
Parviz F. Rad
and
Ginger Levin
Achieving
Project
Management
Success
Using
Virtual Teams

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DEDICATION

To My Older Siblings
With whom I have had virtual family ties for most of my life
PFR

To My Husband, Morris Levin
With whom I have had collocated ties for much of my life
GL

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PREFACE

Virtual project teams have undergone accelerated growth during the past decade, primarily thanks to the development of web tools for handling project communication. Notwithstanding, there is not an abundance of books that provide formalized project procedures specifically for virtual teams. Even then, many of the available books cover virtual teams in service industries within the context of telecommuting for operations.

Admittedly, there are some similarities between the conduct of virtual projects and virtual work across ongoing operational activities. There are additional similarities between virtual project teams and teams of traditional, collocated projects. Therefore, the portrayal of virtual project teams should start with these commonalities and then deal with specific features of global projects and virtual project teams. Accordingly, some of the traditional project management procedures and techniques will need to be modified, and some new procedures will need to be developed altogether, in order to handle the somewhat unique attributes of the virtual project team. Further, to be realistic about the applicability of a virtual team to a particular situation, there is a need for a comprehensive treatment of the advantages and disadvantages of virtual project teams.

The availability of such a full-perspective book will prepare project management professionals for the dissimilarities between traditional and virtual project teams, while highlighting those team features, and process features, that remain unchanged when one moves from a traditional project to a virtual project. This book describes the full set of attributes of virtual project teams in an easy-to-read format. It covers the categorization of the features of traditional project teams and virtual project teams by equating or contrasting those attributes, as the case may be. The introductory chap-

ter highlights the need and motivation for global projects, which in turn have been nourishing the growth of virtual project teams. Beyond the introductory chapter, Chapters 2 and 3 of the book enumerate the similarities and dissimilarities between traditional and virtual project teams. Chapter 2 describes the quantitative features, or things-related features, of virtual teams. Chapter 3 describes the behavioral features, or people-related issues, of virtual teams. Chapter 4 presents several instruments that can be used to determine the behavioral characteristics of individual team members and the team as a whole. Chapter 5 describes a five-level model called the IDEAL model for assessment of virtual teams. The model defines these levels by sophistication of the team's performance. This chapter also presents tools and techniques for assessing, or inferring, the maturity of virtual project teams. The final chapter of the book deals with professional responsibility and a formal code of conduct as they relate to virtual project teams. Issues addressed in this chapter are individual integrity, professional growth, and appropriate respect for intellectual diversity.

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Downloads available for *Achieving Project Management Success Using Virtual Teams* consist of sample project and team charters and instruments to assess the effectiveness of a team meeting, team member attributes, motivation, collaborative leadership, project success, and team maturity.

1

INTRODUCTION

There has been a marked increase in the number of companies that regard themselves as project oriented. Consequently, so has there been an increase in the recognition of the impact of successful projects on the profit–loss status. Therefore, there is a heightened pressure to assure that projects are successful in terms of deliverable results, cost, and delivery date. Global projects with virtual teams have emerged as vehicles by which the cost and duration of projects can be reduced while maintaining a reasonable control on the quality and scope of projects. As a result, there are financial and operational incentives to develop an infrastructure that is friendly to virtual projects. This friendliness will be manifested by strategic imperatives to formulate a customized set of procedures and guidelines specifically for the virtual projects of the organization. Further, the globalization of business has resulted in greater interest in a more comprehensive suite of the best practices of project management.

Through the use of virtual teams, managing organizations by projects has become the reality, because teams and their associated projects are no longer limited by physical boundaries. The fundamental change is that, with the virtual team as an option, geographic location is no longer the primary context in which to define and pursue business opportunities in support of strategic goals and competitive objectives. Managing organizations by projects is a philosophy based on the principle that strategic goals of the corporation can be achieved through the planning and execution of a series of projects that are clearly defined and carefully implemented. If a policy of managing by projects is adopted, then a project mind-set permeates the entire spectrum of strategies of the company. Therefore, best practices of project management principles can be applied even to

those undertakings that, because of physical boundaries, previously were not considered a unified and distinct project and thus were not subject to traditional project management procedures. As a result, the basic definition of project scope, cost, and duration will become the guiding light for staffing any form of effort that requires the planning and execution of a sequence of defined tasks that are to be performed by resources of the organization (Ferrilla, 1997). This might sound like stating the obvious, but some organizations do not follow this simple test to identify project-oriented work. The philosophy of managing by projects involves a major transference of focus, particularly for an organization that only occasionally undertakes projects, typically as part of a major program. In the management-by-projects approach, projects and project management are regarded as assets to the organization and as critical elements of the organizational success. In this approach, project management is accepted as the way for the organization to accomplish all of its goals, not just some of them.

When the organization is following a management-by-projects approach, everyone's work is viewed within the context of managing and successfully completing specific well-defined projects. In this environment, there is a goal-oriented frame of reference, and projects are used as the key tool to deliver products, to support organizational change, and to foster improvements in effectiveness and efficiency. In a manage-by-projects environment, by contrast with a traditional environment, projects are not considered in isolation from other work; rather, projects are viewed as essential for the survival and growth of the organization. Since, under these circumstances, projects often permeate many segments of the organization, a greater significance is placed on enterprise resource management. The increased significance is due to the fact that, in the traditional environment, each project is executed singularly with little regard to other projects that are under way in other areas.

The interrelationship between projects, and the pervasive nature of projects within the organization, has been described as a web of simultaneous projects (Dinsmore, 1997). The comprehensive portfolio of projects would include projects that develop and fine-tune corporate strategy, projects that focus on operational improvement, projects for organizational transformation, and projects for traditional development. In a manage-by-projects environment, scheduling of the individual project components is no longer the top priority, although it is an important issue. The challenge for the Project Management Office (PMO), or other centralized coordinating body, is to ensure that the right resources are assigned to each project team when they are needed, while maintaining a comprehensive balance of the organizational resource pool.

If the organization has primarily, or exclusively, utilized traditional teams for previous projects, the progress monitoring systems, if there were any, are dependent on face-to-face reporting and diagnosis. Therefore, under these circumstances, the progress of a virtual project would not be measurable and may not even be visible. Consequently, the success or failure of a virtual project would become an event that either delights or disappoints management, as the case may be, but remains unpredictable nonetheless. Notwithstanding, it is logical to expect that with proper planning, and with specific attention to the unique features of work in the virtual environment, organizations would be able to nurture cohesive virtual teams that conduct successful projects on a regular basis. At the other end of the spectrum, if virtual teams are not planned and supported properly, their failure would be far more devastating and drastic than would have been the failure of a traditional team.

The increasing use of the manage-by-projects concept and the widespread use of virtual teams for project work will ultimately depend on the intensity of the organizational desire to maintain a healthy balance for all project resources, or the motivation to finish all projects on time, and on the desire to deliver the projects in a cost-efficient manner. With the acceptance of virtual teams as a viable option, resources will no longer be limited to just those people who work in a single location. Virtual teams will afford the organization the flexibility of combining the goals of individual projects with the needs of the entire organization. Consequently, virtual teams will become the tool by which project deliverables, project cost, and a balanced resource pool are aligned with strategic objectives of the enterprise.

There is no question that the opportunities presented by virtual teams outweigh the challenges in terms of efficiency, a large pool of resources, and immediate access to those resources. Probably the most significant advantage of a virtual team is that the resources of a virtual project organization can be deployed quickly and cost effectively. However, in order to provide a healthy and nurturing environment for the virtual teams, significant organizational changes must be made in favor of the specific needs of the virtual teams. If the organization does not have a comprehensive PMO, the adoption of virtual teams might be an appropriate occasion to establish a PMO (Rad and Levin, 2002). However, if the organization already has a PMO, then modifications may need to be made in its features to accommodate virtual teams. For example, if face-to-face standards are employed, PMO personnel will not be able to provide training, consulting, and mentoring to project personnel with whom they cannot have a traditional meeting. Probably the most significant items of change are the new and modified procedures that replace face-to-face procedures in handling

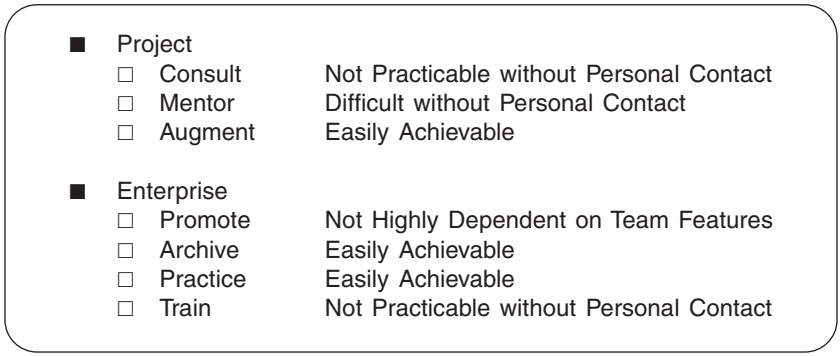

Figure 1.1 PMO Functions for Virtual Projects

project functions. In general, all those PMO functions that deal with things issues of a project can be easily modified for a virtual team. However, those functions that deal with people issues, such as mentoring or training, will need innovative and unusual approaches in order to be effective in virtual teams (Figure 1.1). Other areas that would need significant, but subtle, changes are those that deal with communication, conflict management, progress monitoring, and brainstorming. It should be highlighted that traditional procedures must be maintained and enhanced because traditional teams will still continue to be present in organizations. In fact, the availability of both types of project delivery modes will afford the organization the option of selecting the most cost-effective form of implementing each prospective project.

One of the interesting features of virtual projects is that they allow organizations to form joint ventures for specific short-term purposes. In this scenario, a lead organization creates internal and external alliances with other organizations. The alliances are based on the determination that each of these organizations possesses unique competencies that are considered the best in its own class for building specific products, or delivering services, in the shortest possible period of time. More than likely, these alliances will be based exclusively on virtual relationships because the required skills might not be contained solely in the lead organization. The skills will be contained in hybrid groups of individuals who might be from different organizations, who might be located in different geographic areas, and who might never meet face to face during the life of the project. The virtual team, formed for the purposes of such an alliance, might draw resources from competitors, customers, and suppliers. The purpose of this team is not longevity but rather to bring specific, high-quality products to

market in the most expeditious manner. Once the project is completed, the alliance, or the virtual team, can be disbanded very quickly and efficiently. Therefore, in a way, the objective of this virtual team, not much unlike any other project team, is to arrive at the point when the team will be dissolved in a graceful and yet expeditious manner.

With the increase in the number of companies that have offices and plants around the world, many projects would become a multilocation virtual team. The project team might be a cross-disciplinary team, or the team may be composed of two separate departments, such as production and research. Organizations are redefining themselves as they optimize strategies and resources across borders in order to respond to competitive business pressures. Therefore, the dynamic nature of the transformation of global project implementation policies might become complex and even chaotic (Brake et al., 1995). More so than traditional teams, the virtual team project resources can be selected based on the person who is best suited for the project, because the selection is independent of his or her location. Such freedom in team member selection and having the most appropriate skills at the disposal of the project manager will result in attractive cost and schedule efficiencies. With this kind of careful preplanning and proper resource matching, a far more efficient project team will emerge. Thus, organizations can implement a project team response in situations where a co-located team might be too expensive. Team formation does not involve relocation costs, and occasional technical experts can be added to the team regardless of their location and without the need for travel expenses.

Another motivation for the use of virtual teams and global projects is the incentive for a lower total cost for the project deliverable. The exchange rate between two different currencies that are potential providers of a particular project resource might make a resource in the country with a favorable exchange rate appear to be exceptionally low priced. Buying power of the salary for the same skill level of a certain discipline might be the same in two different countries, although this is not always the case. Thus, additional savings will be gained if the buying power of the skill favors a particular location. This lower cost consideration has been one of the major reasons why many system development projects of U.S. corporations are conducted with global teams drawn from resources residing in Asia, Eastern Europe, Central America, and South America.

Thus, the primary efficiencies of virtual teams come from selecting the most skilled and/or the lowest price of a given resource, because the project manager has access to a large portfolio of resources available, albeit individual resources are in different locations. Another attractive

feature of a virtual team is the ability to select people who have access in their locations to sophisticated technologies that are desirable to the goals of the project, particularly if these technologies are not available in other locations. Thus, in a virtual team environment, enlarging the resource pool increases the probability of selecting people of higher competence and fosters the use of more relevant equipment, both at attractive costs. As Juhre (2001) notes, at times when skilled technical resources are in demand, global staffing becomes a critical success factor for enterprise projects.

Given that it is likely that the location of virtual team members might literally span the globe, team members in different locations can take turns conducting activities that require constant attention. Such continuous work can be accomplished in a hand-off arrangement. This will result in unusual efficiencies in terms of resource utilization and faster project completion. Tasks such as progress monitoring, data collection, and testing can be performed around the clock. Team performance will create the appearance of what is commonly known as a three-shift, round-the-clock operation, even when the project has only one shift in operation at any given location. If all documents are maintained in a soft-copy fashion using agreed-upon tools, documents can be passed easily for review and enhancements at the end of a shift from one team member in one geographic location to a team member who is beginning his or her day in another location. If, for example, the virtual team has team members from the United States, Europe, and the Pacific Rim, then the organization can expect round-the-clock teamwork to occur, particularly for tasks that need continuous attention and/or rapid implementation.

1.1 FEATURES OF VIRTUAL TEAMS

A number of names have been used to describe virtual organizations and virtual teams, including spider webs, modulars, clusters, learning networks, perpetual matrices, spinouts, third-millennium groups, virtual organizations, boundaryless organizations, postmodern organizations, alternate officing, extended enterprises, flexible manufacturing networks, distributed global work teams, turbo task forces, autonomous work groups outside existing organizational structures, and virtual factors (Guss, 1997). Regardless of the name assigned to the organizational feature that supports virtual project activities, it is clear that organizations must be sensitive to the needs of the virtual projects, which in turn will become a major component of the enterprise revenue enhancement.

Unless one uses the description of the project work packages to describe the virtual team, the concept of a virtual team is somewhat difficult to define, partially because different scholars focus on different aspects of the team. Parker (1994) defines a team as a group of people with a high degree of interdependence geared toward the achievement of a goal or the completion of a task. Katzenbach and Smith (1994) define the team as a small number of people with complementary skills committed to a common purpose, performance goals, and approach, for which they hold themselves mutually accountable. Mayer (1998) defines the virtual team as a team that is composed of people who are distributed across buildings, states, and countries. Generally, virtual project teams transcend distance, time zones, organizational boundaries, national borders, and continental entities. Such a team would assemble for a specific project and then disband when the project is finished. Delisle et al. (2001) describe the virtual team as a collection of task-driven members behaving as a temporary group, whose members are separated by geographic or temporal space. Notwithstanding the specific definition in use, a project team is the basic unit of performance for most organizations, particularly for those that have adopted the manage-by-projects approach. This definition would hold for traditional as well as virtual projects.

There are indications that virtual project organizations are the next form in the evolutionary chain of organizational structures (Guss, 1997). In 1998, Mayer noted that the virtual organization, or the virtual corporation, is the model for corporations in the future. Only a few years later, that vision has become an accepted reality for many organizations. A salary survey of project management professionals indicated that virtual teams and global projects transcend the boundaries of multiple companies, governments, and cultures. The results showed that 21% of the respondents worked on a project involving multiple states or provinces, and 15% worked on projects involving multiple continents (Project Management Institute, 2001). One of the reasons for this transformation is that customers, suppliers, and employees are no longer in the same city but rather are in different time zones and continents. It is highly likely that in the coming decade, most project management professionals will work on virtual project teams for at least some part of their duties.

It is fair to say that, partly as a result of the evolution of virtual teams, the project management culture is undergoing a rapid and significant transformation. However, it is intriguing that, while the concept of the virtual team is a major strategic tool for enlightened and forward-looking organizations, minimal information exists concerning how to effectively nurture such a team. Since the usage of virtual project teams is increasing,

and more and more people work in virtual project teams, the profession of project management will need to make appropriate adjustments in its practice as it works to formulate novel approaches to managing projects (Project Management Institute, 1999). Many of the modifications in procedures and policies deal with people issues, such as communication, conflicts, trust, and that elusive concept referred to as team spirit.

In virtual projects, as in traditional projects, teams are responsible for the work that is needed to deliver the desired product or service. A virtual team is regarded as a project-focused group, just like its traditional counterpart. Team membership might be stable, or it might change on a regular basis, again much like its traditional counterpart. Members of a virtual team may be from the same organization or from different organizations, as the circumstances warrant. The most important differentiating feature between virtual and traditional teams is that the members of virtual teams are not in a collocated environment. It is entirely possible that virtual team members will never meet, at least not in the traditional sense. Thus, the virtual project and its geographically dispersed team require processes that are different from traditional projects, in which team members are co-located.

There are two basic modes of implementing a project with a team that is located in many different locations. The first mode is to divide the

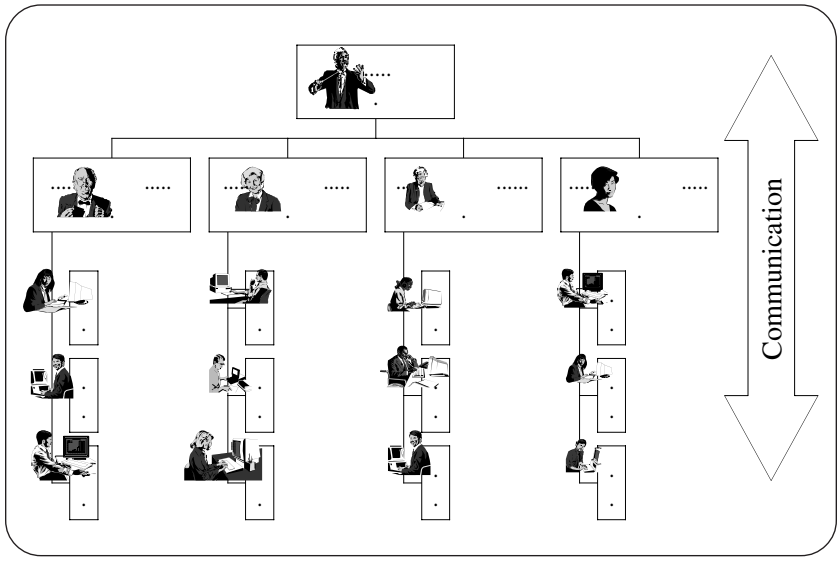

Figure 1.2 A Distributed Project

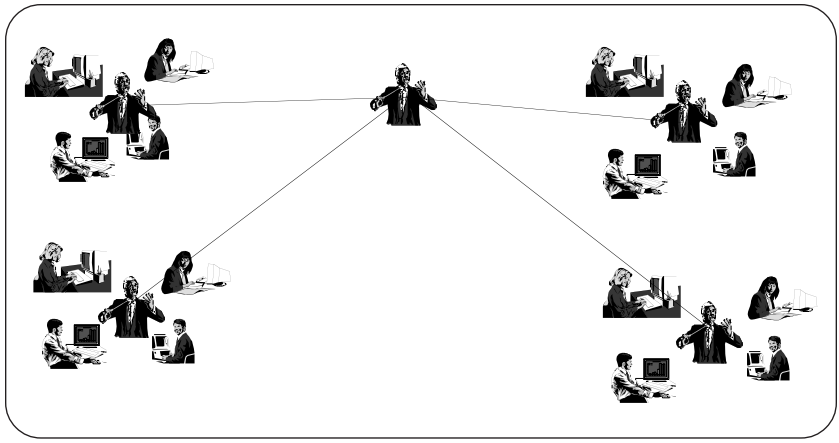

Figure 1.3 Four Teams

project into several identifiable work packages and then assign each work package to a separate team that will design, plan, and implement that specific work package. This form of implementation is not unlike a subcontracting schema in which the general contractor simply serves as the clearinghouse and integrator, but the different components of the project are implemented and fabricated by separate teams that reside in different companies and different locations (Figure 1.2). Usually, there is a project manager for each of these work packages, particularly if these multiple teams reside in separate organizations or if the work is formally contracted to an outside organization (Figure 1.3). As a result, there could actually be four separate teams, each pursuing its own compartmentalized objective. Members of each team would probably be unaware of the expertise, and the contributions, of the members of the other teams. This implementation mode fits the description a virtual global project only partly.

