

# Strategies for Effectively Managing Geographically Dispersed Projects

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## Abstract

Projects increasingly involve multifunctional alliances, joint ventures and consortia, which extend across wide geographic areas. Dispersed and virtual project teams are often temporary in duration and involve differing levels of experience and expertise. Such teams are mostly results driven by assignments and deadlines. These teams must be unified in spite of their geographic dispersion, individual differences, and often multinational composition. While project reporting, tracking and control can be effectively supported with IT tools, sophisticated and flexible leadership styles and proven protocols are needed to effectively manage project missions and the human aspects of successful project completion. Based on a field study and current research of best-in-class project management practices, the paper identifies success factors for coordinating geographically dispersed project teams, gaining and maintaining commitment, verifying actual status, and maintaining project sharing and ownership. The paper provides specific insight into the shared leadership and IT challenges for building unified project teams that are geographically separated. The study was conducted over the last two years and includes 22 projects in 7 companies.

## Introduction

Teams and teamwork are increasingly becoming virtual because of the global and cross-geography nature of business transactions, strategic alliances, networked structures of organizations, outsourcing and dispersed customer relationships. While consulting and high technology firms have long used virtual teams in working with clients, more industries and firms are turning to such arrangements, especially with international, project-based work. Managing virtual teams effectively differs from traditional teams because time, distance, and dependence on communication technologies in decision making adds complexity to interactions. Understanding the factors that contribute to this complexity is a first step in effectively managing virtual teams' effectiveness. This paper summarizes results from the authors' field based consulting during 1997-1999. We address three questions in this paper: (1) What are the barriers that hinder virtual teams from achieving their goals and work objectives? (2) What are the drivers that help virtual teams succeed? and (3) What are recommendations for effectively manage virtual teams?

## Virtual Teams: Definition and Variations

Virtual teams can be defined by the following characteristics:

- Cross functional and matrixed in which core team and extended contributors are separated by and interact across space and time boundaries,
- The team is united by a shared set of work objectives and/or urgent decision demands,
- Team membership may or may not be known; it can be fluid and shifts based on work priorities,
- The virtual space itself becomes a holding environment for the team's deliverables and memory (Moorehead and Kivowitz, 1999).

There are different forms and degrees of virtuality in teams. For example, virtual teams can be

formed and work in the following dimensions: (1) same time and same place, (2) different time and same place, (3) same time and different place, (4) different time and place, (5) anytime and anyplace (Middleman and Briggs, 1999). Virtual teams may also be initially formed in one of these arrangements, e.g. same time and same place, but function and expand to any or all of the other types. There are also varying degrees of complexity that members and leaders in virtual teams must manage. Complexity in interactions generally increases in the above categorization from the first to the fifth dimension.

Virtual teams can also differ on (1) clarity and definition of team membership identification, relationships, and organizational boundaries (from highly defined to blurred definitions), (2) duration of project and task assignments (from immediate need to years of duration), and the (3) number of customer requests and orders (from one long-term customer project to several short-term customer needs being served). It is helpful for members, contributors, and leaders of virtual teams to understand the degree of complexity to be managed before forming the team. The 22 project teams in 7 companies we studied were generally high complex and worked across the five time and space dimensions identified above.

## **Purpose and Method**

The purpose of this paper is to identify major barriers and drivers virtual teams experience in effectively reaching their stated goals. We use suggested success factors from previous research (Duarte and Synder, 1999) as benchmarks for anecdotally evaluating our results. Recommendations based on our research for strengthening drivers for goal obtainment are also identified.

The study is based on field consultations and investigation of 22 project teams in 7 companies from 1996 through August 1999. It summarizes and evaluates the data collected from consulting observations, interviews, and written evaluations from project leaders and team members. The sample includes project managers from different businesses including computers, aerospace, government, pharmaceutical, and management consulting. The size of the seven companies varies from annual operating budgets of \$2 million to \$18 billion. The seven companies over 500 projects annually, varying in size from a few thousand to several millions.

Success factors for virtual teams (Duarte and Synder, 1999) are listed in Figure 1. [Figure 1 here] These factors and related competencies presented below were used to organize and compare the results of this study against these criteria.

The data collection, evaluation and summary are qualitative in nature and rely on content analysis (Krippendorff, 1986), self-report (Spector, 1994, 1996), and observation. While our results are not, nor are they intended to be, statistically verifiable, our approach and findings present a qualitative approach toward identifying hypotheses that can be addressed by further research.

