There are several important steps when creating virtual teams and virtual organizations. Needless to say, it is critical for top management to make the commitment to this new paradigm.

1. Defining the core competencies of your organization.

As described by Hardwick and Bolton (1997), “Virtual enterprise companies share costs, skills, and core competencies that collectively enable them to access global markets with world-class solutions their members could not deliver individually.” The concept of core competencies can be better understood through the work of Porter (1980, 1985), who focuses on two questions: How does a company create and sustain a competitive advantage in cost or differentiation using value-chain analysis? And how does a company conduct an industry and competitor analysis as a prerequisite to creating the competitive advantage? Core competencies are the superior abilities that produce goods and services that are difficult for competitors to replicate. Every organization must concentrate on its core strengths, rather than attempting to excel at everything. However, focusing on core competencies may no longer be sufficient to ensure survival. Virtual enterprises are a way of bolstering your organization’s weaknesses. Apple Computer, McDonald’s, Corning, Toyota, and Marks & Spencer have utilized virtual organizations that concentrate only on their core competencies (Ogilvie, 1994). Many other companies are trying to transform their organizational structure into virtual organizations to prepare for the 21st century business environment. IBM, AT&T, Travelers, Pacific Bell, Panasonic, J.C. Penney, Gerling Group, and SOFTTEK are among the firms embracing the virtual-office concept (Loebbecke & Jelassi, 1997; Greengard, 1994).

2. Integrating a company’s operations with those of other enterprises.

The next step is to integrate your company’s core competencies with those of other companies to create competitive advantages in your industry via creating and sustaining a cost advantage, to create a successful product differentiation strategy, to be a technological leader, or to harness interrelationships among vertically or horizontally-related industries. Many companies are creating virtual relationships to outsource their noncore resources from a foreign or nonunion supplier. Some companies such as Lockheed are forming project-by-project virtual task force teams within the company and then disbanding the virtual teams at the end of the project. For example, a Japanese company, Honda, whose core competency is small motor production, has a wide range of products from motorcycles to lawn mowers. Corning’s core competency is on technology innovation, and its manufacturing operations are performed by more than 30 joint ventures. Virtual companies such as Honda and Corning share or outsource everything but their competitive advantage. (Ogilvie, 1994).

3. Developing the technology to connect and support virtual teams and virtual organizations.

 Creating a virtual organization requires computer and communication systems that connect separate individuals and organizations across time and spaces. As shown in Table 1 (adapted from Nakamura et al. 1996), a plethora of telecommunication systems are available for this purpose.

What are the critical success factors behind the success of the company-wide “Sun Teams” and the NCR’s virtual team? Telecommunica-

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tion systems such as desktop conferencing, videoconferencing, and telewriting play the pivotal roles. According to Nakamura et al. (1996), Fujitsu of Japan has successfully used videoconferencing to develop positive interpersonal relations between conference attendees. Although the telecommunication systems like videoconferencing cannot substitute for face-to-face communication, they can facilitate the development of commitment to get the job done among TFT members, thereby reducing tensions and any forces of resistance.

4. Developing the operating culture

The next step is to develop the operating culture that allows for the use of virtual teams and deals with resistance. Organizational culture is the binding force that connects each virtual team member. It includes recognition and reward systems and value systems. Virtual teams interact through the computer-mediated communication technologies without (or rarely) seeing each other. One of the factors making the virtual organization successful is trust, when only virtual interaction is possible. Many point out that the virtual context constrains or even impedes the development of trust (Jarvenpaa, et al. 1998). Further, they suggest a number of strategies to reinforce trust to improve the team process outcomes — proactive behavior, empathetic task communication, positive tone, rotating team leadership, task goal clarity, role division, frequent interaction with acknowledged and detailed responses to prior messages.

Other research suggests that although traditional face-to-face teams reported greater satisfaction within group interaction processes, the exchange of information was no more effective than that in virtual teams (Wakentin, et al. 1997). Further, it is concluded that “Managers who wish to introduce these technologies (virtual teams) into the workplace should capitalize on the beneficial differences inherent in computer-mediated communication and mitigate the negative differences . . . This requires that managers become familiar with strengths and limitations of the relevant technologies.”

Conclusion

We have discussed an evolving concept, the virtual TFT, as a subset of the virtual organization to effectively deal with a specific task that cannot be done either as efficiently or as effectively through traditional task force teams. The virtual task force team consists of individuals who collaborate closely even though they are separated by space (including national boundaries), time, and organizational barriers. The use of computer-mediated communication technologies and other information technologies such as distributed database management systems, groupware, electronic meeting systems, e-mail, and the Internet can provide a workable, reliable, and flexible base systems for creating the platforms for virtual TFT.

Dr. Eom, who is on the editorial board of the Journal of Global Information Management, has published more than 45 refereed journal articles; his research interests include decision support systems, expert systems, and global information systems management. Mr. Lee is a research assistant and graduate student in the MBA program of Southeast Missouri State University.

REFERENCES


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