However, if the project were to be planned and implemented by a single team whose members are located in different areas, then the team fits the purist definition of a virtual team. In such a team, the task assignment is conducted on a member-by-member basis, and the resource allocation and schedule adjustments are conducted on a member-by-member basis, but across the entire project (Figure 1.4). Here, it is not necessary to have a project manager for each of the components because the team is working directly with the project manager. The important distinction is that in this model all team members work as one collective unit. In a truly virtual team, the same team member orientation is conducted for all team members. Further, team communication will extend to all team members,

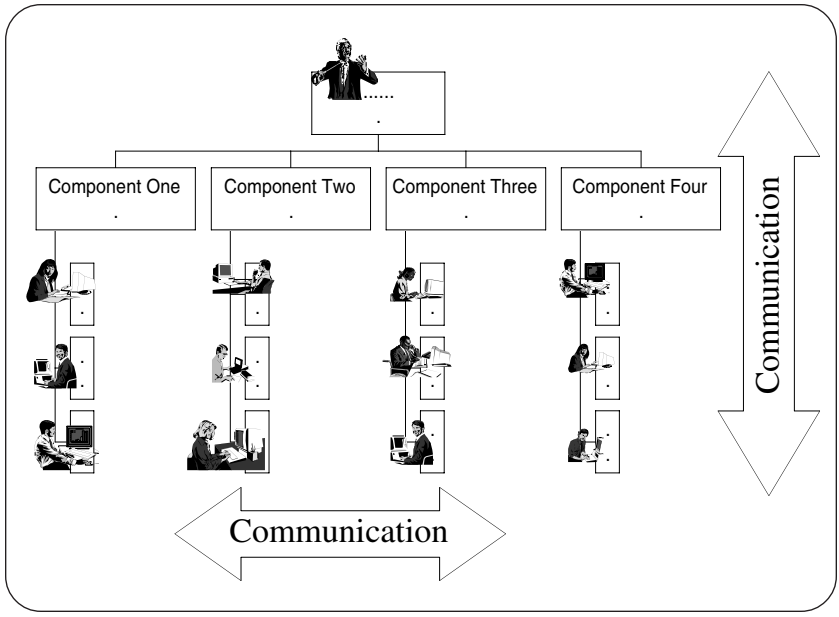

Figure 1.4 A Virtual Project

and all team members are collectively committed to the entire project. Under this set of circumstances, the team members will be fully aware that they are part of one single team that works collaboratively on all aspects of the project (Figure 1.5).

1.2 MANAGEMENT OF VIRTUAL TEAMS

The project manager of a co-located team is clearly the central control of the project as signaled by an array of physical status symbols visible to those who are in close proximity to the project manager. As such, he or she might become the principal project spokesperson to the project sponsor and to internal and external stakeholders who are in that location. Thus, in a traditional project, the project manager tends also to be the one, and the only one, who provides leadership for the project. However, in a virtual project, leadership is typically shared among team members based on the specific task at hand, location, and each team member's area of expertise. In a virtual team, the project manager may not be in the same geographic location as the sponsor or the customers. Therefore, liaison with the sponsor or customers might have to be performed by team mem-

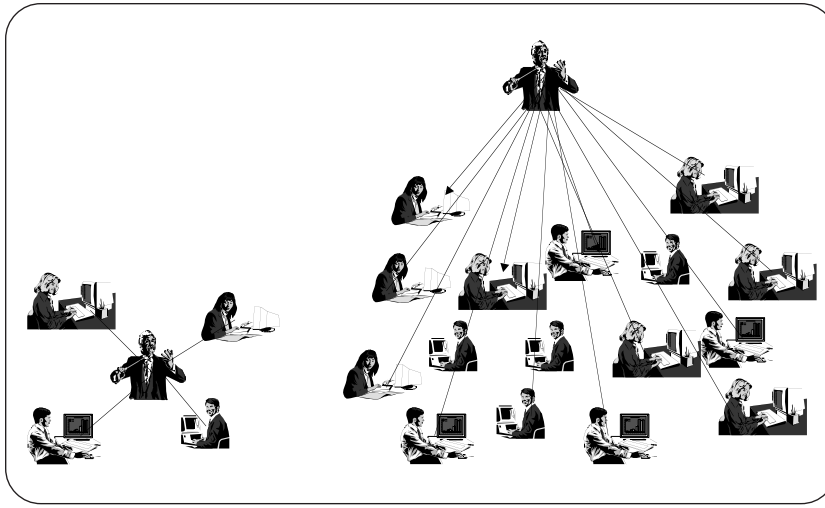

Figure 1.5 One Team

bers who share the same location and who are designated as relationship managers with key stakeholders. The duties of a virtual project manager, in comparison with duties of a collocated project manager, then would include a larger amount of facilitative and administrative functions.

The diverse membership of a global team can cause novel management problems, although it can also lead to greater innovation and ingenuity. During brainstorming sessions and other creative exercises, or even in day-to-day activities, more diverse and unorthodox concepts might be presented for evaluation and expansion. As a result, there is a diminished danger of what is known as groupthink, which is occasionally found in homogenized teams and which refers to situations where the team quickly reaches decisions without exploring several points of view.

An inescapable fact of a virtual project is that the project components are built, fabricated, and implemented in different locations. However, before the desired deliverable is submitted to the client, the individual components will have to be integrated. The tasks of unit testing and integration testing might become more complex for a virtual project than a traditional project. Therefore, in virtual projects, more so than traditional projects, detailed specifications must be developed at the onset of the project for each component of the deliverable. Equally important, a sophisticated configuration management system, again more so than one in use by traditional project teams, must be in effect for the project deliverables. One would hope that the additional effort necessary for component testing

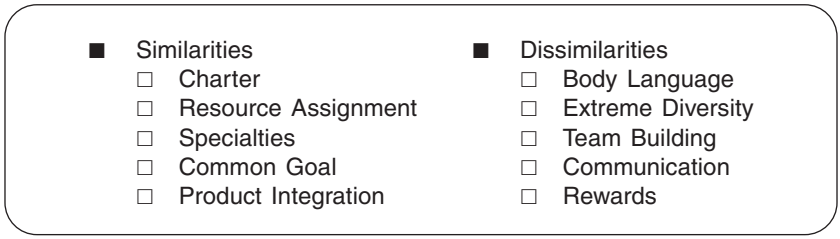

Figure 1.6 Virtual Team Procedures

and integration will outweigh the efficiencies achieved by using a global virtual team.

Teams that work on global projects require their own procedures and guidelines, although some of the procedures and guidelines can be adapted from the existing guidelines that have been prepared for traditional teams. The policies and procedures that deal with quantitative project performance can be used in virtual projects with minimal modifications. However, the procedures that deal with people issues will need to be modified extensively to make them applicable to virtual teams (Figure 1.6). One of the subtle missions of the environment-specific procedures is that a common team culture must be created. The premise is that even virtual teams need to deal with the cultural issues of project management, perhaps even more so. Project managers of global teams must deal with a new range of challenges, from language barriers and time differences to religious diversity to differences in eating habits. It cannot be overstated that subtle differences in the attributes of traditional teams and virtual teams can present complex challenges, if they are not properly handled in the early stages of team formation.

Zeitoun (1998) reported the key challenges that were uncovered during a study of 40 project managers in several different industries. These challenges include differences in culture, laws, time, language, trust, and the use of technology. For example, in conducting asynchronous communication, one must be mindful of the time zones in which the team members reside. Team members must be made aware of the fact that, because of cultural differences, people will interact and behave in different ways. Language differences, which are very common in teams that span multiple countries, may lead to communication misunderstandings. Further, it may be harder to gain the trust and confidence of other team members in a circumstance where one never actually meets them in a physical setting. With customers and team members dispersed throughout the globe, team members must also become cognizant of the differing laws and regula-

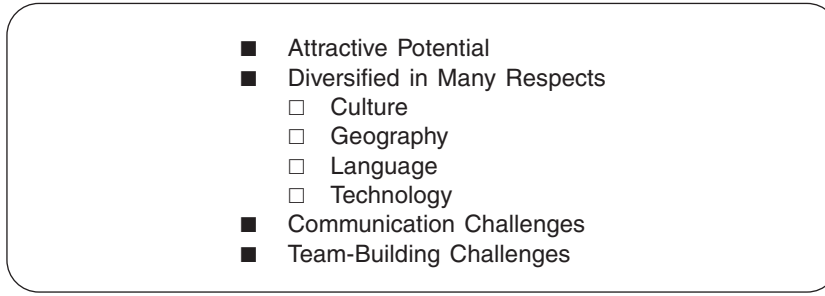

Figure 1.7 Global Teams

tions that may affect the project. Since virtual team members are more apt to place a heavy reliance on technology to achieve the goals and objectives of the project, a common suite of tools and appropriate training must be prescribed for the team members. Successful virtual teams are those that plan for all these special features in order to capitalize on the positive aspects of technical and intellectual diversity. Although traditional organizations shy away from virtual teams because they cannot easily guide them to success, enlightened organizations meet the special needs of virtual teams so that they might reap the efficiency benefits of them (Figure 1.7). To get a realistic picture of the trade-offs, an organization must weigh the financial advantages of virtual teams against the effort needed to meet the challenges of supporting these unique collections of project team members.

With appropriate measures in place, handling emerging issues or even conducting routine tasks might become somewhat easier in a virtual environment. However, traditional processes might have to be modified in order to make them specifically effective for multilocation members of virtual teams. The changes include blending the web into the document control procedures and contingencies for exchange rate volatility, which could change the project cost even if there are no other changes. Further, allowances must be made for time zones, cultural issues, and regional and political risks. Finally, project personnel must be sensitive to possible differences in terminology in different parts of the globe, even when using the same language.

Probably the most common transition mode for organizations, from traditional teams to virtual teams, is to attempt to apply the same policies and procedures in both types of teams. As project managers and team members realize that some of the procedures cannot be directly imported into the virtual environment, the policies and procedures will be modified

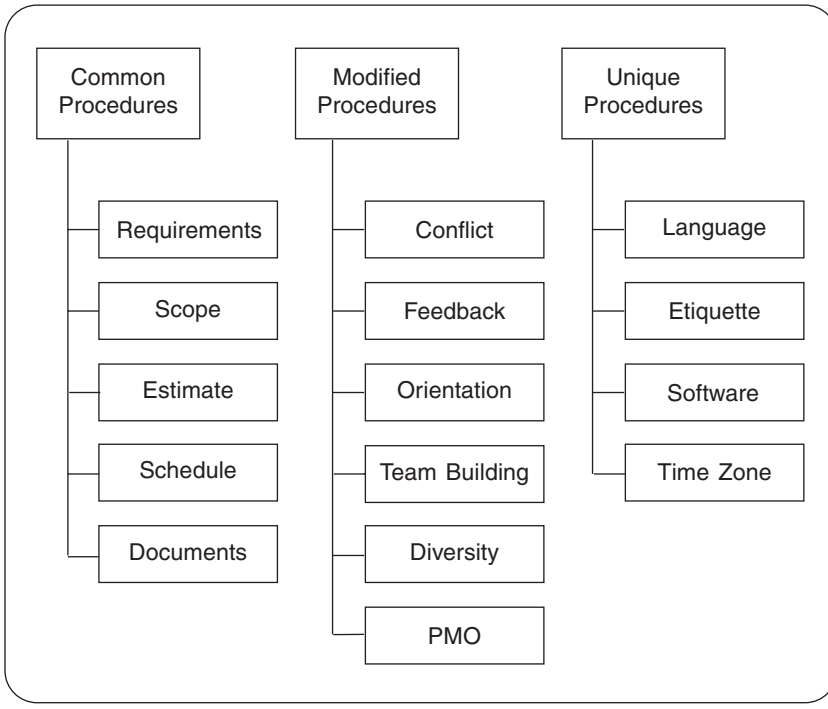

Figure 1.8 Virtual Team Policies and Procedures

with an eye toward the specific features of the team. Further, unique processes may have to be devised to handle the circumstances that occur only in virtual teams. Thus, the procedures and policies necessary for virtual teams fall into three separate categories: common procedures, modified procedures, and unique procedures (Figure 1.8). Common procedures are those that can be imported directly from the traditional team archives of best practices without any changes. These procedures deal with formats and templates for the project charter, requirements analysis, deliverable descriptions, and overall team performance indices, such as productivity, cost performance, and schedule performance. Other common procedures include those for project performance, quality management, contract management, and scope management. Modified procedures are those transportable procedures that have been used successfully for traditional teams, and creating their virtual team versions would require somewhat minor modifications and enhancements. The modifications can be minor, such as those necessary for the team charter, or they can be major, such as what would be necessary for conflict management and communication manage-

ment. Other procedures that would be candidates for some level of modification include team building, team spirit, status reporting, negotiations, team maturity evaluations, and performance reward mechanisms. Unique procedures are those procedures and tools that must be developed exclusively for virtual teams to account for their special features. These procedures deal with issues of distance communication and the proper use of technology in handling the project's emerging issues, as well as complications that arise only in teams that are distant and virtual. They cover topics such as the proper use of e-mail, file transfer, and the recommended software for communication and for technical work. Unique procedures also deal with the use of portals for formulating project plans, for reporting best practices, for facilitating the integration of the final product, for brainstorming, and as a replacement for the traditional project war room. Other procedures that fall under this category are phone-conferencing protocols and videoconferencing processes.

1.3 SUMMARY

A virtual team provides a cost-effective and efficient organizational entity that would facilitate the achievement of better business results through managing by projects. The major advantage of a virtual team is that the team is not physically bounded, and it can be formed very quickly. The disadvantage is that, because the team might span multiple cultural and language boundaries, project procedures must provide guidelines so that the resulting diversity will become an asset and not a liability.

2

MANAGEMENT OF PROJECT THINGS

By definition, the primary focus of the project team is the final deliverable of the project. However, the team must focus on the deliverable in conjunction with the activities that assure the delivery of the desired product, or the facilitation of the desired service, in the most cost-effective and efficient manner. The project team must plan the delivery of the product or service through adoption of best practices and consistent procedures. Then, during the implementation phase of the plans, which usually occurs in a dynamic environment, the team must manage emerging issues that influence its performance in delivering the desired results.

The activities of the project team can be divided into two major categories: those that deal with things and those that deal with people. The things issues include quantifiable performance of planning procedures, cost management, schedule management, scope management, risk management, change management, and integration efforts. The goals and objectives of the procedures for managing things issues are nearly the same for all projects independent of the type of team employed in delivering the product. People issues include the usually nonquantifiable characteristics of client satisfaction, vendor satisfaction, team morale, and communication (Figure 2.1). The separation of things issues and people issues is only for purposes of topical coverage, because these two sets of issues are almost always intertwined. This chapter deals with management of the things issues of the team's performance. The management of the people issues of the team's performance is addressed in Chapter 3.

- Things
  - Hard
  - Science
  - Quantitative
  - Project Side of Project Management
- People
  - Soft
  - Art
  - Qualitative
  - Management Side of Project Management

Figure 2.1 Project Management Skills

Successful performance of the project team, traditional and virtual alike, is characterized by the team's performance in handling the full complement of life-cycle issues of the project. The life-cycle issues include early definition of the project scope, establishing a scope modification process, and formalizing the scope enhancement process. Beyond the project scope, other important issues are the original and final values of cost and schedule. In order to characterize the success and effectiveness of the project manager, and the team, in achieving the desired project objectives, one would need to identify three separate elements: existence of standardized processes and procedures, consistent conformance of the project team with those procedures, and the efficacy of these procedures (Figure 2.2). The rationale for using this three-part system is to determine

	Procedures		
	Presence	**Compliance**	**Efficacy**
Scope	Full	Full	Full
Quality	Full	Full	Full
Cost	Full	Full	Full
Schedule	Full	Full	Full
Risk	Full	Full	Full
Integration	Full	Full	Full
Reporting	Full	Full	Full
Contract	Full	Full	Full
Communication	Full	Full	Full
Team	Full	Full	Full
Client	Full	Full	Full
Vendor	Full	Full	Full

Figure 2.2 Successful Project Management Procedures

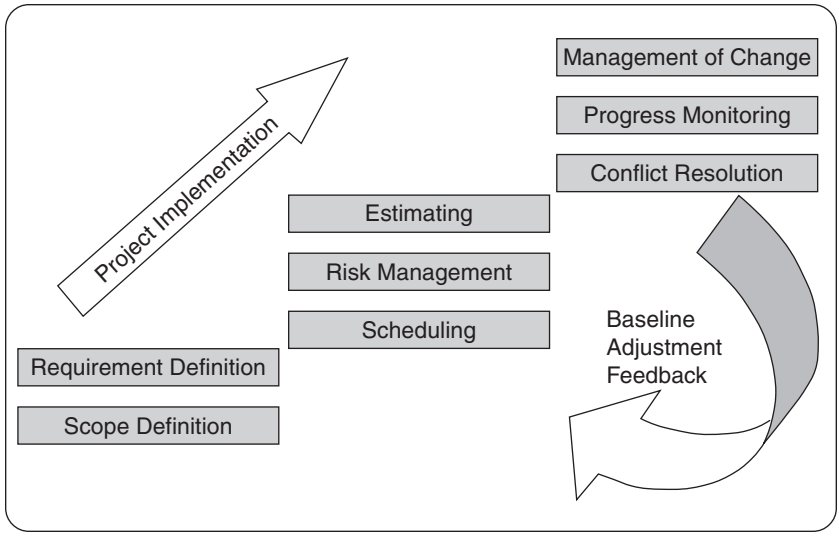

Figure 2.3 Project Management Process Dynamics

whether the success of the project manager was by accident or by design. For example, if there are no existing procedures and yet the desired value of that facet is achieved, as much as the occasion is to be celebrated, that performance cannot be expected to be repeated in future projects by this project manager. On the other hand, if the achievement of success in an element is concurrent with these formalized procedures, the likelihood of success in future projects is far higher. Thus, the mission of the project manager and the supporting team is to define and plan each of these components as clearly and carefully as possible, execute the plan, monitor the performance of the plan, optimize the plan, and install the optimized plan (Figure 2.3). An ideal project team is one that has the full set of tools and templates to meet all aspects of the project mission in accordance with the optimized plans.