## **Success Factors in Virtual Teams: A Typology**

A successful virtual team would, ideally, exemplify the seven success factors (Duarte and Synder, 1999) identified in figure 1, i.e. select supportive leadership, establish a trusting organizational culture, ensure team-leader and team-member competencies, develop human resource policies that support virtual teams, create appropriate standard organizational and team processes, ensure the use of state-of-art collaborative communication technologies, and develop relevant on-the-job training, development and

education. We have organized related competencies under each success factor as shown in figure 2. It is interesting to note from these figures that many key competencies and skills are similar to those listed in literature for project teams in general (Cleland, 1993, 1994). Major competency differences in virtual teams are more a matter of emphasis; for example, selecting the appropriate collaborative electronic technology to perform and complete a task in a disperse team can make the difference between succeeding or not. The success factor competencies can also be used by managers as benchmarks when organizing and running virtual teams.

In the following section, we summarize the barriers to effective team performance from our study. We reference from figure 2 the corresponding success factor that relates to each of the barriers.

## **Barriers to Effective Team Performance**

The twenty-two virtual teams we observed and evaluated over the two-year period completed their projects and met their stated objectives. However, not all did so optimally or without, in several instances, significant tensions, mistakes, and problems. Five teams fell behind on schedule and budget and almost lost their customers' orders. Two teams had to reorganize mid way through their projects; both managed to recover. The following barriers are based on our identification of recurring themes from project managers and team members self-reports, interviews, and field observations:

### **1. Poor Preparation Of Protocol And Conflict Resolution Methods**

A reoccurring problem teams experienced was their lack of having a clear communication protocol and agreed on conflict resolution methods. During and after the project, managers and team members identified breakdowns in their virtual communications. This problem was attributed to several causes, a major one being the lack of a clearly stated protocol, i.e. methods for handing on-line communication problems and conflicts. Even the six project teams whom we observed as having clear protocols for sharing and following-up their communications, experienced some confusion on how to solve conflicts that still occurred. Because of time and space distances, pressures and deadlines, lack of clear instructions for sharing information can lead to serious decision delays and resultant hard feelings. Those teams who lacked appropriate communication standards and protocols had to take time to create common understandings for communication exchange, which also increased pressures on task completion. Success factor 5 (Standard Organizational Team Processes) in figure 2 addresses this issue. An effective protocol is established at the beginning of the team's formation, has acceptance and understanding by all members, is easily accessible in an on-line file by everyone, and be used to instruct new members as the project progresses. This protocol should anticipate the different types of communication exchanges, processes, and requirements needed to effectively reciprocate messages, interactive reports, and bring closure to these exchanges. Conflict resolution methods and protocol should also be part of this file with detailed procedures members can follow with each other to clarify misunderstandings and disputes in order to enhance clarity, effectiveness, and efficiency of communications.

### **2. Project Leadership Tensions Based On Role Conflict And Power Struggles**

Because virtual teams are separated, project managers cannot communicate everywhere, all the time, especially on-line. Emergent and shared leadership is a “given” in these situations. Project managers and members who either had little or no experience in virtual teams and those who had difficulty sharing responsibility, authority, and control experienced role conflict and power struggles. For example, in two teams, a project manager in one and a senior consultant in another, sustained conflict with other team members over approval procedures and “sign off” requirements was experienced. In both instances the conflicts were not based on project goals, objectives, or substantive process procedures. In one case, the protocol was not clear on “sign off” procedures for sending a report (in this case) on to the customer. Lack of clear communication protocols discussed above was one underlying cause of these conflicts. Also lack of adequate training on shared leadership roles and responsibilities in virtual teams was another contributing barrier to effective collaboration. Success factors 3.1 (Team-Leader Competencies) and 3.2 (Team-Member Competencies) are relevant to these topics and behaviors.

### **3. Lack Of Trust From Poor Accountability And Responsibility Among Team Members**

Lack of trust occurred in almost every team during the span of the projects. A reoccurring reason offered for lack of trust was individuals not taking responsibility and accountability, or “ownership”, to ensure the completion or proper “hand off” of certain tasks. As a result, other team members felt burdened to perform an unfair share of workload in such cases. Concentrating on establishing a clear project team vision, mission, and norms at the beginning can solve this problem. The problem of lack of assumed accountability and responsibility is also aggravated in virtual teams when new members are recruited along the way without “signing on” to team norms and agreed on process. This problem area is addressed in success factor 1 (Leadership Support) and 2 (Organizational Culture) in Figure 2.