There are some traditional practices that, although not fully formalized, tend to produce results when these practices are used in traditional teams. An example of such a practice is to hold review meetings without any specific agenda with the expectation that, as the conversation progresses, areas of concern will present themselves for solution; this expectation is often satisfied. Another example is the practice of management by walking around, again with the expectation that the project manager would notice practices, or results of interest, and guide those points appropriately (Figure 2.4). Even then, their success depends on a specific behavior and

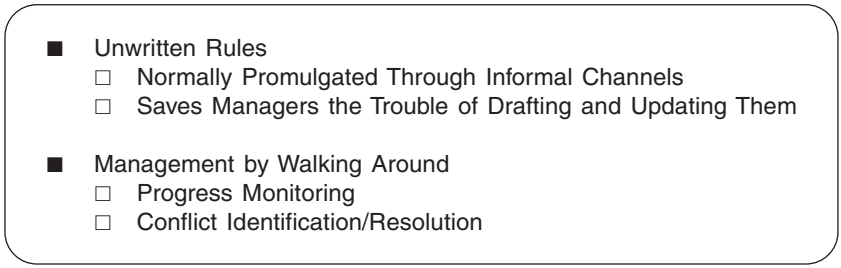

Figure 2.4 Collocation Practices

specific organizational culture, such as the tendency to share information openly with the project manager. The success of this pattern also depends on having a seasoned manager who knows how to handle unexpected occurrences. These two examples are classic cases that require development of unique procedures so that virtual teams effect the same results as traditional teams. In general, all traditional procedures that have a face-to-face component will have to be modified, or replaced entirely, with a novel medium that would still enable the expression of words, emotions, feelings, preferences, etc.

If the virtual team concept is new to an organization, then seasoned project managers might chart an intuitive path toward efficient virtual team operations. As such, the migration of procedures starts with wholesale importation of traditional procedures into the virtual environment. With passage of time, these procedures might be modified to fit their new circumstances. Ultimately, these seasoned managers will

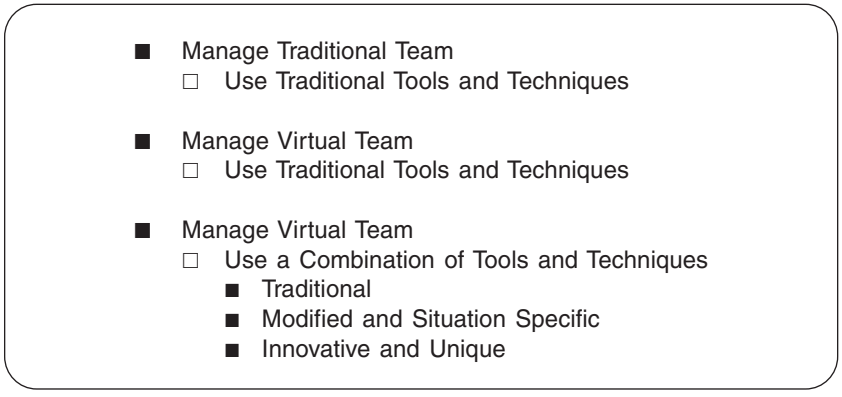

Figure 2.5 Stages of Transition

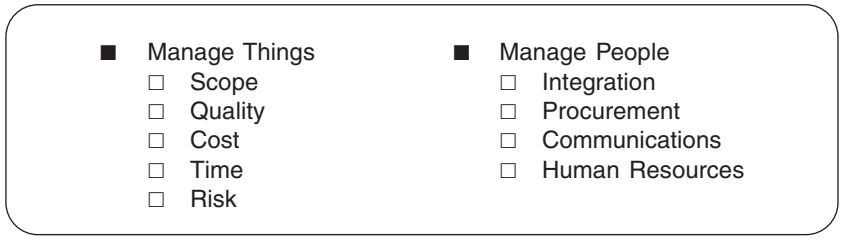

Figure 2.6 Project Management Performance Areas

begin to develop virtual-specific procedures and guidelines (Figure 2.5). To put these issues in perspective, these procedures will ultimately deal with the full complement of the knowledge areas of project management (Figure 2.6). In essence, the project manager should revisit the procedures for management of all of the knowledge areas in order to verify their applicability to the virtual environment for his or her project within the specific organization.

At the higher level of detail, the elements of project planning and implementation are the same for virtual and traditional teams. The means and modes by which these phases and elements are implemented are what separate the virtual team from its traditional counterpart. Even though the procedures for managing things do not need to be changed dramatically, policies and procedures must be modified in order to allow the team members to conduct communications and negotiations dealing with things issues in modes other than face to face. Finally, unusual facilitation tools may need to be employed in order to solicit and receive the input of all team members in a collaborative fashion, albeit the subject of discussion may be one of the things elements of the project.

2.1 REQUIREMENTS MANAGEMENT

Most projects, particularly system development projects, are not fully defined when they are authorized. The client's wants, needs, and requirements must be articulated and documented somewhat quickly, albeit with minimal detail. Then, during the early phases of the project, this documented information must be reconciled with current technological capabilities. In these projects, there is a continuous dialogue between the project team and the client with regard to the attributes of the deliverable. During, and as a result of, these frequent dialogues, the team continually embellishes the then current and well-defined features of the deliverable.

The enhancement of the details of the deliverable will reflect the requirements of the user as well as business needs of the client. The client may be represented by a number of different groups that typically include management, system owners, users, customers, developers, and designers. Each stakeholder will have a unique set of interests that must be met in the outcome of the project. Ironically, sometimes these stakeholders might have conflicting interests, requirements, and issues.

The requirements and needs of the client are articulated in a set of documents that will in turn provide the basis for the mission of the project. In essence, a nondescript problem must be turned into a well-defined problem by virtue of a detailed set of requirements. To the extent possible, the definition of requirements must be as accurate as practicable, because information obtained during the requirements definition process will be used to determine whether or not the project should be authorized. Later, as additional information becomes available, the updated set of requirements will be used to determine whether the project should continue or whether cancellation of the project should be recommended.

It is very common for a client to modify the expression of requirements as the ramifications of those requirements are manifested in the definition of the features of the deliverable. Parenthetically, the dynamic nature of this process is one of the reasons for relatively large cost and schedule variances in system development and systems integration projects. The volatility of cost and schedule will become even more significant when the project uses novel technologies in responding to the client's evolving business needs. Notwithstanding, a project charter similar to that in Appendix 2A must be developed in order to document the evolution of the mission of the project team.

A methodical requirements management process will begin with exploratory exercises in order to fully understand the client's needs. The next step involves the development of a clear and concise statement of the problem. The narrative description of the problem is then expanded into a detailed technical specification of the requirements and functions. The technical specifications, and their companion suite of tests, will define the attributes that verify the attainment of the services and/or products that would meet the originally stated problem of the client. Naturally, the specifications and tests will be reviewed by the client to validate the problem and its solution. Finally, an ideal requirements development process must produce several alternative solutions, allowing the client to explore the advantages and disadvantages of each one.

A properly executed requirements management task will start with the articulation of the client's needs, to the extent possible (Figure 2.7). The

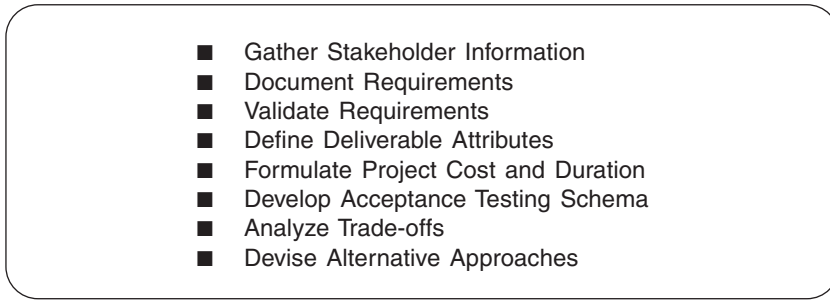

Figure 2.7 Requirements Management

key is to document these requirements with as much quantified detail as possible. Care should be taken to identify all primary and secondary requirements of the intended product. Such specificity will help the client verify each of the requirements statements in an informed fashion. Beyond that, an effective requirements management process will allow the team to craft the deliverables in full compliance with the client's current needs and requirements. It is at this point that alternative solutions and acceptance testing schema for each solution are formulated. Once the project moves into the implementation phase, a clear set of specifications must be drafted and/or finalized. Clarity of project objectives will facilitate the usually arduous tasks of risk management, configuration management, and cost/schedule management.

It is important to note that project information exchange for the vast majority of traditional projects is conducted through meetings between the project team and the client. Some of the useful tools of the requirements management process are interviews with stakeholders, customer involvement workshops, simulations, usability studies, and prototyping. All of these tools involve some type of personal interaction. Customer involvement workshops promote contact between developers and users and help many different users become part of the process. Sometimes simulations define selected project processes by bringing users together to collectively work on a problem. Usability studies can provide direct evidence of the ease of use of a product and thus can help uncover common errors or faulty design. Finally, prototyping can provide input for the requirements identification process by prompting direct user influence and direct feedback concerning requirements. Most, if not all, of these tools use face-to-face meetings on traditional projects. By comparison, such meetings need to be conducted through alternate means for virtual teams. These alternate means will have to be fully formalized and continually enhanced. The

exact nature of the alternate information exchange modes is dependent on the organization, although many of them will have roots in the web, e-mail, and Internet messaging.

Once the initial requirements have been articulated and documented, then a baseline estimate for cost and schedule will be formulated in light of those requirements. Then, as the project progresses into implementation, requirements management activities include those tasks that are performed in order to keep a reasonable balance among the project's triple constraints. The continuing requirements management task must react to changes in any of the triple constraints. The objective of a midstream change in the project is, or should be, that the client ultimately takes delivery of a product that serves all of its reasonable business needs. The mission of the project manager is to do this while maintaining acceptable values for the project's cost and schedule. Maintaining this balance is a highly delicate task because most changes in requirements cause an increase in cost and a delay in the delivery date. The situation might be more complicated if the delivery date is somewhat inflexible, in which case the only one of the triple constraints over which the project manager has any real control is the project cost.

2.2 SCOPE DEFINITION

Scope definition is the process by which the client's requirements are transformed into the detailed description of the project deliverables. The scope definition documents may include technical descriptions of equipment and hardware, technical description of the software, and the details of size and capacity of the resulting system. Scope definition may also include quantified performance features of the final product, such as reliability, error rate, speed, response time, maintainability, and user friendliness.

The technical features of the project deliverables are recorded in text, formulas, code, flowcharts, and graphics. The verbal, quantitative, and technical definition of the project scope is followed by the development of a work breakdown structure (WBS) that highlights all of the discrete components of the product that the client will receive, separately or in aggregate, at the end of the project. A WBS is a uniform, consistent, and logical method for dividing the project into small manageable components for purposes of planning, estimating, and monitoring. A WBS will facilitate the process of integrating project plans for time, resources, and quality.

There are three basic types of WBS: deliverable oriented, task oriented, or resource oriented. A deliverable-oriented WBS is one where all or most of the elements are deliverables or quantified performance targets. Clearly, a deliverable-oriented WBS is the preferred and most useful form of dividing the project into manageable components. A deliverable-oriented WBS provides a framework for common reference for all project elements, for specific tasks within the project, and ultimately for better schedules and better estimates. A task-oriented WBS is one where some or most of the elements describe activities and tasks of the team members or stakeholders. A resource-oriented WBS is one where most or all of the elements refer to control accounts, departments, machinery, or team members.

A detailed WBS encourages a systematic project planning process, reduces the possibility of omission of key project elements, and simplifies the project by dividing it into manageable units. If the WBS is used as the common skeleton for the schedule and for the cost estimate, it will facilitate communication among the professionals who implement the project. Ideally, a WBS would be composed of deliverable-oriented elements up to three or four levels. These levels will include an inventory of the elements of the deliverable that the client would receive once the project is finished. In essence, this portion of the WBS will serve as a stylized visualization of the scope. It also will serve as the base of reference when deliverable components are added to, or removed from, the project (Figure 2.8). Below these deliverable levels, the WBS is extended another one or two levels with activities that the project team must perform in order to deliver each specific component of the project deliverable. If these element-specific activities are estimated and scheduled properly during the

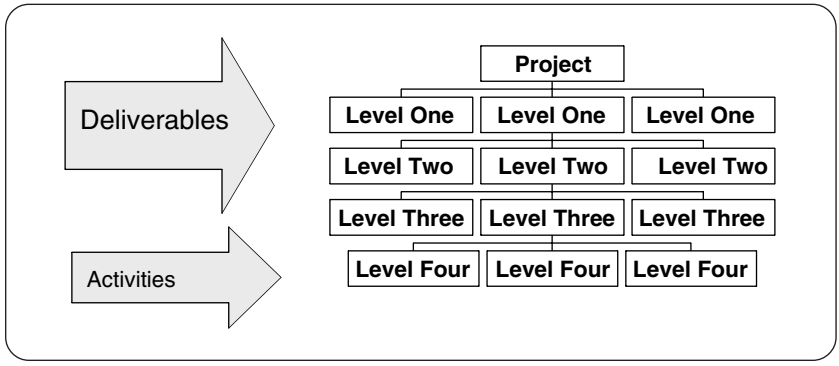

Figure 2.8 WBS Elements

- Project Personnel
- Equipment Embedded in Deliverable
- Tools for Project Personnel
- Fees, Licenses, and Insurance

Figure 2.9 RBS Elements

planning stages of the project, then managing a scope change is a straightforward task that consists of increasing the intensity or magnitude of the element-specific activities in response to the changed conditions.

2.3 ESTIMATING AND SCHEDULING

With the availability of a detailed and logical WBS, the estimating and scheduling functions will be significantly more methodical and accurate. The process involves assigning resources to each element-specific activity through the use of a resource breakdown structure (RBS). Typically, an RBS is a detailed listing of all of the project's resources, divided into the following major categories: personnel, hardware, tools, and other expenses (Figure 2.9). The intensity and duration of each resource provide the total resource expenditure, which, in turn, will provide the cost of that activity if the unit price of the resource is known (Rad, 2002). In turn, the resource duration will provide one of the two elements that are necessary for the development of a schedule. The second item necessary for the development of a schedule is the sequence of activities that need to be performed for that element, or for the project for that matter. A fully developed project schedule will include start and finish dates for all activities of the project and, most importantly, a delivery date for the integrated project deliverable. Naturally, the predicted delivery date will vary somewhat throughout the life of the project because schedule variances can be caused by changes to the requirements, activity durations, and the logical sequence of those activities. If the same WBS is used for the estimate and the schedule, the project manager can make logical and informed tradeoffs when the project environment is changed, when the client modifies the project requirements, when one of the triple constraints is changed as a result of forces external to the project, or when the scope is altered as a result of discoveries and accuracy refinements made during project execution.

- Identify Risks
- Quantify Risks
- Analyze and Prioritize Risks
- Mitigate Risks

Figure 2.10 Risk Management Phases

2.4 RISK MANAGEMENT

It is almost naive to expect that the project would advance through its life-cycle stages without encountering any unwanted and/or unplanned events. These unexpected events usually complicate the normal execution of the project by way of expanding the scope, increasing the cost, and delaying the delivery date. Although these deleterious events cannot be prevented, the team can put measures in place that would mitigate the consequences of such occurrences. With a logical overall project risk management plan, and risk-specific response plans, the team can minimize the impact of these risk events on the progress of the project somewhat gracefully.

There are four major steps in risk management: identification, quantification, analysis, and response development (Figure 2.10). At the beginning of the project, a database of all nonnegligible project risks must be developed and then continually maintained throughout the life of the project. This list of risks must be updated throughout the life of the project, since risk management is a continuous activity. Then, for each risk event, the probability of occurrence and its impact on the project will be estimated. The impact can be on scope, cost, or schedule. The team will identify specific warning signs and/or triggers of the possible risk event. Next, the team must outline responses that would be required to mitigate the risks that have been identified. A characteristic of the risk planning process is that any or all of the identified risks might occur, occur in a form not envisioned, or fail to occur at all. Also, by extension, and as probabilities go, risks other than those on the official list might also surface. None of these predicaments should deter the project team member from having a project risk management plan in place, because, on balance, risk management plans facilitate a more effective completion of the project. The impact of a risk event on the overall performance of the project is usually negative, although it can be positive on rare occasions. Thus, a beneficial side effect of a risk plan is that it identifies unexpected events, even those that are favorable in terms of the project deliverable. This side

effect of predicting and capitalizing on favorable unplanned events could become the payoff for the efforts spent in conducting a detailed risk management effort. The benefits are twofold: one is the actual tangible impact on the project outcome, and the other is the subtle but important feeling that the project team is aware of all the details of the project environment.

Ideally, risk identification, quantification, and analysis should become routine activities, similar to other project activities. As such, a project risk management plan should include team reviews, task planning, tracking, monitoring, and control. These risk management plans will allow consensus on actions, which in turn will establish a shared understanding of the project risks. The basis for this collective approach is the presumption that all team members have a shared vision for success, as stated in a team charter. Thus, the risk management process would include a communication plan that encourages free flow of information. Having regular and timely risk data, the team would view risk management as an integral part of project management, with routine risk identification and monitoring activities throughout all phases of the project life cycle. Thus, managing risks becomes part of the overall project management methodology, and not a stand-alone activity.

While the project manager has the overall responsibility and authority for all aspects of project performance, team members are delegated to play key roles in the process. The team, as a unit, must continually work to identify the emerging risks, classify them, estimate their probability of occurrence, calculate their impact, and highlight the time frame of occurrence. Further, the team must update the response plans and monitor the mitigation efforts. Team meetings, held on a regular basis, are useful in reviewing the status of identified risks and the efficiencies of corresponding risk response plans. The advantage of using the team approach in the risk management process is that there is less likelihood that some risk information might be overlooked. The subtle objective is for the entire team to learn to think "risk" in order to prevent small task-related problems from growing into major project crisis situations. Again, the virtual team would follow the same principles, but the communication schema probably would not include face-to-face media, maybe not even voice-to-voice media.

During project status reviews with the client, risks should be an agenda item. Resolving project risks is a joint responsibility, because the client and the project management team can draw on each other's resources to mitigate risks so as to enable more rapid responses. Formal communica-

tion dealing with risk events should not be just the sharing of issues on a case-by-case basis and not only at times when the project management team is certain that a problem is soon to develop. Rather, risk management should be integrated into technical interchange meetings, design reviews, and user requirement reviews. During these meetings, all team members should jointly identify those risks that are considered to have the highest probability of occurring and the greatest impact on the project deliverable. Through this joint effort, risks are identified, categorized, and prioritized before they evolve into major problems. Higuera et al. (1994) suggest that risk management should be even more in-depth by way of involving the full complement of the team members, the stakeholders, and the client representatives. This approach broadens the knowledge base, thus making the experience extremely effective in identifying the risks. Equally important, the collaborative nature of risk identification sets the stage for actions in dealing with those risks, because often remedial plans will include joint action by the client, the stakeholders, and the project team.

2.5 PROGRESS MONITORING AND REPORTING

The objective and purpose of a progress monitoring system are to keep the project team informed of progress on the individual tasks and the progress of the full team. Additionally, progress is reviewed in light of the overall project objectives and organizational strategies. A progress monitoring process should be part of the organizational project management culture, rather than narrowly focused on the specific project at hand. A monitoring system is most successful when it is formalized and fully embedded into the organizational procedures for managing projects. It is under these circumstances that project personnel would know what data are expected of them for input into the progress reporting system. Accordingly, the project personnel will have a clearer picture of the volume, quality, and frequency of the reports that they will be receiving from the progress reporting system.

There is no question that accurate collection of cost and schedule information should be part of the data that are collected and/or computed by a project monitoring system, but cost and schedule are not the primary concern of the data collection; deliverable-specific resources are the data of concern. Reliance on the RBS and WBS, provided by a formalized progress monitoring system, will allow project managers to compile meaningful historical project data. In turn, detailed progress data will be signifi-

cantly useful in managing the changes in the texture of the current project, while providing useful historical data for streamlining the estimating and management of future projects.

The progress monitoring system should be formulated and implemented in such a way that it would not have a negative impact on progress, creativity, innovation, and morale of the technical personnel on the project team. Rather, it must be a facilitative tool that informs the team members of their individual assignments, reminds them of forthcoming events, and warns them if there are significant variances. Additionally, the progress monitoring system must centrally store the data for forecasting and for future customization of estimating and scheduling models. In order to increase the utility of the progress monitoring and reporting system, the data must be compiled, refined, and reported to the team members in a timely manner and at the level of detail that is useful to the recipient of the information.

2.6 CHANGE MANAGEMENT

Changes in scope and in the implementation environment are inevitable in all projects. Change management is the process that is used in order to maintain a reasonable level for quality, cost, and schedule while delivering the desired product as close to the client's current expectations as possible. The trademark of a successful project is having a sophisticated change management process in place for this eventuality. Because project changes occur in a continuous and evolving form throughout the project, it is necessary to have proactive tools that identify trends, manage trade-offs, implement changes, and report the changes to anyone who might be impacted by them. The success and effectiveness of the change management system depend heavily on the sophistication of the progress monitoring system. Once the progress reports identify the significant variances, remedial actions can be formulated in a logical and efficient manner (Figure 2.11). Project information that would form the basis of a change management system includes a detailed description of client objectives, project requirements, quality expectations, resource constraints, funding structure, acceptance test details, administrative milestones, and the anticipated delivery date.

The change management process is most effective when it is formalized and integrated with the enterprise project management policies and procedures. A formalized change management process will ensure that all project personnel, in all projects, follow a specific set of established pro-

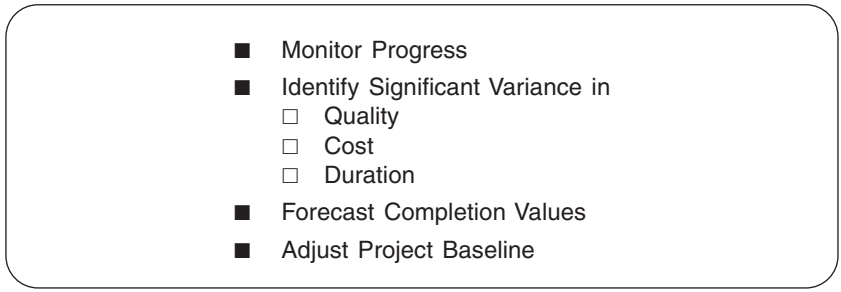

Figure 2.11 Change Management

cedures. A formal change management structure will have the added advantage of keeping all of the project stakeholders involved in, or at least informed of, the performance status of the project, thereby contributing to team spirit and good morale.

The objectives of the change management process are to track progress, compare the actual values to the planned values, analyze the impact of variances, and make adjustments in light of these variances. The progress data from the current project will be interpreted in light of current project specifications, historical data from previous projects, and benchmarking data from other projects within the same industry. These interpretations must be repeated or refreshed on a regular basis and particularly as part of making the inevitable changes throughout the life of the project. The impact of each change must be evaluated in terms of scope, cost, schedule, and resource demand. It bears repeating that the most effective change management system is one that assures consultation with the stakeholders in all triple-constraint trade-off decisions and one that facilitates a full and prompt dissemination of the subsequent disposition of each change request to project personnel. Additionally, determination of the variances between planned and actual values should not narrowly focus on the total project; rather, it should span all elements of the WBS. As such, the full suite of data for individual component resource expenditures, as well as the total project resource expenditure profile, should always be at the disposal of the project stakeholders.

The basic administrative structure of a typical change management system includes a change request form, a change log, a change management board, and a configuration management board. The change request form is the prescribed mechanism by which proposed changes are requested (Figure 2.12). The change request form will standardize the information that is submitted for invoking a change in the formal plan of the

- Name of Requester
- Requester's Organization
- Date of Request
- Description
- Priority
- Current Status
- Action Requested
- Change Request Number
- Impact/Benefit of Change
- Approval

Figure 2.12 Typical Elements of Change Request Form

project. The change log is a historical account of the evolutionary history of scope, configuration, cost, and schedule (Figure 2.13). In turn, the change management log will provide a formalized mechanism for recording the change request stream of the project life cycle. The change management board and configuration management board review the changes from a project management viewpoint and from a technological standpoint, respectively (Figure 2.14). The change management board is usually composed of the project manager, the client liaison, technical personnel, and a contract officer if the project is an external project. The change management board is charged with defining and implementing the process for handling project change requests. Then, during the implementation phase, the board ensures compliance with these established processes and procedures. The configuration management board is normally composed of all the technical specialties represented in the project deliverable, the client representative, and the project management personnel. The configuration management board is charged with monitoring and documenting

- Name of Requester
- Requester's Organization
- Date of Request
- Description
- Current Status
- Action Requested
- Change Request Number
- Impact/Benefit of Change

Figure 2.13 Typical Elements of Change Management Log

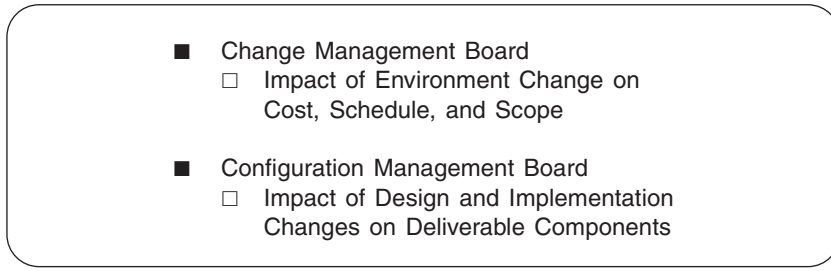

Figure 2.14 Project Review Boards

functional and physical characteristics of the components of the deliverable, as defined in the original project documents. The configuration management board is further charged with managing the changes to these characteristics, optimizing the effects of changes, and verifying conformance of the attributes of the deliverable with the client's evolving specifications. As an example, the change management board would review, in light of the client's current expectations, the impact that a change in a software module might have on the delivery date and on the total cost of the project. On the other hand, the configuration management board would be concerned with the impact of these changes on the input/output structure of other modules, the processing speed, maintenance complications, database duplication, and system complexity.

Procedural consistency in data collection and reporting will encourage the review of changes by the stakeholders, thus preventing ad-hoc implementation of changes. The change authorization form is the prescribed and formal mechanism by which requested and approved changes are authorized for implementation (Figure 2.15). It is essential in the change man-

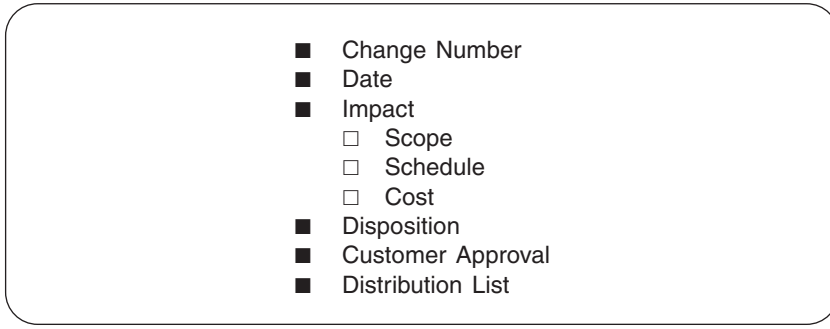

Figure 2.15 Typical Elements of Change Order Authorization

agement process that the team maintains the delicate balance between providing a timely and complete flow of information to those who need a lot of information while not overwhelming those who need not receive detailed information. As each report is designed, defined, and distributed, special attention must be paid to the rationale why a particular report is being sent to a particular individual. The expected response from the recipient of that report should also be defined in detail. Finally, the change management process need not be very elaborate if the project is very small or is of short duration and/or if it involves only three or four people, although the project change management system should be formalized nonetheless.

2.7 SUMMARY

The tools and practices in this category deal with management of scope, quality, cost, schedule, and risk. Management of the things issues of virtual teams is of nearly the same complexity as for traditional teams. Since managing the things issues sometimes requires negotiations and communications among project stakeholders, these processes might have to be appropriately customized for virtual teams. With appropriate processes and procedures in place, management of things issues of virtual teams might even become easier in comparison with traditional teams.

APPENDIX 2A PROJECT CHARTER

Director, PMO	Phone	Fax	E-mail
Project Manager	Phone	Fax	E-mail
Objectives			
Scope			
Responsibilities ■ The Team ■ The Stakeholders			
Assumptions			
Constraints			
Major Risks			
Major Milestones			
Approvals:			
Project Manager	Signature	Date	
Director PMO	Signature	Date	
Vice President	Signature	Date	
Stakeholder #1	Signature	Date	
Stakeholder #2	Signature	Date	
Stakeholder #N	Signature	Date	

3

MANAGEMENT OF PROJECT PEOPLE

As mentioned in Chapter 2, the primary mission of the project manager of a virtual team, or of a traditional team, is the delivery of the desired product or the facilitation of the required service. To that end, the team's efforts are focused on the activities and measures that would produce the deliverable of the project in a cost-effective and efficient manner. Thus, the team must plan the delivery of the product or service though best practices, policies, and procedures. The team will then implement the plans in a dynamic environment and manage all emerging issues and unusual circumstances that influence the delivery performance (Rad and Levin, 2002). The previous chapter discussed the challenges and importance of things issues in a project. This chapter presents the key considerations of people issues. The goal of the people side of the project manager's duties is to develop processes and procedures for effecting acceptable levels of client satisfaction, vendor satisfaction, and team morale. Although communication is an essential portion of these activities, attention to people's feelings, priorities, and perceptions is also important in the process of conveying information — maybe even more important. People issues are often considered to be more challenging because they encompass the intricacies of how team members relate to one another. These issues affect cohesiveness and commitment of the team members, which in turn affect, in very subtle and indirect but significant ways, the overall performance of the project team in delivering the project results.

The proper discharge of the planning, implementing, and monitoring missions of the project depends partly on interpersonal relationships and personality attributes. Since there is wide range of personality attributes, project managers are always in search of means to detect these attributes and to motivate team members appropriately. Given that project managers usually determine the personality and performance characteristics of team members through visual observations, there is some sentiment on the part of project managers of collocated teams that if all of the participants are in the same location, they can be monitored more closely and inspired more effectively (Mayer, 1998). It is during the planning, implementing, and monitoring of people facets of the virtual project that the project manager might begin to realize that the people skills that used to work well with traditional teams do not work as well with virtual teams. Thus, the project manager will be challenged to modify some processes and procedures and to create new ones for those issues that are specific to virtual teams. Generally speaking, the full spectrum of the performance of virtual team members can be divided into individual work and teamwork. More than likely, individual work will stay unchanged regardless of the project environment (Figure 3.1). However, major modifications will have to be contemplated if one is to handle teamwork in the virtual environment. It bears repeating that direct importation of traditional procedures and policies into virtual projects can be a serious disservice to the success of the project. Since ultimately it is the people on the project team who manage and implement project things, some modifications would have to be made even to the procedures for managing virtual project things.

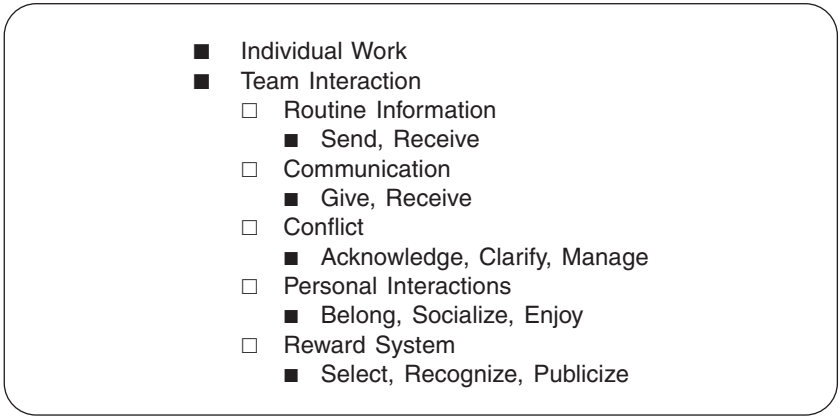

Figure 3.1 Project Activities

3.1 COMMUNICATION

Communication is defined as the transfer of some type of a message that contains one or more pieces of information. That information can be conveyed through either formal channels or informal channels. The nature of the information can be either technical or personal. Thus, the full spectrum of communication includes the following categories:

- **Formal communication:** Status reports, plans, specifications, legal documents, letters, formal reviews, and forecasts
- **Informal communication:** Memos, conversations, e-mails, and phone calls
- **Technical communication:** Project-specific information, product specifications, and component descriptions
- **Personal communication:** Typically information that is not officially concerned with the project

A given instance of information exchange might include all of the above characteristics during the course of that exchange. For example, many of the above attributes can be found in team meetings, in one-on-one meetings between the project manager and an individual team member, in one-on-one meetings between team members, on bulletin boards, in videoconferencing, in internal publications, and in newsletters. Some argue that the inclusion of each of the above features in a technical and/or project meeting contributes to the cohesiveness and trust among team members. It is further argued that virtual-specific meetings should be held regularly in order to nourish the people side of the project. The trademark of a sophisticated virtual team is that there are unique virtual-specific procedures in place whereby trust and cooperation can be established among the team members without the requirement of face-to-face meetings. Whether a team is collocated or virtual, open communication among its members is critical to the success of the project team.

The image depicted by regular face-to-face communication between employees of the same department in the same organization typifies a traditional, co-located team. Further, it is commonly accepted that working in a traditional team, in physical proximity with other team members, will reinforce social similarity, shared values, and expectations. Informal communication, such as that which might take place around a water cooler or coffee pot, is eliminated when the team is geographically dispersed. Such casual communication is not available to the virtual project team, since the team members will rarely, if ever, see one another. Another subtle advantage of proximity is that collocation increases the anxiety pressure resulting from the possibility of failing to meet commitments

(Latane et al., 1994). Presumably, this anxiety increases the likelihood of success.

Larger teams tend to be afflicted with more communications barriers, particularly if there are multiple specialties within the team. Consequently, in large complex projects, as much effort may be directed toward communication and coordination as toward carrying out the required technical tasks (Frame, 1995). As a result, when an inordinate amount of time is spent sending and receiving messages, team efficiency declines. Therefore, as a courtesy to other team members, and for purposes of efficiency, communication should be purposeful and intentional. Further, to foster the habit of communicating with one another, project information must be communicated on a regular basis, although at times it might be in response to the occurrence of specific events.

At the other end of the spectrum, research has shown that collocation practices increase the opportunities for communication (Allen, 1977) and that distance inhibits communication. This research showed that people sitting 40 meters apart had only a 5% probability of communicating at least once a week. The percentage did not increase until the distance between the parties decreased to 8 meters. Then, team members would be more likely to communicate and collaborate. This research demonstrates the challenges faced in communication on virtual project teams, primarily because the distances are such that face-to-face communication is nonexistent, a rarity at best. Additionally, communication inadequacies are more damaging in virtual teams because of reduced personal access and because of a natural tendency to rely on nonverbal communication clues (Guss, 1997). Therefore, new or modified team processes and procedures must be formulated in order to maintain a healthy flow of communication within the team, in spite of the significant physical separation (Figure 3.2). After the team forms, team members must be continually aware of, and sensitive to, the fact that conventional human interaction is scarce in virtual teams (Figure 3.3). This is not to say that people do not make personal connections, just that modified or new venues must be employed to achieve personal connections. In traditional and virtual teams alike, one of the beneficial side effects of regular communication is that it imparts to the project team members the comfort of being physically and emotionally connected with the other members of the project team. The virtual team, however, may need more frequent communications so that team members continue to feel connected, especially since many of the virtual team interactions are asynchronous. Naturally, not everyone needs to communicate with everyone else on all topics.

If clarification or additional information is required during a commu-

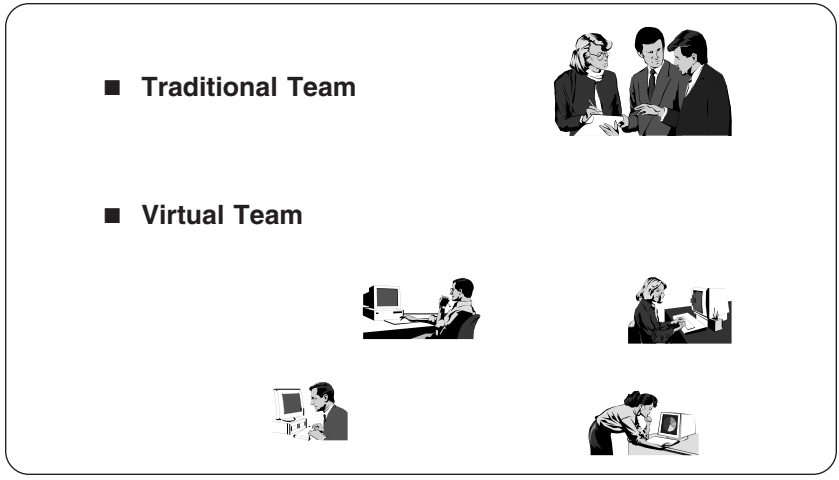

Figure 3.2 Communication

nication of a collocated team, quite often the sender can sense that requirement from nonverbal clues. Moreover, if the sender does not notice the clues that signal the need for clarification, it is relatively easy for the receiver to explicitly ask for clarification or additional information. Even if the recipient of the communication fails to actually say something, one can observe how he or she reacts to what was said, and the nonverbal reaction may convey significant meaning. In other words, in face-to-face communication, it is easier to take responsibility for content transferences because both parties can pay attention to feedback at the time the communication occurs. Then, by analyzing the feedback, adjustments can be

Venue	Traditional Teams	Virtual Teams
Hard Data	Readily Available	Readily Available
Written Procedures	Readily Available	Readily Available
Unwritten Rules	Readily Available	Usually Not Available
Voice Tonality	Readily Available	Usually Not Available
Facial Expression	Readily Available	Usually Not Available
Gestures	Readily Available	Usually Not Available
Body Language	Readily Available	Usually Not Available
Social Interaction	Readily Available	Usually Not Available

Figure 3.3 Human Interaction

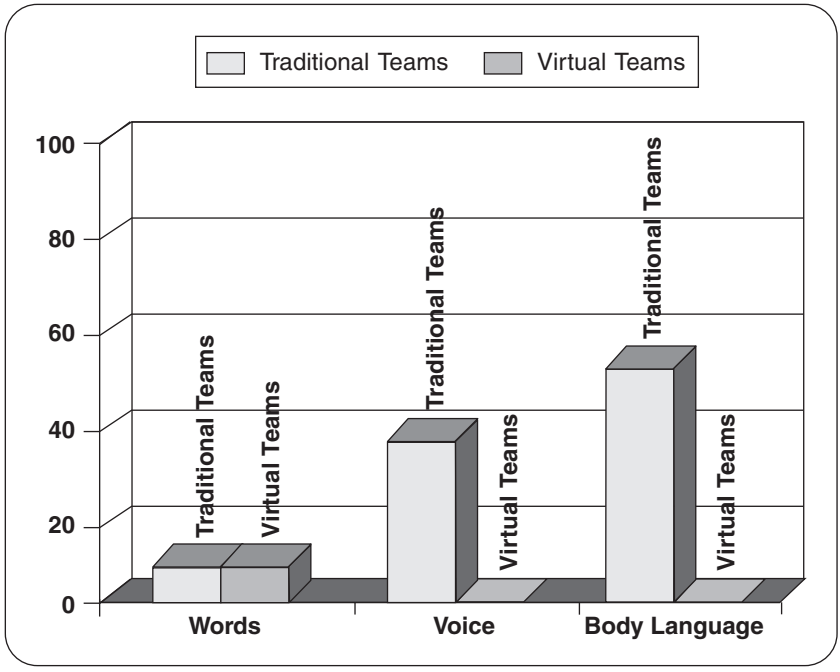

Figure 3.4 Team Communication Clues for Meaning

made. Literature shows that words only comprise 7% of the total impact of a message, with vocal tones representing 38% and facial expressions 55% (Meharabian, 1968). Verbal data, complemented and qualified by nonverbal clues in the face-to-face environment, transmit that status of our moods and emotions (Figure 3.4). Literature further indicates that the manner by which the message is delivered is sometimes more important than the specific verbal content of the message. Therefore, in order to receive the full set of available data, all project team members must practice active listening. However, considering the constraints of virtual teams, a medium-specific variation of active listening should be developed for virtual team members.