### **4. Misuse Of Appropriate Communication Technology For Intended Purposes**

Another problem area identified across several teams was misuse of appropriate communication technologies given the purpose, expectation, and nature of the anticipated result. Most of the teams we observed had access to asynchronous groupware (E-mail, workflow applications, database sharing and conference--non-real-time, group calendars/schedules, web pages and bulletin boards). All had the following synchronous groupware capability (audio conferencing, desktop and real-time data conferencing, some had video conferencing). E-mail, one of the most widely used electronic communication technologies, was many times inappropriately “overused” in attempting to solve problems without answers and negotiating technical and interpersonal conflicts. In these instances video with voice, face-to-face meetings, and EMS (electronic meeting system with voice link) are useful for these more complex communication exchanges. (Nunamaker, Briggs, Mittleman, Vogel, and Balthazard, 1996-7). In some instances team members did not have access to appropriate groupware. However, a large number of members reported that they and members of their team either did not understand how to access and use the “right” technology for their collaborative writing projects, or they did not take the time to do so. Misuse of appropriate technology aggravates communication flow and meeting deadlines. Conflict often results over relationships, roles, and responsibilities. Understanding the use of which technology to use for what purpose and having access to the technologies can prevent problems and potential crises. Success factors 6 (Collaborative Electronic Communication Technology) and 7 (Training & Development) are pre-project planning benchmarks that should address the issues and set appropriate process standards.

## **5. Lack Of Sufficient Face-To-Face Meetings**

Lack of face-to-face meetings is listed as a separate factor, although it is a subset of the above barrier, since members from most of the teams identified the need for face-to-face meetings before and during the project to “get a sense of” who they were working with and for. Many noted that face-to-face meetings are especially important for core team members if not for every member. In three instances in this study, major project delays and unnecessary escalating conflict could have been avoided had the project managers called face-to-face meetings. Anecdotal data from our discussions with other virtual team experts who have written and consulted in this area agree that face-to-face meetings when necessary enhance performance and morale. This is especially the case when other technologies cannot solve complex problems; or, when a team needs to take advantage of a high stakes, time compressed opportunity, which requires an information rich exchange among a large number of members.

## **6. Information Hoarding: Observed And Perceived**

Information hoarding was noted in several teams by members who either perceived or experienced others withholding information to enhance self-importance or from inexperience on virtual teams. Since information is the major-- in some instances the only-- commodity and resource in virtual teams, hoarding is unacceptable. Establishing norms based on trust (success factor 2 in figure 2) as well as orienting and training members in information sharing (success factor 7) are ways to prevent information hoarding.

## **7. Lack Of Project Support From Suppliers, Partners, And Organization**

Team members from half the projects we studied identified lack of support from either their own organization or from external stakeholders. For example, in some instances suppliers and partners were not informed of the role and responsibility of the project team. Decisions involving multiple approvals from external officers and supervisors were delayed. Two project deadlines were pushed back as a result. Virtual teams often work with and between different groups internal and external to their own organization.

These partners and stakeholders are, in effect, a temporary part of the virtual team since their support and involvement is key to delivering the product, service, information, or decision. Gaining and sustaining the support of these stakeholders is the responsibility of the project sponsor and leader. (See success factor 1, Leadership Support, in figure 2).

## **8. Breakdowns With Technology Infrastructure And Resultant Slow Assistance**

Another barrier that caused delays and frustrations in almost every team was breakdowns with technology infrastructures. For example, servers that went down at crucial times, power failures, and laptops that did not function properly. Members were as frustrated, if not more, with the lack of attention and slow response from their organizations or other stakeholder groups in not offering timely and professional assistance in solving technical problems. This problem is a leadership, administrative, and infrastructure issue, which must be addressed and planned before the project begins, then serviced throughout the project. Several team members suggested having members of the technology service groups participate in the team charter and norms phase of the project with other team members. Success factors 5(Standard Organizational Team Processes), 6(Collaborative Electronic Communication Technology), and 7(Training & Development) can address this very important area.