While face-to-face communication of a collocated team is almost always sender controlled, distance communication of a virtual team is primarily receiver controlled. Therefore, one cannot assume that because a message was sent, it was received. For example, if you call someone on the phone, the person may choose not to answer your call in the first place or might choose to terminate the call at any time. If you send an e-mail to another person, he or she might choose not to open it or might open it

but choose to read it at a later time. By comparison, in face-to-face communication, it is difficult for the receiver not to hear the message and/or not to respond. Finally, given that most of the virtual project information is exchanged in an asynchronous mode, the reader is usually left to his or her own devices to interpret the material, thus creating another level of complexity for virtual communications.

In any type of communication, and particularly in a virtual team environment, the receiver must accept the transfer in order for the communication to occur. The next complication is that it is easy for the receiver to filter the information and mentally register selected portions of the communication. If this behavior is allowed to continue, there is a likelihood that some team members will perpetuate a state of isolation from the virtual project team by avoiding all but the required forms of communication. Conversely, other people might feel that they really are contributing to overall project success if they bombard the team with lots of information even if some of that information is only tangentially related to the project. These team members may feel that extensive information exchange helps to demonstrate their commitment to the project. Thus, they end up focusing on the quantity, rather than the quality, of communications. Furthermore, it would be inaccurate to assume that all people on a team will use the information they receive in the same way. In reality, some people may feel that certain information is important and requires immediate attention, while others put that specific information in a file with other project documents and regard it as something that is nice to know but not necessarily important.

The traditional process of walking someone through the comprehension of a topic obviously does not exist in the virtual mode, at least not in that exact form. Therefore, the impact of errors, even minute ones, is magnified, because there is no opportunity for a continuous stream of questions and answers, as there is with traditional teams. Consequently, there is extraordinary pressure, at least compared to traditional teams, to be accurate, succinct, clear, and direct in all items of information that are transmitted to other team members. Different levels of energy also are present at the time of communication (e.g., 9:00 a.m. in the U.S eastern time zone is different than 4:00 p.m. in parts of Europe). Therefore, some methods to enable the virtual team to develop cohesion, in the absence of face-to-face communication, are required. These methods are relatively easy to use, although team members need to be careful to use only those methods that are appropriate and effective in the special circumstances of that team. Hopefully, these behavioral modifications will open new windows for positive change.

Efficient communication techniques, and strategies to ensure team member involvement, are more desirable in virtual projects. Thus, if the team, as a group, has set clearly documented project goals and business outcomes, these planning documents can form a subtle but effective foundation for collaborative project work. These collaborations and communications will ultimately serve as unifying motivators for all stakeholders, thus establishing a more direct link between project objectives and organizational goals. Since communication is more delicate in the virtual team than in its traditional counterpart, a project communications management plan and a training course, focused on communication issues, will be very useful. A typical training course could cover the following:

- Use of relevant communication modes and media
- Enhancement of interpersonal communication skills
- Methods to prioritize communications
- Methods to address concerns and issues instead of personalities
- Effective use of e-mail
- Methods to facilitate meetings
- The importance of active listening
- Skills for consensus building
- Techniques for group problem solving

3.1.1 Cross-Cultural Issues

Project managers in the virtual environment must pay attention to cultural differences and recognize their effect on team members' values, attitudes, and behavior. Cultural differences are inevitable in projects that use virtual team members from around the globe. An inability to recognize, and deal with, cultural elements of the team might lead to problems with the project deliverable's attributes of time, cost, and performance. Cultural differences also can alter communication symbols and meanings, thus resulting in misunderstandings. Therefore, team members must be vigilant to recognize what might be a cultural difference. For example, a team member might summarily discount messages that are not consistent with his or her own cultural norms. To overcome this problem, and to minimize the possibility of misinterpreting what is being said or what is being done, each person must be cognizant of the specific culture of his or her teammates (Sohmen and Levin, 2001). Under some circumstances, an increased level of conflict might occur as a result of a mismatch between implicit, culturally based, assumptions of team members.

During the communication activities of the project, team members are

expected to be able to determine if the receiver of the message, or the observer of an incident, interpreted the meaning differently. The team is further expected to discern if this difference was because of a communication barrier caused by preconceived notions and assumptions rooted in cultural backgrounds. Behavioral experts agree that one must always be aware of differences in assumptions that are made while interpreting actions or words (Bauhaus et al., 1996). Cultural differences can create inconsistent assumptions, varied constraints, unique challenges, unexpected opportunities, and unusual risks. It goes without saying that the communication is ineffective if the intended message takes on differing meanings.

It would not be surprising to find that different people react differently to contents of phone calls, e-mail, and voice mail. This disparity in comprehension and in subsequent behavior is almost inevitable in virtual teams because larger geographical spans lead to greater cultural interpretations of the messages of the communication. The originator of a concept should take responsibility for making it clearly understood by the receiver, and the interpretation of the content of the message should not be left up to the receiver. For example, common misunderstandings that might easily occur in phone conversations can be the result of different interpretations of the significance of silence and the meaning of pauses in different cultures. Another example of a potential misunderstanding is starting from the abstract and moving to the specific, which might be accepted by some people and not by others.

Since a global project normally employs people from different nationalities, the project team should select a common language for the official project business. Research has suggested the use of English as the link language for international projects even though there are three times as many native speakers of Chinese as there are of English (Crystal, 1997). Because different words may mean different things to different members of the team, it is important to recognize that even a team member who is fluent in languages other than his or her native language may react differently to written and verbal terms when using one of these languages. Simple and direct communication will help reduce the risk of distorted messages, which in turn will reduce the probability of misunderstanding. For example, a word such as “resent” may convey different meanings based on the context of its use. If English is selected as the common language for the project, project communication should be based on a vocabulary that is limited to essential and unambiguous words. Thus, the official project language with the abbreviated English vocabulary could easily serve as a common language for the project team. Virtual project team members, conceivably representing many different cultures, might

adopt an international English vocabulary, which contains the approximately 4000 words in the English dictionary that are commonly used, in order to promote a simple and clear communication tool (Chaney and Martin, 1995). This approach would create a new language that is based on English words and patterns but free from slang and colloquialisms (Sohmen and Levin, 2002). It is reasonable to expect one's personal conversational language and the official project language to be different. Therefore, adoption of a project language will require that even those team members whose native language is English be more careful in their choice of words.

The growth in the number and usage of global projects will increase the likelihood and intensity of cultural diversity of virtual project teams. Culture, as defined by Ferraro (1998), is everything that people have, think, and do as members of their specific group or society. Culture is transmitted through the process of learning and by interacting with one's environment. Ferraro further notes that success on global projects is directly related to the team's knowledge of its members' cultural environment. Therefore, it might be useful for the virtual teams of global projects to adopt a unique project-specific culture.

Since the original birth culture of each team member impacts the project in many ways, global project team members must recognize the influence of their own culture on their own behavior and the resulting influence of their behavior on the overall team's behavior. In some circumstances, one team member might evaluate another team member's behavior by the standards of his or her own culture, based on the belief that one's own culture is superior to another. Instead, in order to create synergy, the team members must embrace, and not avoid, the cultural differences. Cultural background, affiliation, and previous experiences of each team member must be acknowledged as a prelude to leveraging the cultural differences as a source of inspiration and discovery rather than irritation and frustration. Candor, honesty, directness, and openness will go a long way toward making a cohesive team, independent of the cultural origins of the team members.

3.1.2 Modified Meetings

In traditional projects, face-to-face meetings serve to provide a feeling among participants that a project team exists and that the project team members work together as a team. Team meetings have become a common tool in managing traditional projects (Verma, 1996). For example, a project kickoff meeting has proven to be an exceptionally useful tool in

starting a project with the appropriate attitude. Then, once the project is off and running, progress review meetings should be used to assess status and report on the progress of the project. However, project meetings must offer adequate benefits in exchange for the time that they consume. Therefore, all meetings of any project team should be planned with specific objectives and with sufficient preparation. As a symbolic signal that the team operates in a collaborative fashion, anyone who can make a contribution must be encouraged to participate. Thus, progress reporting meetings can also be used for team building. These meetings can provide an environment in which each team member would clearly recognize how his or her work contributes to the project deliverable. These sessions can provide a way for team members to interact, to discuss problems, to air issues, and to share ideas for problem resolution.

Project managers of collocated teams, in the traditional project environment, can easily call a meeting on a semiregular basis, since project participants can quickly assemble to meet face to face. This pattern of management, although very effective, takes advantage of the physical proximity of the team members in avoiding extensive meeting preparation, monitoring, and reporting. However, the project manager of a virtual team must be far more proactive and organized, because meetings and information exchanges cannot be arranged nearly as quickly for a virtual project, nor can they be conducted effectively without a clear and specific agenda. Preparation for a virtual team meeting tends to be more complex than its traditional counterpart because there are more variables involved in planning and holding these meetings in the virtual environment. These meetings might involve different time zones and different native languages. Since there is no face-to-face interaction, there is a need for means, methods, and protocols that would facilitate receiving project information in different formats. The virtual team requires additional guidelines for its team meetings in order to maximize efficiency of the meeting and in order to ensure that team members fully participate in the meeting. Generally, in the interest of holding the complete attention of all virtual team members, the topics covered in meetings should be narrower in scope than in traditional collocated meetings. Finally, the project manager should occasionally solicit the individual team members' feedback on how to best improve the conduct of the meeting. Basic guidelines for procedures for virtual team meetings would cover topics such as:

- Circumstances for calling a virtual team meeting
- Format for the meeting agenda
- The lead time for distributing the agenda

- The importance of following the agenda
- Mode of the meeting, such as a web address or a phone call
- Required confirmation from those team members who are expected to attend the meeting
- Contingency plans in case the technology to be used cannot be accessed by all team members
- Review of minutes, and action items, from previous meetings by all participants
- The importance of being brief in presenting ideas
- Methods to use to check for understanding
- Assigning someone to serve as a recorder, or note-taker, for the meeting
- Regular rotation of meeting management duties
- Time limits for responding to ideas and for making suggestions
- Assigning action items at the end of the meeting
- Tracking meeting action items to completion

Finally, a short survey such as the one shown in Appendix 3A would be useful in determining the success and efficiency of the meeting.

3.1.3 Trust and Identity

The behavior, interrelationships, teamwork, and performance of the entire team are impacted significantly by the manner in which a team member views, relates to, and shows respect to other team members. Trust is far more pivotal in the virtual team than its traditional counterpart. In a virtual project, trust is the key ingredient necessary in preventing the geographical and organizational distances of team members from becoming psychological distances (O'Hara-Devereaux and Johansen, 1994). Since the vast majority of virtual teams communicate over the computer and asynchronously, they lack face time to build rapport. Additionally, the cultural dimension of relationships must be carefully considered when implementing virtual project plans. One notable skill for developing trust is the proper use of what is referred to as "trained respect," in that one trains oneself to suspend judgment, temporarily or permanently, in order to truly listen to a different point of view (Bauhaus et al., 1996). Team members must demonstrate that they regard one another's views as valid. One must take time to understand the other team members, in order to relate to and connect with them. For example, when a team member proceeds to initiate a problem-solving dialogue, he or she must check whether other team

members have interpreted correctly what has occurred. It is entirely possible that different team members might interpret the problem, or define an issue, differently because of a cultural communication barrier.

Another requirement for a cohesive team is that team members must adopt a policy of not stereotyping others (e.g., the engineers, the young kids, the auditors, the people about to retire, etc.). Generally, stereotyping of other team members is based on an individual's views and attitudes toward members of a specific group, which in turn is often based on incomplete information. It is an interesting occurrence that if these stereotyping views are positive, relationship building will increase, but if they are negative, they will dramatically thwart team building (Flannes and Levin, 2001).

Knowing the identity of the people with whom one is communicating is essential for a full understanding of the explicit and implicit components of a particular interaction. In a traditional collocated team, there are basic and abundant clues from facial expressions and from general body language that help team members in gauging one another's personality and social status. To state the obvious, one cannot use the same barometer to gauge the identity, and personality characteristics, of one's teammates in the virtual environment. For better or for worse, on-line interaction strips away many of the clues and signs that are part of face-to-face interaction, thus making identity and organizational status ambiguous concepts. Although the lack of identity clues is generally considered a disadvantage, it can also be an opportunity for virtual team process improvement. The advantage is that under this mode of communication, people will be judged by the value of their ideas rather than by gender, race, religion, national origin, class, or age. Further, traditional chain-of-command hierarchies may be less evident in virtual teams, thus facilitating a shift from the traditional power base of the team. This power shift can enable team members to speak up more willingly. The net result is that team members might offer more useful suggestions, insights, feedback, and alternative approaches to problems, on one another's work, and on the overall direction of the project. Therefore, the team members will become accustomed to the advantages of conducting a specific communication without any knowledge of, or reference to, one's status in the organization. Communication that is based on mutual respect would apply when the organizational ranks of team members are not equal, such as communication between a project manager, a team member, and a sponsor. However, it is always helpful if both the sender and the receiver involved in the communication recognize the individual style of the other party and make appro-

priate adjustments for that specific style. This mode is in contrast with traditional teams, where the style of the person with the highest rank automatically prevails.

If at all possible, information technology must help create and maintain a common identity among the virtual team members. However, building of trust and camaraderie, which is one of the essential elements of a productive team, is hindered if team communications do not seem consistent or organized. Therefore, the project manager must put measures in place so that communication among team members is equitable, regular, and predictable. Another important feature is that substantive responses must be solicited from team members in order to keep everyone involved in all matters of the team.

The virtual team, as a whole, must continually work to establish and foster group identity and a sense of belonging, albeit in a virtual community. The project environment must provide means that can be used to communicate information, personal clues, and job-related data. To that end, the virtual project team members must make an effort to meet regularly in a "virtual space." During these meetings, the team members will have an opportunity to observe (in the virtual sense) one another's behavior and personalities. Sometimes this insight can be formed based on indications of how other team members have behaved in the past. Accordingly, greater gains are possible if information about past interactions is aggregated and shared within a group. These interactions and their information exchange components will make the team members more accountable to one another because they now feel that they know each other personally.

3.2 INFORMATION TECHNOLOGY AS THE ENABLER OF THE VIRTUAL PROJECT

If it were not for the ease of use of and rapid developments in information technology, virtual projects would not have been pursued as readily. Information technology is the enabler of the global project since its components facilitate the collaboration of the virtual project team members. Common technologies that could be used by virtual teams include Internet portals, e-mail, desktop videoconferencing, and group decision support systems. These tools enable generation of work assignments, on-line review of deliverables, facilitation of task-specific feedback, notification of upcoming tasks and priorities, and collection of day-to-day progress information about the project. Other uses include notifying team members about emerg-

ing issues, tracking action items, collecting historical data, developing new project/team metrics, and conducting real-time status updates.

Using the appropriate tools of the information technology, data can be gathered, presented, manipulated, and examined in real time. By virtue of enabling real-time experiences in a dynamic business environment, information technology assists the virtual team to overcome some of the barriers that have been created by time, distance, complexity, and the diversity of participants (Tuman and McMackin, 1997). If the appropriate technology is employed, and if the frequency and mode of communication are carefully planned, information technology might even become an instrument by which virtual project team members make personal human connections.

It is a reality of project implementation that all project teams need to exchange ideas and project data. Information must be shared and managed across the project and through the life cycle of the project. The geographically dispersed team can use a web-based team room, somewhat akin to the war room or team room of the co-located project team. Thus, a web-based team room will capture pertinent project data for use by all project team members. The team room can provide meeting databases and discussion forums that are accessible to all. Approvals can be given and decisions can be made in the team room. Team members can log-in to this easily accessible archive as they start their work each day. Information can be captured and stored in the team room for all team members; thus the global team can work on the project 24 hours a day. Built-in action databases can allow problems or tasks to be identified, assigned, and communicated to the team members. As changes occur in the various components of the project's performance and environment, automatic notifications can be sent to team members. Such project databases can also serve as historical information for use in future projects. Thus, for better or for worse, no longer does a show-and-tell type of status meeting need to be held in which team members report on the progress of their specific tasks. Instead, status information is broadcast through the central databases so that status meetings can become proactive strategy sessions.

However, while technology serves as the enabler of the virtual project, the specific nature of technology might become a source of conflict rather than collaboration. Therefore, team members must strive to reach agreement as to the purpose of each available tool and the procedure for using each tool. Otherwise, the lack of common norms can lead to conflict that could damage working relationships. For example, one team member may feel that e-mail is a tool to be used only for urgent business, while another team member may use it only for documentation of information, fully

expecting to save urgent messages for telephone communication. The more diverse the team is, the more important it is to clearly define the technologies that must be used. Naturally, the project or the organization must purchase a sufficient number of the entire agreed-upon suite of hardware/software tools for every member of the project team.

During the early stages of team formation, the team must reach agreements on communication methods, technology to be used, and the tentative communications schedule. Ideally, computer-mediated communication systems could be employed to encourage wider participation and greater candor. However, an inordinately high reliance must not be placed on technology; rather, attention must be paid to the individual differences among the team members during the use of a specific technology. There is a temptation to believe that technologies such as fax, e-mail, and voice mail can substitute for high-touch management (Leonard et al., 1998). Ironically, people who prefer to discuss things in a synchronous fashion sometimes regard text-based tools, like e-mail, fax, and shared databases, as a hassle. Nonetheless, given the right circumstances, these tools can enable the virtual team to align its intent and interpretation within the context of the team culture, the official language, and the organization's business objectives. The participative culture of the team will be fostered substantially if the team members have immediate access to the information that they need to perform their assigned work. Consistency in communications will be enhanced if the team subscribes to predefined formats, a unifying and distinguishable logo, and operational templates. Thus, it may be appropriate to use "lean" technologies, such as e-mail, for simple information exchange. Then, a "rich" type of technology, such as videoconferencing, can be reserved for brainstorming or for conflict resolution sessions (Leonard et al., 1998).

One of the very attractive features of the advanced technology communication tools is that a team member can transfer information to any other team member. Therefore, most items of information that need to be exchanged during the project planning and execution phases can be transmitted almost instantaneously. Project information that would be disseminated includes project requirements descriptions, project planning details, project estimates, project schedules, and project progress details. The project information can also include details of the components of the deliverable, such as engineering drawings, architectural renderings, software files, software test results, the project charter, the team charter, and elements of the project notebook. Since virtual project teams make extensive use of information technology, they can transmit a much larger volume of infor-

mation compared to the traditional information exchange modes and with greater ease. Therefore, a virtual team charter must explicitly address the prudent transfer of project/company information. The team charter must include procedures that guard against infringement of intellectual property rights, proprietary information, copyrighted information, trademarks, and service marks.

3.2.1 Using E-Mail

Since the use of e-mail pervades a multitude of facets of almost everyone's life, specific guidelines must be provided to the virtual team members for its proper use. In turn, team members should exercise due diligence in complying with these guidelines, because group dynamics are more difficult to manage in an asynchronous environment of e-mail. Since e-mail will be the primary method of communication among the virtual team members, the ability to write concise and effective e-mail is a critical skill for virtual team members. Thus, it might be desirable to formulate consistent procedures for the appropriate use of e-mail. The following guidelines can be used as a starting point in developing a procedure that promotes effective use of e-mail.