## **9. Time Management: Underestimating Collaborative Tasks And Products**

Newcomers and veterans of virtual teams experience problems of underestimating time, resources, and effort required for a team to complete a collaborative task electronically. One task as seemingly simple as gaining consensus on a five page report was completed by three professionals in one project team we observed over three continents. Planned completion time was a weekend. Actual completion time was six calendar days. The team did not plan on contingencies of each member; for example, multiple member parallel tasks, breakdown of equipment or software glitches, and lack of appropriate groupware for editing and comparing notes. This problem area is addressed in success factors 3.2 (Team-Member Competencies) and 6 (Collaborative Electronic Communication Technology).

There were other barriers and problems areas noted in this study, e.g. cultural miscues and miscommunications due cross-national differences in language and assumptions about work. There was also confusion of some members regarding organizational rewards after project completion, and a lack of understanding of how projects fit into career plans. The nine barriers identified above represent those that reoccurred most frequently and that caused greatest perceived and actual hindrance to team performance and project completion. In the following section, we identify the drivers to high team performance, which we observed, and which members and managers identified as the most prominent.

### **Drivers to High Team Performance**

Based on our field observations, content analysis of post project completion interviews, and self-reports from project managers and team members, the following factors across the teams were identified as facilitating team goal obtainment and performance:

#### **1. Qualified Project Team Members And Emergent Leaders**

Those teams (18 of the 22) that excelled in meeting deadlines and delivering quality products in our study gave credit to qualified team members who served as emergent leaders and well as responsible followers. We are aware that this finding is subject to attribution error, i.e. people attribute their successes to their own abilities and effort and failure to external factors like luck, equipment, or someone else. However, based on strong project results and the surprising frequency of this response across teams, we observed strong face validity of this success driver. It should also be noted that project leaders and managers were included in this facilitator.

## **2. Quick Ramp-Up Ability By Core Team And In-Coming Members**

A salient feature of virtual project teams is the shifting and fluid nature of membership. Members and managers in this study noted the quick “ramp-up” ability of core team and in-coming members to get work done, meet deadlines, and share expertise required by emerging tasks as an asset. This driver could also be a function of selection of the “right” professionals (success factor 4 in figure 2), of establishing high trust and collaborative team norms (success factor 1), and by bringing on people with highly skilled competencies (success factor 3.2 Team-Member Competencies).

## **3. Responsible Risk Taking And Sharing**

Taking and sharing risks to obtain strategic information to complete customer requirements on time was a repeated theme stated for project success. One of the youngest team members in the study, a 23 year old woman, noted that she would probably never have succeeded in helping complete a key business document had she contacted the executives face-to-face in a traditional project team. She believed cultural and other behavioral biases would have prevented her and the executives contacted from sharing confidential information so openly. Her team encouraged her to take on the task for their high visibility report. Because of the open and trusting team culture (success factor 2)) and team-member competencies (success factor 3.2), she move forward and succeeded.

## **4. Flexibility, Willingness To Admit Errors And Change**

Most of the project professionals we interviewed, observed, and who completed self-reports offered flexibility and the willingness to admit errors, then change behaviors, decisions, or assumptions to get work done “the right way” as a key factor in their team’s performance. In virtual teams where face-to-face meetings and contact is a rare commodity, demonstrating flexibility is a core competency for collaboration. Hiring and selecting project managers and members into virtual teams who have these characteristics are part of success factors 3.1, 3.2, and 4 in figure 2.

## **5. Sense Of Purpose And Commitment To Results**

Establishing a mission and norms that clearly identify the purpose of the project along with the leader and members’ commitment to results sets the cultural tone for the project. Members and managers repeated these themes as valued success factors across teams. As one team member stated, “We always had to remember what our purpose was to keep focused.” The project leader sets high performance expectations around the purpose and then models both (success factors 1, figure 2). In this study, emergent team members modeled these behaviors frequently and avidly.

## **6. Need For High Achievement**

The need for achievement and a sense of accomplishment was also a major theme offered as a motivating factor for individual team members. Virtual teams are basically results oriented since their collaborative efforts are rewarded for the end product. It is, therefore, not surprising that high achievement and accomplishment are motivating factors. We did note in this study that those team members who expressed that their motivations were more affiliative than achievement oriented did experience more

frustration when having to work without the support of others. Career and professional working needs and motivations are important factors to consider for those responsible for recruiting and hiring members to virtual teams.