Composing e-mail

- Use of the subject line to convey the purpose
- Ways to organize the content of the message in a logical fashion
- Methods to highlight important information
- Use of return-receipt e-mail
- Best methods for including background information
- The importance of avoiding acronyms and abbreviations
- Ways to avoid a lengthy document trail
- Use of upper- and lowercase letters
- Appropriate use of all caps in e-mail
- The importance of using short words, sentences, and paragraphs
- Methods to anticipate, and answer, readers' questions
- Methods to ensure a professional presentation of the message
- Approaches to ensure the clarity and focus of each message
- Ways to write e-mail from the reader's point of view
- The importance of translating technical language for nontechnical recipients
- The importance of checking grammar, spelling, sentence structure, and punctuation

Sending and/or responding to e-mail

- Should different types of e-mail be sent to all team members or to only selected team members?
- What are the specific next steps that describe what the sender plans to do and what the receiver should do, including time frames?
- If e-mail is used for communication, and if the original communication is intended for every member of the team, should all team members be copied in the response?
- Should team members acknowledge receipt of all e-mail, even if they do not need to specifically respond with action?
- If one team member sends an e-mail, can the recipient forward it directly to other team members, or should the recipient request that this be done by the sender?
- Can e-mail be forwarded to people outside the project team without the sender's explicit permission?
- Are there any specific situations that are inappropriate for e-mail?
- Are blind copies appropriate for project information transmission?
- If a team member communicates via e-mail, and if the recipient requires some clarification before responding, can a phone call be used?
- Alternatively, should all subsequent communication be via e-mail?
- How often should e-mail be checked, and when should the sender expect a response?
- If someone does not respond in the time period established in the charter, should the sender send a second e-mail, make a phone call, or send a fax?

3.3 POLICIES AND PROCEDURES FOR THE VIRTUAL TEAM

The people challenges that are likely to be encountered in virtual teams are of a higher magnitude than those in traditional teams. More so than traditional teams, virtual teams need specific ground rules for the team's day-to-day activities. Therefore, virtual team project managers must pay special attention to processes, policies, and procedures for people issues. Naturally, all team members must conduct themselves in line with these ground rules in order to foster mutual accountability. Members of a mature project team must continuously improve the team's procedures and policies so that they can meet the challenges of changing project circumstances effectively and efficiently.

Typically, policies and procedures are comprised of processes for various tasks and duties. The purpose of a detailed process is to describe what one must do to bring about a set of predefined results. Therefore, a process can be described as a set of practically oriented steps designed to help team members reach a specific goal. If all project team members establish the project processes collectively, they are more likely to take personal responsibility for the planning and execution of their work. Documented and understandable procedures can facilitate the planning and implementation of changes to the existing procedures. These documents will also serve as on-the-job training manuals for new team members. Thus, projects are dependent on processes for the success of the activities that produce the client's desired product. On the other hand, lessons learned from successful projects of an organization will provide a continuous stream of enhancements to the existing processes of the organization. Therefore, in a way, processes are also dependent on projects for their enhancement (Dinsmore, 1999). In turn, these new processes will form an elevated starting point for planning the processes of new projects.

The processes and procedures should be designed such that they would not constrain innovation and creativity, because the ability to balance discipline and flexibility is critically important in the project environment. Therefore, the administrative structure of the project should have enough discipline to get the project completed, with minimal bureaucracy (Flannes and Levin, 2001). In determining the amount of structure that is required, the team should examine the technical challenges of the project, government regulations that affect the project, the overall complexity of the work to be done, and the requirements of the project's stakeholders. Then, the team should use that information to determine the desired procedural flexibility necessary to complete the project. The balance between bureaucracy and flexibility should be such that team members do not regard the policies and procedures as hindrances to the timely completion of their assigned tasks.

3.4 THE TEAM CHARTER

As noted in Chapter 2, the project charter is the official document that describes the purpose of the project, sets forth the project manager's authority, links the project to the organization's strategic goals, and formalizes the administrative and financial position of the project within the organization. Similarly, a team charter should formalize the internal member-to-member behavior of the team in planning and delivering the results

of the project. The team charter should be more specific than the project charter, because a team charter establishes the roles and responsibilities of the team members, ground rules for the team's operation, and team development policies (Appendix 3B). The team charter should also contain the prevailing practices and procedures that team members should use to perform the project work. A subtle, but important, benefit of the team charter is that it encourages the team members to set forth a vision of the project that is based on a common purpose, shared ownership, and collective commitment.

Since everyone requires a sense of complementary objectives, the team charter should state specific expectations that are to be met, collectively and individually, by the team members. These expectations should clearly indicate what the team members must do and also what the team members must not do. A lack of clarity will lead to confusion, frustration, and lack of motivational incentives. The team charter should specify the team's expectations of each project team member in terms of general behavior, respect, commitment, and openness. The team charter must highlight the specific performance expectations, such as timeliness in delivering promised outputs. It should also include the procedures for the most graceful ways to prompt a tardy participant and for identification and escalation of a conflict. These features of the team charter will subtly but surely affect the contribution of the team members to the project. The charter should include the basic ground rules for the use of e-mail for project communication. It should also include guidelines for communication modes other than e-mail, such as conference calls. The charter should prescribe the times at which conference calls should be scheduled, so that people in different time zones are not always unnecessarily burdened or surprised.

The team charter should describe how the team members should collectively plan the work, how team members should share information, how they should participate in making decisions, and how they should perform their work in concert with each other. If the work to be done is interdependent, team members should mutually agree to coordinate the related activities with due consideration to their intertwined commitments. The charter should specify any collaborative work currently under way with other organizational groups. The points of contact, and modes of contact, should be specified for those interfaces with other groups.

The charter should describe the team decision-making processes concisely and clearly so that each team member understands the process that he or she needs to follow. At times, independent decisions by one team member are appropriate, while at other times a coordinated decision, with input from several team members, is required. There are yet other occa-

sions when a consensus decision, involving input from all team members, is more appropriate. Items to list when developing decision-making procedures include the name of the person who is accountable for the process, the names of people who are in possession of the information relevant to this decision, the names of those stakeholders that must support the decision, specific work activities that are affected by the decision, and an implementation date for the decision.

3.4.1 The Kickoff Meeting

Although the concept, and even the name, kickoff has definite visual implications, a variation of it can be used to inaugurate the virtual team. The kickoff meeting, held electronically for a virtual team, could start by having each team member describe the best project in which he or she has participated. The description should include an enumeration of what might have made that particular project a success. The next step would be a similar discussion of the worst project in which each person has participated. Then, specifics must be recited as to why that project was not successful. On the basis of these experiences, lists of similarities and differences among team members' characterizations of a successful project and a marginal project can be prepared. Then, the team members should be prompted to discuss what they hope the level of sophistication of the deliverable of this project will be and what issues might become pivotal in this project.

The project kickoff meeting is a perfect opportunity to plan the project's deliverable in order to meet the client's needs and expectations and to plan the performance of the team in crafting the deliverable. The former will be the basis for the project charter, and the latter will form the basis for the team charter. Knutson (1997) refers to the team charter as the team's *raison d'être.*

The kickoff meeting should set the stage for the team members to become familiar with the project's background, goals, and deliverables. Then, team members should be encouraged to share their views on what would comprise an effective team in delivering the promised output. The compilation of these views will be incorporated in the team charter and updated as the project team develops a better focus about its work.

The team members, working together, must prepare performance statements to be used as a benchmark of project success. The performance statements would serve as the baseline for measuring the performance of the team in crafting the deliverable of the project. These team-perspective performance statements should additionally list the current barriers to

project success, regardless of whether the barriers are perceived or real. The focus of these statements and these meetings should not be exclusively on technical concerns and specific tools and techniques, but should also cover members' cooperative and collaborative behavior, over which the team has a significant influence. Hopefully, this initial performance statement, and continually enhanced versions of it, will encourage the team members to communicate openly, to reduce frivolous conflicts, resolve major conflicts, and capitalize on intellectual diversity.

The charter should also include a statement that indicates the commitment of each team member to the other team members and to the stakeholders. Essentially, the commitment statement is the team's code of conduct, which should become a reference document throughout the project. Additionally, each team member should list his or her general responsibilities to project stakeholders and to the customer. Then, the team members would list specific details for project planning, execution, monitoring, control, and closeout. Each team member should electronically sign the charter through an e-mail to indicate his or her symbolic support of it. When new members join the team at a later time, they too should be asked to sign the charter. Notwithstanding, these new members should be encouraged to openly express any reservations or suggestions for enhancement that they may have about this charter.

The commitment statement would affirm issues such as:

- The team is responsible to the stakeholders for the project deliverable so that it is:
  - On time and within budget
  - Of high quality in all aspects
  - Consistent with the client's business plan
  - Positive in its impact in terms of social, economic, and environmental sustainability
  - In accordance with applicable standards and regulations
- The team members are committed to each other for performance in completing the project by:
  - Sharing best practices
  - Resolving issues quickly and cooperatively
  - Respecting personal, ethnic, and cultural differences
  - Promoting a collaborative project environment
- Each of the team members pledges to foster working relationships among the project team members through open and frequent communication, recognition of professional responsibility, collaborative leadership, and mutual cooperation.

- The team members of this project commit themselves to working together, in a cooperative and collaborative manner, in order to ensure that the project is completed successfully. The indications of success would be desirable values of performance, quality, delivery date, and total cost.

3.4.2 Conflict Management

By definition, many of the elements of the project deliverable are new and unique, and as a result, project management activities may lack a clear precedence. Thus, one should expect that challenges, opportunities, problems, risks, concerns, and issues will arise throughout the life of the project. Therefore, exercising initiative is one of the common traits of project professionals in both virtual and traditional teams. The project manager's areas of initiative include primarily those that deal with project issues and enterprise issues. On the other hand, team members' areas of initiative deal primarily with interaction issues, communication issues, and task issues (Figure 3.5). Additionally, since virtual teams provide greater opportunities for delegated responsibility and shared power, the lines of demarcation become a bit blurred, much to the benefit of the overall cohesiveness of the team, which in turn results in better performance. One can imagine that the manner in which any of these issues is

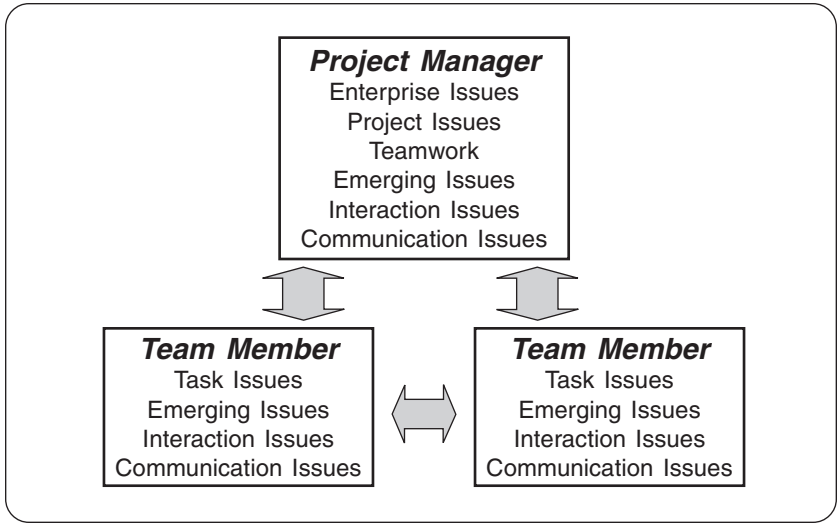

Figure 3.5 Project Initiative

handled by one member will have a definite impact on other team members and ultimately on the deliverables of the project.

If minor issues are left unresolved, they might grow into major conflicts. The earlier an issue is identified, the sooner it will be resolved, thus avoiding the likelihood that the issue will evolve into a major area of conflict. Early recognition of issues will result in fewer surprises, which in turn will promote open and constructive discussion among team members. Early detection and resolution of issues also can reduce the uncertainty in the work environment. This uncertainty can sometimes be very unsettling for virtual team members.

The definition of conflict, in the context of project environment, is that it is a dispute, disagreement, or contention between two or more entities. The entities might be individual team members, teams, functional departments, or stakeholders (Flannes and Levin, 2001). Conflicts may occur over a variety of subjects, including schedules, budgets, resource allocation, performance, personalities, technical matters, legal and ethical concerns, coordination, loyalties, and priorities. Incidents of conflict may be substantive, involving policies, procedures, roles, responsibilities, budgets, and schedules. Conflicts may also stem from trust issues, emotional reactions, individual values, and personal preferences. Parenthetically, sometimes the latter category of conflicts might manifest itself through items in the former category. Conflicts are somewhat common in traditional projects, but they are dangerously prevalent in those virtual teams that have been formed with insufficient supporting structure. Therefore, all conflicts on any project should be addressed as early as possible.

Most people have a general instinctive tendency to avoid conflict. The premise for the avoidance is that conflict has negative repercussions and that dealing with conflict will more than likely involve unpleasant undertakings. Many also believe that by avoiding conflict, somehow it will naturally go away. However, a more enlightened and constructive approach is to view conflict as a potentially positive component of the project team experience. The team members must capitalize on the diversity that causes the conflict, avoid what is known as "groupthink," exchange valuable insights, and forge improved working relationships. Recognizing and handling conflicts properly form the cornerstone of greater team unity.

In a virtual team interaction, one's mood and morale are less apparent than they would be in a traditional team. It is difficult to express displeasure and frustration in the virtual environment unless someone makes an effort to send a curt e-mail, in which case there would be no misinterpretation of that particular sentiment. Notwithstanding, if virtual team con-

flicts are allowed to remain and fester, it might result in decreased motivation and negative behavior, which may be far more difficult to resolve in the asynchronous environment. Those conflicts that might rise to the surface when two people see each other on a day-to-day basis might remain hidden in the virtual environment. Therefore, conflicts should be addressed in a proactive fashion with ample forethought in planning and with more commitment in monitoring. When there is a conflict between two or more members of a traditional team, the project manager can easily assemble the parties in a room and work with them to resolve the difference. By comparison, when such a conflict arises in a virtual team, such a direct resolution is not available, at least not by using the same techniques and procedures.

The charter should set forth formal procedures that describe how to raise a conflict, what decision-making processes to use, and how responses should be provided. The charter should also describe how one should extract a resolution from a conflict. The charter should also highlight how to escalate a conflict directly to the upper management outside of the project team without fear of reprisal. Further, the charter should include guidelines for reviewing conflicts, resolving conflicts, appealing the resolutions, and tracking the actions during the review and resolution process. Embedded in all of these procedures should be safeguards to ensure fairness and confidentiality. Finally, and most important of all, the goal of conflict resolution should not be to create a situation where one individual team member declares victory over another.

In order to formalize the identification of issues, and eventual resolution of them, the team charter should specify a process for the identification of issues. Such a process should address the following:

- How to raise an issue
  - In writing
  - Through meetings with other team members
  - Through meetings with a neutral third party such as a facilitator or mentor
  - Through meetings with the project manager if the concern cannot be resolved by the team
- How to track an issue
- How to conduct a meeting to discuss possible resolutions
- How to effect follow-on activities after the meeting

The charter should also specify the necessary steps in cases when the issue evolves into a major project conflict:

- Should team members who are directly involved in the conflict agree to resolve the conflict?
- Should one of the other team members facilitate the resolution?
- What are the problems that can be solved within the team?
- What problems should be escalated to upper management?
- What are the specific levels of authority for conflict resolution?
- How much time should be devoted to the conflict resolution process?
- Who should be informed of the conflict and its resolution?
  - Only the affected team members?
  - The entire team?

3.5 VIRTUAL TEAM PERFORMANCE

The success of any project will be based primarily on the measurable values of the triple constraint. However, it would be somewhat simplistic to regard project performance as a collection of statistics. A more realistic description would be that projects are technical problems with human dimensions. Thus, project success would require that a group of individuals work, collectively and individually, toward a common goal. Today's projects are very complex, and they involve creative and innovative products and services. In order to meet the challenges of the project, the team members must coordinate their efforts, share their ideas, and discuss their insights. Project teams are expected to produce results, and thus performance is hindered if the team members do not work together effectively. If every team member is totally engaged and fully productive, then the virtual team will successfully deliver the desired products and services.

However, considering the specific attributes of virtual teams, it would stand to reason that work compartmentalization becomes exacerbated in the virtual environment. In the virtual environment, it is relatively easy for team members to work as isolated individuals and not to perform as a team. Then, each person would feel responsible only for his or her specific tasks without regard to how he or she interfaces with those tasks that are the responsibility of others. In such a case, individual team members would not contribute fully and effectively to the goals and objective of the entire project. In this scenario, individuals tend to contribute in singular ways, and the full component of their capabilities might not be exploited. In this environment, responsibility for project issues might not be shared, leading to possible mal-performance, which in turn leads to shortfalls in the project deliverable. Team members might make decisions based on

incomplete information because, in this isolated environment, it becomes difficult to acquire expert information from multiple sources. Unfortunately, an atmosphere of teamwork does not result under these isolation circumstances. Notwithstanding, compartmentalization can be harmless in cases where the tasks are totally independent or when a team member has been commissioned to integrate all the individual and independent components of the project.

The objectives of the project team, and those of each team member, must be established in the team charter with as much detail as possible. In turn, these objectives must set the foundation for measuring team performance as well as individual performance. Ideally, drafting the performance standards should be conducted in a collaborative manner so that team members develop guidelines to evaluate the contributions of others to their tasks. Then, repeated and regular discussion of performance should focus on improving overall project performance. The charter should specify how often accomplishments are to be reviewed against the objectives, ways to obtain information concerning these accomplishments, information to be documented, and distribution of performance information. The charter should describe methods for reviewing performance information, methods to address unsatisfactory performance, and procedures for resolving any subsequent disagreements. Finally, the charter should note how people are expected to report their accomplishments and with what frequency progress information should be disseminated to the collective team.

All of the team members should be aware of the contributions of others. Such awareness is easy to maintain in a collocated team because people can determine quite readily whether someone is or is not participating in the product development. Unfortunately, the members of a virtual team can sometimes become afflicted with performance misconceptions, which result in either overwork or underwork. In a virtual team, someone might be diligently completing his or her assigned tasks, yet other team members might not specifically acknowledge and recognize these accomplishments in team conference calls, on the project intranet, or through standard status performance reports. Some people simply will not complete their assignments, believing that others will not notice their lack of participation. Further, some team members may duplicate the objectives of others if they are unaware that someone else actually is doing the work. In other cases, work may not get done at all because people assume someone else is doing that specific task. Given that these situations are usually the result of improper communication and inaccu-

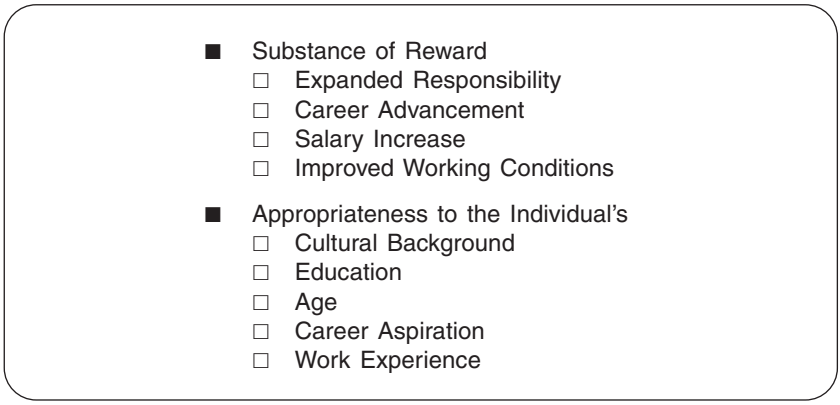

Figure 3.6 Rewards

rate progress reporting, appropriate communication procedures should be aimed at minimizing the incidence of episodes involving overlaps and/or gaps in performance.