## **6. A Sense Of Urgency**

Professionals in this study also reported that having a sense of urgency to meet important deadlines was part of their success as a team. Since many of the projects were customer focused, team members expressed an obligation to provide results on time. Their work also had a purpose for an organization, a client, a customer as well as a time commitment.

## **7. Technological Support And Assistance**

Finally, most members believed they received the technological support and assistance they needed most of the time. Several members noted that technology support could always be better. Others stated that as long as they received the necessary training and state-of-art equipment and groupware, they were satisfied. In virtual teams this factor is one of the most important in getting work done. Competencies in success factor 4 are key ingredients to virtual team success: well-funded, respected and experienced systems staff; reliable, effective system installation and maintenance; well-maintained, responsive corporate network; consistent standards and tools; equal access and skills in using technology; and resources to buy and support state-of-art technology.

In the following section, we discuss key requirements for setting up a virtual team and other recommendations for virtual team success, in addition to the success factors already presented in figure 2.

### **Recommendations for Starting and Building a Virtual Team**

The first steps in starting a virtual team include the following

- Team sponsors & stakeholders
- Team charter
- Selection process of team members
- Team orientation
- Team processes and protocol

Identifying a team sponsor involves selecting a person(s) who has the credibility, power, access and ability to leverage team resources, help identify and obtain the support of essential stakeholders in getting the project successfully launched, delivered, and closed. The sponsor should be committed to the goals and processes of the team in order to provide support throughout the process. In virtual teams, the sponsor is particularly important since gaining entry and support of dispersed stakeholders has added complexity.

The team charter is the vision, mission, values, norms, and goal of the project team. The sponsor along with the selected project manager helps set the criteria for the team member selection (Weiss, 1992).

The core team then drafts the charter and with the help of the sponsor get appropriate sign-offs and resources for project launch. In virtual teams, the charter becomes the psychological and working contract

for the team. It is the touchstone and authority for recruiting members, resolving conflicts, and creating the all-important protocol for collaborative problem solving and communicating across time and space.

Selection of team members in virtual projects requires selecting members who, in addition to having competencies in the subject areas needed for project contribution, have high achievement orientation, are trained and comfortable working with electronic technologies, share information freely, work from a strong sense of purpose and results, have quick emotional and technical mistake recovery time, and who can quickly adapt to changing situations, new and anonymous members.

We have already discussed the need for virtual team to create and orient their members to trust oriented cultures. Trust is the “glue” that holds the virtual team together. It is also important to repeat that each team must agree on, establish, and install on-line protocols that explain in detail the “who, what, when, where, why” along with contingencies for writing, responding, editing, including people, handing-off tasks, reports, shared assignments, responsibilities, and other collaborative work products. Since virtual teams live and die by their capability to communicate collaboratively in dispersed, time compressed and exposed mediums, standard communication procedures and structured protocols are required.

## REFERENCES

Anderson, W.O. “Human Resource Development Challenges in a Virtual Organization,” in IEMC Proceedings: Managing the Virtual Enterprise, Vancouver, B.C.: IEMC, 1996.

Apgar, M. “The Alternative Workplace: Changing Where and How People Work,” Harvard Business Review, May-June, 1998, 121-139.

Blundell, D. “Collaborative Presentation Technologies: Meetings, Presentations, and Collaboration,” in D. Coleman (Ed.), GroupWare: Collaborative Strategies for LANs and Intranets. Upper Saddle River, N.J.: Prentice Hall, 1997.

Cleland, C., ed. Global Project Management Handbook, New York: McGraw-Hill, 1993. Also, See C. Cleland, ed., Project Management Strategic Design and Implementation, New York: McGraw-Hill, 1994.

Davidow, W.H. and M.S. Malone, The Virtual Corporation: Structuring and Revitalizing the Corporation for the 21<sup>st</sup> Century. New York: HarperBusiness, 1992.

Deborah, K. and N. Snyder. Mastering Virtual Teams. San Francisco: Jossey-Bass, 1999.

Fried, Y., K. Rowland, and G. Ferris (1984), “The Physiological Measurement of Work Stress, A Critique,” Personnel Psychology 37, 585-615.

Handy, C. “Trust and the Virtual Organization,” Harvard Business Review, 1994, 73(3).

Hartzler, M. and J. Henry. Team Fitness: A How-To Manual for Building a Winning Work Team. Milwaukee: ASQC Quality Press, 1994.

Henry, J. and M. Hartzler. Tools for Virtual Teams. Milwaukee, WI: ASQ Quality Press, 1998.

Hightower R.T. and C. Hagmann, "Social Influences on Remote Group Interaction," Journal of International Information Management," 1995, 4, 17-32.

Igbaria M. and M. Tan (Eds.), The Virtual Workplace, Hershey, Pa.: Idea Group Publishing, 1998.

Jarvenpaa S.L. and D.E. Leidner, "Organization: Trust in Virtual Teams," Harvard Business Review, 1998, 76(3), 21.

Krippendorff, Klaus, Content Analysis: An Introduction, Sage Publications, 1986.

Mittleman and B. Briggs. "Communication Technology for Teams: Electronic Collaboration," in E. Sunderstrom and Associates, Supporting Work Team Effectiveness: Best Practices for Fostering

High-Performance. San Francisco: Jossey-Bass, 1998..

Moorehead, L. and B. Kivowitz. "Virtual Teaming," a presentation at Bentley College, Waltham, MA, June 1, 1999.

Nunamaker, J. Jur., B. Briggs, D. Mittleman, D. Vogel, and P. Balthazard, "Lessons from a Dozen Years of Group Support Systems Research: A Discussion of Lab and Field Findings," Journal of Management Information Systems, Winter, 1996-7, 163-207.

Turner, P. S. Turner, S. Green, and P. Mayne, "Collaborative Notebooks for the Virtual Workplace," in M. Igbaria and M. Tan (Eds.), The Virtual Workplace, Hershey, PA: Idea Group Publishing, 1998.

Spector, P. "A consideration of the validity and meaning of self-report measures of job conditions," in C. Cooper and I. Ronbertren (eds.) International Review of Industrial and Organizational Psychology, John Wiley, West Sussex, England, 1992.

Spector, P. "Using self-report in questionnaires in OB research, comment on the use of a controversial method," Journal of Organizational Behavior, 1994, vol.15: 385-392

Townsend, A.M., S.M. DeMarie, and A.R. Hendrickson. Are You Ready for Virtual Teams? HRMagazine (September, 2996): 123-126.

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## **Figure 1**

### **7 Success Factors of Virtual Teams**

1. Strong leadership support of virtual teams
2. Organizational culture based on trust
3. Team-leader and team-member virtual competencies
4. Human Resource policies supporting virtual teams
5. Standard organization and virtual based team processes
6. Use of electronic collaboration and communication technology
7. Training and on-the-job education and development

**Figure 2**  
**Success Factor Competencies for Virtual Teams**

<p>1. Leadership Support</p>
<p>a. Set high performance expectations  b. Model behaviors of effective technology use  c. Gain stakeholder and customer support  d. Supply training and technology resource allocation</p>
<p>1. Organizational Culture  a. Create high trust  b. Create organization – suppliers – partners high trust  c. Develop teamwork – collaboration norms  d. Value diversity  2. Team – Leader Competencies  a. Virtual coaching, feedback, performance management  b. Selection and use of communication for collaborative technologies  c. Develop and transition team members  d. Build, maintain trust  3.1 Team-Member Competencies  a. Working knowledge of project management methods  b. Virtual networking abilities  c. Effective use of electronic collaborative technology  d. Set personal boundaries; time management  e. Interpersonal awareness</p>
<p>4. Human Resource Policies</p>
<p>a. Career development systems for virtual team members  b. Reward systems for virtual team members  c. Support of virtual work arrangement  d. Reward results</p>
<p>4. Standard Organizational Team Processes  a. Agreed-on standard technical processes used organization-wide  b. Agreed-on team standard processes used organization-wide  c. Adaptable process when necessary  4. Collaborative Electronic Communication Technology  a. Well-funded, experienced systems staff  b. Reliable, effective system installation and maintenance  c. Well-maintained, responsive corporate network  d. Consistent standards and tools</p>

- e. Equal access and skills in using technology
- f. Resources to buy and support state-of-art technology

4. Training & Development

- a. Available methods and access to just-in-time, web-based training
- b. Mechanisms for virtual sharing (lessons learned databases)

Source: Based on D. Duarte and N. Synder (1999)