One of the more festive components of team building is the reward process. Best practices of team building include activities related to, and occasions for, recognition of superior performance. The rewards can be of a physical nature, such as monetary rewards or gifts. The rewards can also be of a recognition nature, such as plaques, titles, and other intrinsic rewards (Figure 3.6). Notwithstanding, these rewards are usually awarded in public gatherings and/or documented in newsletters. A reward system appropriate to the behavioral aspects of the team and applicable to the technical aspects of the team must be established for each virtual team. Finally, an effective team is one where the reward system is based on a combination of individual performance and mutual accountability.

3.6 SUMMARY

The team's efforts must be focused on delivering the client's desired project on time and within budget. However, managing the people issues of the project is one of the most important duties of the project manager, because the project work must be performed by individuals who have feelings, emotions, and opinions. The importance of dealing with the intricacies of communication, conflict, and personalities is magnified in virtual teams because the face-to-face remedies, which are the most common remedies for problem solving in traditional teams, cannot be used.

APPENDIX 3A EFFECTIVENESS OF TEAM MEETING

Please use the scale provided to rate the project team meeting:

1 = Significant Improvement Required
2 = Some Improvement Required
3 = Sufficient
4 = Valuable
5 = Extremely Valuable

	1	2	3	4	5
1. Clarity of meeting goals					
2. Clarity of meeting agenda					
3. Time devoted to each agenda item					
4. Ability to participate					
5. Ability to understand others' views					
6. Ability to interact with other team members					
7. Materials presented					
8. Decisions reached					
9. Action items presented					
10. Importance of meeting to overall project work					
Overall Meeting Effectiveness					

APPENDIX 3B TEAM CHARTER

Project Manager	Phone	Fax	E-mail
Mission Statement			
Project Commitment Statement			
Description of Project Manager Role			
Description of Project Sponsor Role			
Description of Client Role			
Description of Stakeholder 1 Role			
Description of Stakeholder N Role			
Description of Team Member 1 Role			
Description of Team Member N Role			
Performance Objectives			
Measures of Success			
Scope and Boundaries of the Team's Work			
Project Time Frame			
Deliverables			
Conflict Management Protocol			
Decision-Making Protocol			
Communication Protocol			
Administrative Activities Protocol			
Issue Escalation Protocol			
Approvals:			
Project Sponsor	Signature		Date
Project Manager	Signature		Date
Team Coordinator	Signature		Date
Team Leader #1	Signature		Date
Team Member #1	Signature		Date
Team Member #N	Signature		Date

4

CHARACTERIZING VIRTUAL TEAM MEMBERS

For the purposes of continuous improvement, it is useful to evaluate the sophistication of the team members in handling the people issues and things issues of the project at various points during the project life cycle. Such evaluations can be performed with far more ease if there were a series of instruments at the disposal of the team. The contention of the authors is that, particularly in virtual teams, the people dimensions are far more important than the things issues, and they should be evaluated on a frequent basis using a consistent and formalized process. If one imports traditional project procedures directly into virtual teams, the team's efficiency and productivity will be significantly reduced, particularly in the management of people-related issues (Figure 4.1). The reason for such reduction is that traditional team procedures are heavily dependent upon face-to-face means for initialization of the project and specific tasks, for monitoring the progress of tasks, and for management of changes to the project environment. More importantly, detection of changes and/or problems usually depends on visual observations and personal contact. Therefore, it will not come as a major surprise if the virtual team appears to be phenomenally more difficult to organize and manage by someone whose entire suite of skill sets depends on face-to-face tools. Unfortunately, since there is some amount of progress even when using inappropriate procedures, it might be some time before the project manager, or the Project Management Office, becomes aware of the existence of a serious deficiency.

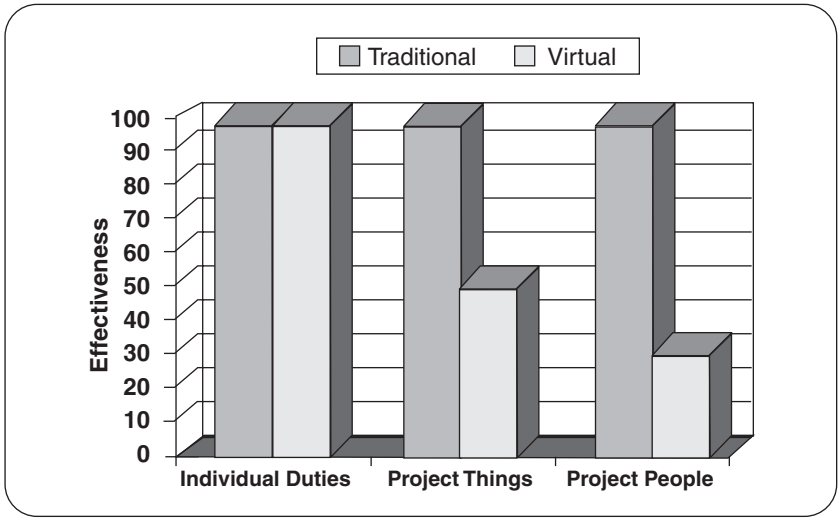

Figure 4.1 Stylized Comparison of the Effectiveness of Traditional Procedures in Virtual and Traditional Teams

It is important to note that the quality and volume of individual work will not be materially affected regardless of the nature of the team to which a person is attached. Further, if the procedures are either validated or customized for virtual teams, the effectiveness of managing the things issues of virtual projects would be equal to that of traditional teams. As for the management of people issues, unique virtual team tools might be able to bring the effectiveness of these issues to a level that is almost equal to that of traditional teams (Figure 4.2). It is fair to say that if team members are equipped with the appropriate tools, their performance will be more focused when working in a virtual team. Still, those individuals who need continuous face-to-face contact with their teammates will not do well in virtual projects, even with virtual-specific procedures and tools. However, those individuals who do not require face-to-face affirmation might do even better in virtual teams than they would have in traditional teams.

4.1 CRITICAL DIMENSIONS OF PROJECT TEAMS

While the primary focus of the team is on the final deliverables and technical results of the project, the team's focus is also on the activities and processes that facilitate the delivery of the product or service. The

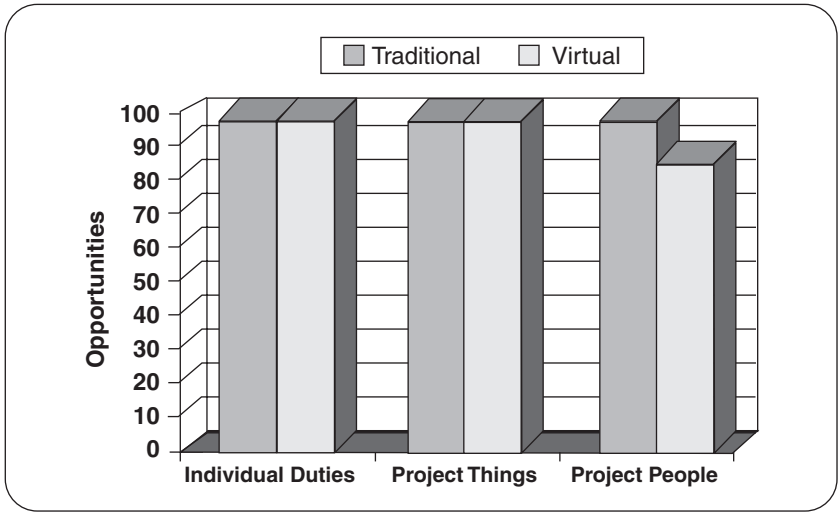

Figure 4.2 Stylized Comparison of the Effectiveness of Customized Procedures in Virtual and Traditional Teams

team members work to deliver that product or service by using best practices and procedures. The success of these practices and procedures would depend partly on how much contentment the individual team members derive from an increased knowledge of the personal and professional attributes of the other team members. In turn, this contentment with personal knowledge would lead to satisfaction with the process by which the team accomplishes its work. One positive side effect of these personal ties among team members is that the team members show an interest in working together on future projects.

Success of an individual team member in performing his or her project duties can be predicted based on the behavioral dimensions of that person. By extrapolation, the success of the team would be the sum total of the incremental success of the individual team members. This concept would hold for virtual teams as well as traditional teams. Ten critical dimensions of a synergistic virtual team (Figure 4.3) are presented in this section. Effective performance in these ten critical areas will lead to maximum performance for the individual and, by extension, to optimal performance of the team. Further, improvements in one or more of these dimensions will result in improvements in team behaviors, which in turn lead to improved overall project performance and ultimately to organizational success. What follows is a brief description of each of the ten team dimensions and why they are important to the virtual team.

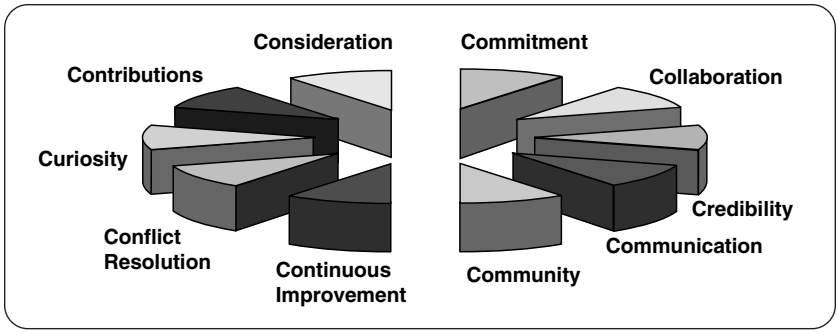

Figure 4.3 Ten Critical Team Dimensions

4.1.1 A Strong *Commitment* to the Goals and Objectives of the Project

Generally speaking, a commitment is an agreement concerning the work to be done. In the context of a project, completing the work involves delivery of the product or facilitation of the service on time, within budget, and according to specifications. The visual reminder of the frantic pace of project work, so characteristic of traditional co-located projects, is often missing in the virtual project. It is possible that a team member might be unaware of changes in scope, changes in a project milestone, changes in the delivery date of other team members' tasks, changes in the overall project budget, changes in overall project direction, or changes in the organizational strategic direction. As a result, other work obligations of this team member, particularly any on-site work, often assume a higher priority. Under these circumstances, one might lose sight of the project's objectives and how one's piece of the project contributes to the overall desired outcome. A common purpose will serve as a solid foundation for the procedures that prioritize team activities. It is through commitment that team members will give the project's goals and objectives their best effort. If all team members commit to the goals of the project, the stage is set for cooperative relationships among team members, an attitude of trust, and increased motivation. All of these factors would ultimately result in a product that meets or exceeds the project's goals.

4.1.2 A *Collaborative* Environment for Project Work

Typically, the early stages of a project set the tone for each individual's degree of involvement. Therefore, people must feel involved from the

beginning of the project. Team members need to understand the goals and objectives of the project, how the goals and objectives relate to the overall organizational objectives, and then how their individual work packages dovetail into the project deliverable. The team environment should encourage dialogue and interaction about the project's goals and objectives, the reasons for the team structure, the approach for meeting the goals and objectives, the processes and procedures the team will use to complete its work, and methods to resolve issues. Ideally, team members should actively participate in decision-making processes that impact their work on the project. It is fascinating that, under some circumstances, collaboration is even viewed as cheating (Parker, 1994). Nonetheless, the team must identify those forces and behavioral traits that might hinder effective teamwork, in order to put measures in place to lessen their impact.

Further, since most project work involves tasks with multiple dependencies, these dependencies must be clearly identified. Then, the involved team members should establish and document mutually agreed-upon mechanisms for coordinating interdependent work. For example, if it becomes evident that a scheduled milestone date cannot be met, team members must communicate such a forecast to each other. Then, the team will have the opportunity to proactively revise the contributing dates through mutual agreement among all those affected.

The team members become involved and connected if they are prompted to share thoughts, ideas, and concerns, particularly if this exchange is conducted as a group of peers. An emphasis on collaborative leadership will provide an atmosphere in which team members respond affirmatively to situations where they are called upon to influence, direct, and motivate others.

4.1.3 Demonstrated *Credibility* in All Aspects of Project Work

Each member of the team should demonstrate high performance standards. This behavior includes organizing and managing time productively so as to complete assigned tasks as promised. It also includes providing timely information to others to help enhance their work on the project. Individual team members should take time to gather and analyze data before making decisions that affect the project. A nonjudgmental attitude toward each person's ideas should be displayed during these deliberations. It also is important for each person to know the roles and responsibilities of the other team members. If previous experiences have demonstrated the competency and dedication of a team member, then there would be justified

expectation that other team members would more readily feel comfortable in accepting this team member's opinions and results without any concerns about accuracy and reliability. Under these circumstances, team members can easily express confidence in the skills and abilities of others. If information on previous behavior is not available, then team members initially might approach the project with the hopeful expectation that all team members were selected because of their unique expertise that would enable them to make significant contributions to project success. Part and parcel of this hopeful expectation is that there is some level of anxiety while personal data are being accumulated to support these expectations. The positive foundation provided by personal knowledge and mutual expectations will not eliminate the incidents of disagreements. However, this atmosphere will minimize the probability that full disclosure and veracity of statements will be the subject of such debates.

4.1.4 Effective *Communication* among Project Team Members and Stakeholders

Effective conduct of a traditional team requires open and frequent communication, but the need for communication is even greater in the virtual teams, where frequent face-to-face interaction is unavailable. Miscommunication can create hard feelings that might remain undetected for a long time, thereby undermining team success. Open communication must be encouraged so that every team member feels comfortable contributing to discussions and debates. Project debates are exceptionally useful, because it is during these debates that team members provide useful and important information to other team members. Improving communication involves identifying information needs and ways to best share information among the team. Predictable and effective communication will help maintain trust and momentum among team members. Communication policies of the team must provide an environment that ensures that the information that is shared is of value to the project.

There are many different communication tools that can be used. In order to ensure that the flow of information among the team is unencumbered, the team should be given the opportunity to draft protocols as to when each tool should be used. Early involvement of team members sets the stage for encouraging them to work with one another to develop effective ways to communicate project information. Team meetings, face to face or virtual, should further be viewed as results oriented and generally as a useful way to spend time. These meetings must be planned and managed so that the meeting time is used effectively. Then, each team

member would participate actively in the meeting and will not be tempted to conduct other business during a meeting just because he or she is not visible to the rest of the team. Additionally, each team member should take responsibility for being heard and for being understood. It would be quite useful if team members used agreed-upon methods to stay in contact with each other. These contacts between team members throughout the project life cycle would serve as starting points to discuss ideas, issues, insights, and information.

4.1.5 A Sense of *Community* within the Project Team with a Focus on Professional Responsibility in All Activities

An atmosphere of openness and trust is required if the project team is expected to work together successfully. By definition, each team member should start the project trusting other team members by way of eliciting and respecting the values of others. Each team member should behave with honesty and give other team members the benefit of the doubt. Tolerance and compromise should be exercised in interactions both with team members and with other project stakeholders. Further, each team member should work to eliminate any conflicts of interests that may exist. In such an environment, team members will be encouraged to make a specific commitment to the performance of others in completing the project. By placing an emphasis on sharing ideas, lessons learned, and best practices, the sense of community will be greatly enhanced. If team members use appropriate judgment in project work, and foster integrity, the quality of the project can only improve. Improved quality of the project work will delight the client and team members alike.

4.1.6 An Emphasis on *Continuous Improvement* in Personal and Team Skills and Knowledge

Ideally, each team member should have a personal learning agenda. Individuals should be motivated, and also afforded opportunities, to develop new skills and to enhance their knowledge of the profession's specialty areas. Each person should take an active role to define and develop the skills that he or she would need for further advancement. In addition, each team member should make a commitment to improve the effectiveness and efficiency of the team's processes and procedures in delivering the project's deliverables. Unfortunately, effective teamwork, team behavior, team learning, and collaboration are not the norm in all project environ-

ments, primarily because most organizations emphasize individual accomplishments. Literature shows that people need instruction on how to be effective team players and that continuous improvement must be fostered. Continuous improvement programs should be set up so they encourage individual team members, and the team as a whole, to propose improvements to processes and procedures. An important ingredient of a continuous improvement program is that it must have explicit support of the parent organization of the project.

4.1.7 Effective *Conflict Resolution* among Team Members

Conflicts are an inevitable part of any project because people can and will differ with each other when it comes to identifying and pursuing the best path to a solution. The primary sources of conflict are the triple constraints, although conflicts also will occur concerning personalities, priorities, coordination problems, legal or ethical issues, interdependent commitments, new ideas, technology, and business strategies. Team members are more likely to be motivated to do their best if they know that the conflicts that are certain to arise will be handled in an open and cooperative way. Sometimes the team might require assurance that if conflicts involve a small group of team members, confidentiality will be preserved. There might also be times when only the parties involved in the conflict would need to participate in the resolution discussions. On the other hand, there may be times when the entire team must be informed of the outcome of a conflict.

4.1.8 An Emphasis on *Creative Curiosity* in Project Activities

In the same fashion that a team member would strive to foster incremental improvements in products and processes, the team must be on the lookout for radical and quantum improvements in processes, prevailing techniques, tools, and deliverables. Team members should be of the mind-set that breakthroughs are not only desirable but also attainable. Therefore, the team must keep a watchful eye on sources of opportunity during the project life cycle. It is entirely possible that quantum advancements in one area of the deliverable can be generated by someone who works on another facet of the deliverable but somehow developed the vision of this advancement. The result of such team spirit is that the project, and pos-

sibly the entire organization, can achieve unprecedented levels of performance. Thus, a sense of community will develop around the technical content of the project. Finally, technical creativity of project personnel will become a source of nourishment for entrepreneurial challenges of the parent organization.

4.1.9 Recognition of the *Contributions* of Other Team Members to the Project's Goals and Objectives

Success should be central to the team's culture. Early successes can help build a winning attitude and set the direction of the entire project toward success. Then, with the habit of success created early in the project, team members will be motivated to continue on a successful path. Each team member can help in this area by taking actions to reduce negative features of the overall project performance. Internal and external influences on team performance must be analyzed in order to identify and remove barriers to project performance.

Each team member should recognize other team members' contributions. This type of recognition should be directed at team members who champion ideas as well as those who support the ideas of others. There is no question that any team member will welcome genuine, positive reinforcement, particularly if the reinforcement is considered recognition by a valued professional peer. Thus, each team member should look for opportunities to create and celebrate the success of the individuals on the team as well as the success of the overall team (Skulmoski and Levin, 2001). Finally, some type of team celebrations should be held to provide public praise for individual and team efforts.

4.1.10 An Attitude of *Consideration* toward Other Team Members during the Project

In a cohesive and productive team, helping others succeed is as important as one's own success. Even when disagreements occur, each team member should treat other team members in a fair and consistent matter, showing genuine concern and interest. Further, personal accusations should be avoided. Each team member should show a willingness to take time to listen, and to understand, the points of view of the other team members. Genuine concern and interest should be shown even during periods of technical disagreements. Communication should not be condescending, and each person should treat other team members as equals. Corrective

feedback should be provided in a constructive manner based on technical issues rather than personalities. This pattern of behavior will promote long-lasting relationships among team members.

4.2 TEAM PERFORMANCE APPRAISAL

Generally, a performance objective is a measurable attribute, or quantified result of work behavior, that can be used to gauge the performance of a team or an individual. In organizations that primarily perform maintenance operations, performance appraisal is limited to a feedback process between employees and supervisors. In the project management environment, such an appraisal is usually completed by the individual's functional or department manager, often with input from the project manager. With the increasing use of project teams in organizations, particularly with the movement toward the concept of managing the organization by projects, a much larger set of attributes should be measured and rated. Each team member should establish specific performance goals for his or her work. These goals must emphasize teamwork as well as individual results. Further, in such a collaborative team environment, each team member should provide input to the performance appraisals of other team members with whom he or she collaborates in a significant way.

In order to align the work of each individual with the work of the project team, a multiple feedback approach to performance is highly recommended. This approach, commonly known as a 360-degree evaluation, is also called multirater, full circle, and multilevel feedback and refers to a general process of gathering observations concerning performance from many different individuals. In a 360-degree evaluation, team members, the project manager, the functional manager, the client, and others as appropriate conduct separate appraisals of the same subject. Since team members have a uniquely realistic perspective on one another's performance, a 360-degree evaluation should result in a much more realistic and comprehensive evaluation.

To support project teamwork, each of the team members should have the opportunity to evaluate other team members using the 360-degree approach. Ideally, the items to be evaluated should be collectively determined by the team members during the project kickoff meeting. Team members could either design an entirely new system or tailor a rating system that is currently in use in the organization. If the team members have a direct involvement in the design and customization of the evaluation instrument, they are far more likely to value the resulting data and

subsequent recommendations. If the entire team is involved in determining the specific items that are to be used in rating each other, and if this is done at the beginning of the project, then possible biases of individual members of the entire group of raters will be averaged out. Additionally, the team, as a unit, should develop a procedure to govern the use of the rating process. Team input, as compiled through this type of instrument, can be particularly useful for recognition and awards. Further, it may be helpful to have ratings completed periodically so that the team can determine whether changes are necessary in the processes and procedures or in the behavior of individual team members.

The primary focus of this evaluation is on ways to improve work performance of the project team. However, there are often many personal challenges and issues in a team environment that can become sources of frustration and stress, which in turn distort the performance of the team members. An evaluation system of the type described here will give team members the opportunity to improve the working relationships within the team. The results of this instrument can point to developmental needs of team members or to the need for new tools and techniques that support virtual team effectiveness. Naturally, the frequency at which the ratings are performed would depend on the length of the project and on the mood and wishes of the project team.

There might be circumstances where it may be desirable to conduct the rating process anonymously. For example, on a newly formed team, it may be useful to keep the identities of each team member confidential so that there is honest feedback. However, if the team is a mature one, and/or if open communication is part of its culture, there would be enough trust among team members so that raters can be identified. Such an open evaluation will provide the foundation for direct feedback, coaching opportunities, and continuous improvement.

The 360-degree instrument also can be used, with minor tailoring, for a self-assessment by each of the team members. Using the results of this instrument, each team member will see how others perceive him or her, compare those views with his or her own self-assessment, and identify his or her own strengths and weaknesses. Thus, the feedback can serve as a motivating factor to enhance individual competence. Alternately, the focus of the assessment can be solely on mutual explorations by the team members on ways to improve overall team performance, without identifying specific individuals who are the source of such evaluations. Using this approach, first each team member rates other team members anonymously. Then, a neutral third party analyzes the anonymous ratings and presents the summarized results to the entire team as a unit.

Appendix 4A contains a 360-degree assessment tool that can be used by virtual team members. This tool is based on the ten critical dimensions of virtual project teams described earlier. Each of the dimensions has 15 specific items that collectively comprise the overall rating. A five-level Likert scale has been set up for the rating. Naturally, a team should use this template as a starting point as it designs its own instrument based on the unique characteristics of its project. In performing the rating, each team member will use the following scale for responses to all the questions:

1 = Never
2 = Seldom
3 = Sometimes
4 = Often
5 = Always

Figure 4.4 shows a stylized depiction of the evaluation results for three team members. In this example, one can easily see areas in which team member A excels and those in which team member B excels. Naturally, the person to emulate would be member C. Thus, members A and B can

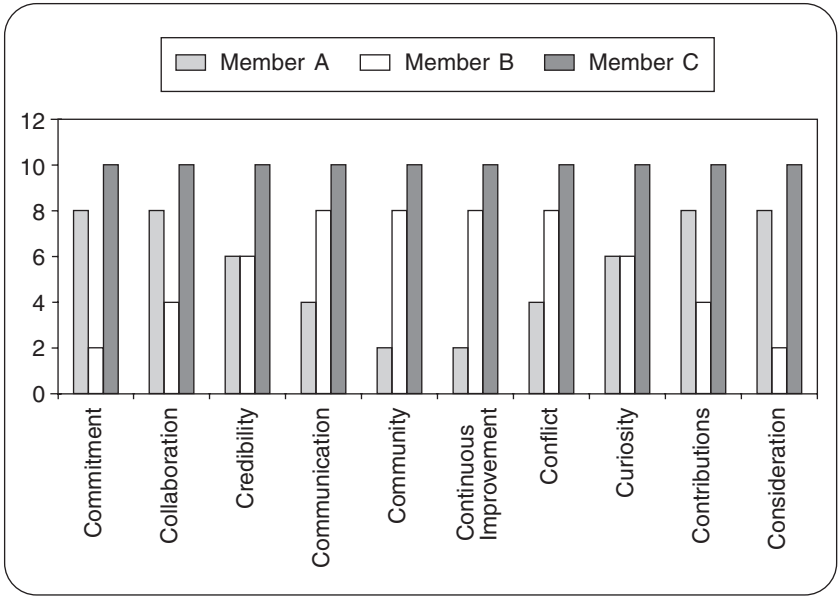

Figure 4.4 Sample Evaluation

use these results as a motivating factor to observe the effectiveness of member C in the areas of interest. The evaluation results will also provide each team member the opportunity to develop a personal improvement plan in those areas in which he or she may be rated lower than others. When this evaluation is extended to the entire team, the compiled results will offer opportunities for identifying possible mentors and coaches for other team members.

4.3 MOTIVATION AND THE PROJECT TEAM

Motivation is difficult to describe, but it is a term that is used often in organizational theory and project human resource management and has been defined and described in many different forms. One definition is that it is "a process, action, or intervention that serves as an incentive for a project team member to take the necessary action to complete a task within the appropriate confines and scope of performance, time, and cost" (Flannes and Levin, 2001). Motivation is a critical element for a high-performing project team, regardless of whether the team is collocated or is operating in a virtual environment. However, while the presence of motivation does not guarantee stellar performance, its absence certainly will result in long-term problems. Furthermore, individuals vary as to what motivates them, and the sources of motivation for an individual might not be constant throughout the project.

Different theories of motivation can be grouped and classified into drive theories, incentive theories, evolutionary and biologic theories, achievement need theories, and fear of failure theories. In general, all motivation theories note that individuals display a wide array of different motives at different times of their careers and at different points in their lives (Flannes and Levin, 2001). Among all motivation theories, one of the more relevant to the project management environment categorizes team member behavior into three separate and identifiable categories that address the need for achievement, affiliation, and power (McClelland, 1961). The need for achievement is characterized by a desire to seek attainable but challenging goals and feedback on performance. The need for affiliation is characterized by a desire to be part of a group with friendly relationships and to have roles that involve human interaction. The need for power is characterized by a desire to make an impact and to be viewed as influential and effective.

The following anecdotal illustration in the development and management of a charter will highlight the major differences in the three behav-

ioral facets. The achievement-oriented individual, who is interested in team goal setting, will be the one who initially develops the team charter. However, once the project gets under way, the power-oriented individual, who is interested in being a leader in charge, will call frequent meetings to modify the objectives and content of the charter and to ensure they continue to relate to the organization's strategic vision and mission. Amidst all of this, the affiliation-oriented person, who is interested in providing an amicable working environment, will try to moderate the efforts of these two individuals, will work to facilitate meetings, and will mentor new team members when they join the team so they understand the team's operating protocols as delineated in the team charter.

4.3.1 Achievement Motivation

Those people with a high need for achievement are driven by a high desire for success and the fear of failure. They typically take calculated risks and set goals of moderate difficulty for themselves in order to maximize the probability of attaining those goals. These people like to see concrete evidence of their completed work. Achievement-motivated people tend to be more concerned with personal achievement than the extrinsic rewards of success. They like to solve a problem methodically. They prefer not to leave the outcome of unresolved issues to chance.

Someone with a high need for achievement should best be placed in project roles in which he or she is asked to complete a challenging task. Work suitable for this person would challenge his or her abilities and skills. The achievement-oriented team member will avoid administrative tasks if at all possible, so that he or she can concentrate on the technical aspects of the project. Since the achievement-oriented individual is interested in setting goals, he or she will enjoy participating in the development of the team charter. Once the achievement-oriented person commits to the goals of the team through the team charter, though, he or she wants freedom and flexibility in executing his or her assigned tasks. Therefore, such a person is well suited to the virtual team environment, since this person does not need close interaction with others in a face-to-face setting to complete the assigned work. This type of team member would be particularly effective and productive if the assigned duties deal with an entire work package for which he or she has primary responsibility. He or she can easily build a sense of identity around the content of the work and does not require extensive face-to-face interaction with others on the project team in order to identify with the project. Achievement-oriented people prefer to work primarily on their assigned responsibilities and tasks. These

individuals do not have a great desire to interfere with, be involved in, or even know the details of the specific work being done by other members of the team. Achievement-oriented team members are very likely to set personal goals to accomplish their tasks ahead of schedule.

Most achievement-oriented individuals can quickly adapt to the use of technology for communications. Thus, they can use technology to disseminate key technical issues for edification of other team members. They also might find the virtual forum an easier way to present complex information, issues, and ideas. Not surprisingly, they might even prefer use of the electronic water cooler as a forum to exchange ideas and insights, primarily because an electronic forum will focus more on the technical aspects of the work than on possible personality traits. This type of team member likes to receive feedback on his or her work and recognition from subject matter experts. Interestingly enough, it would be perfectly acceptable to these members if recognition were announced in a medium other than face-to-face interaction. This person enjoys the independence afforded by the virtual environment.

4.3.2 Affiliation Motivation

People with a high need for affiliation strive to build a friendly environment in which to work. They enjoy being part of a team, tend to conform to group norms, and like to work toward team success. Affiliation-motivated people are noted for seeking acceptance and friendship from others and for having a cooperative attitude. They respond positively to requests for assistance from other team members and are sensitive to the feelings of others.

By comparison with the achievement-oriented person, the affiliation-oriented person may find it difficult to work on a virtual project. He or she is reluctant to join virtual teams because this person enjoys interacting with team members, discussing ideas, providing assistance, seeking approval from other team members, and socializing with them during the course of the project. However, with the increasing use of virtual teams for projects, more and more people who might be affiliation-oriented will be assigned to virtual teams. The dilemma will be to determine under what circumstances such individuals would find the virtual team experience to be a rewarding one. More importantly, the challenge is to explore under what circumstances an affiliation-oriented person would work as diligently on a virtual team assignment as he or she would on a traditional team. One approach to consider is to use affiliation-oriented people in roles such as that of a relationship manager for the virtual team. During

project initiation, the affiliation-oriented person could be commissioned to provide a sense of identity for the virtual team. This person's efforts would be directed toward providing a way to enable team members to learn about the strengths and areas of expertise of each other and toward introducing some common ground among the entire team to enable team members to get to know each other.

Then, during project execution, an affiliation-oriented person could find professional satisfaction in performing the following project duties:

- Introducing new members to the team and its methods of operation
- Introducing the technologies that the team is using to facilitate its communications
- Helping others on the team to understand the project's goals and objectives and aligning the project's purpose or mission with their own personal wants and needs
- Serving as a communications expeditor
- Making sure that everyone is kept up to date about upcoming milestones, project status, new or emerging risks, accomplishments, and meetings
- Serving as a facilitator by working to ensure that any meetings held, whether on line or through video- or teleconferencing, stay on track and that everyone has an opportunity to participate
- Maintaining a "parking lot" during meetings for issues to be discussed later, for potential solutions, and future action items
- Presenting team members with ideas to keep them focused and challenged, if it appears that some team members may not be actively participating
- Promoting camaraderie among team members
- Checking for consensus on team ground rules among team members
- Following up on any action items that are assigned in meetings
- Serving as a neutral party if two or more team members are having a conflict and helping them focus on interests and not positions
- Mentoring younger team members in the project management profession and helping them learn new concepts
- Ensuring that the team celebrates success as key project deliverables are completed

4.3.3 Power Motivation

People with a high need for power are noted for influence and control. Even if they are not the official project manager or leader, they like to

persuade others to see or do things their way. They will often try to define and redefine the goals of the team, in response to their interpretation of the overall goals of the organization. Power-motivated people are noted for being competitive and for being eager to make decisions on behalf of the project. They are comfortable directing the work of others, will take risks, and like to get publicized recognition for their contributions.

Of the three personality types, the person who is most power oriented in motivation may find it most difficult to be a member of a virtual team. In the virtual team, this individual will have a far more challenging time persuading others to accept his or her point of view. It may also be harder for these individuals to demonstrate leadership and to be visibly recognized for their contributions. Because they are not on the scene and not interacting regularly with other members of the project team, power-oriented people might not have the opportunity to participate at will in a variety of project tasks. Power-oriented team members might feel an intense sense of frustration in virtual teams because they will not be able to easily take initiative in order to solve problems, as least not as much as they do when they work on traditional teams. Further, since they might lack opportunities to meet and interact with internal and external project stakeholders, they might feel that their virtual project team contributions will not be recognized as frequently as compared to contributions of a member of a traditional collocated team. Nonetheless, it is likely that power-oriented people will be asked to become virtual team members. To capitalize on their natural strengths and orientations, they could be asked to perform some critical roles such as:

- Helping to clarify the project's purpose and critical success factors
- Relating the project's purpose to the overall strategic vision of the organization
- Providing a clear and complete articulation of the team's charter
- Leading team meetings
- Helping the team come to closure during problem-solving sessions
- Identifying project stakeholders and making sure that their requirements are being satisfied by the project
- Mentoring others on the team by showing them better and more effective ways to complete the assigned tasks
- Fostering forthright discussion of the issue when two or more team members have a conflict that is impeding project performance
- Pointing out the merits of possible opportunities that others may perceive as risks

4.3.4 Motivation Instrument

While a number of different instruments have been designed to address the primary motivational style of individuals (Flannes and Buell, 1999; Schein, 1990; Briggs-Myers et al., 1998), we have prepared an instrument that can be used for project-specific behavioral attributes. This instrument is applicable to traditional teams and virtual teams alike. Specifically, the instrument is intended to assess one's need for achievement, affiliation, and power in the project management environment (Appendix 4B). Our premise is that motivation involves goal-directed behavior and that with an understanding of one's primary motivational approach, one can ascertain those project roles, and team responsibilities, that each team member should pursue to make the greatest contribution to the project deliverable. Further, with this information, the project manager can determine the most effective avenue for motivating the people on his or her team, based on each team member's specific categorization as high achiever, high in affiliation needs, or high in power motives. The project manager should work with each team member to identify that team member's specific motivational orientation in order to match it with the project resource requirements. Further, the project manager must determine how each team member's individual needs relate to the project goals. Naturally, the project manager should continually look for opportunities to help each team member accumulate new knowledge and skills to make his or her professional profile more well rounded.

4.4 THE VIRTUAL TEAM AND COLLABORATIVE LEADERSHIP

Collaboration has long been viewed as an effective technique in resolving conflicts on project teams. Collaboration that results from conflict occurs frequently when diverse and conflicting points of view are recognized as important and viable and then are integrated into a unified solution (Blake and Mouton, 1964; Thomas and Kilmann, 1974). This approach prescribes the use of a combination of high assertiveness and high cooperativeness when one team member considers the merits of another person's ideological position. As a prelude to working together in finding optimal and integrated solutions, a collaborative leadership approach would guide the team members to treat each other's ideas as important to the overall project outcome. Consequently, the intellectual energy of the participants in this discussion will be focused on merging perspectives in order to draw from a broader range of expertise and experience. The concept of collabo-

ration also emphasizes learning from others by way of testing all assumptions. Most important of all, if a team member demonstrates a willingness to work with others and to understand other team members' perspectives, he or she will gain greater trust and support, which in turn will improve future ongoing communication among team members.

Research on the nature and texture of work in growing organizations has substantiated the importance of collaboration. Based on the results of this research, a five-part evolution has been suggested (Greiner, 1972). The five stages of growth are creativity, direction, delegation, coordination, and collaboration. The five-part model is based on the premise that growing organizations move through five relatively calm phases of evolution, each of which ends with a brief period that is characterized by revolution and crisis. The five evolutionary periods have a dominant management style that is used to achieve growth. Each crisis period also has a dominant management crisis that must be solved before growth can continue. For example, in the creativity stage, the emphasis of the founders of the organization is to create a product or service and a specific market niche. Emphasis is solely on establishing the organization, but as the organization develops, management problems occur that cannot be handled easily in an informal way. The founders of the organization then find themselves concentrating on managerial concerns. A crisis of leadership then develops, and the first revolutionary period begins. The founders must either become managers of this process or find an internal person to direct and manage internal operations of the company in order to lead to the next stage, growth through direction. The direction period then leads to a revolutionary period, the crisis of autonomy. People feel that there is not enough empowerment, employees become disenchanted as they believe they lack responsibility, and many decide to leave the organization. The solution is usually greater delegation, the third stage, with a more decentralized structure. However, this provokes a crisis of control as top managers now feel they have lost control over the organization. This often results in a return to centralization, which creates even more resentment on the part of those at lower levels. A more effective solution is the fourth stage, coordination. It is characterized by the use of formal systems by management for greater coordination. This fourth stage is very germane here, because it is during the period of coordination in which some people in many organizations seem to get carried away. The end result is a crisis of red tape or bureaucracy, formal programs, and rigid systems. If these problems are to be overcome, collaboration, the fifth stage, is required. Collaboration "emphasizes greater spontaneity in management through teams and the skillful confrontation of interpersonal differences. At this

point, social controls, and self-discipline, take over from formal control" (Greiner, 1972). The preceding concepts were later extended in order to offer collaboration as an alternative to traditional hierarchical leadership in solving problems (Chrislip and Larsen, 1994). This approach promotes leadership that brings diverse stakeholders together in a partnership arrangement where everyone is regarded as a peer. This process requires a high level of involvement, a clear purpose, adequate resources, the power to decide, and the will to implement from all associated with the effort.

Those team members who exercise collaboration are goal-oriented individuals who prompt the team to fulfill its mission with new ideas and enhanced methods (Parker, 1994). The virtual team is the ideal mechanism for collaborative leadership because, compared to a traditional team, virtual team members are more likely to regard one another as peers. In a virtual team, team members can be both independent and collaborative at the same time. In virtual teams, people are more likely to be viewed in terms of what they have to contribute, rather than their formal status or position in the organization. Such a shift in focus is caused by the fact that, without collocation, people are not as aware of someone's position, age, or seniority in the organization. These virtual-specific attributes point to behaviors that will result in a higher level of achievement.

A collaborative leader would help the team achieve its goals more effectively by putting the project work into the proper context of the organizational strategies. The collaborative leader is able to tap the resources and talents of the various team members to support his or her own specific assignments, as well as the overall team's objectives. The focus of the energy of a collaborative leader is on meeting the project's goals and objectives by being involved, connected, and engaged. To set boundaries for this leadership behavior, a collaborative leader does not make all the decisions for the team, nor does he or she do all of the work at the risk of duplicating the work of others. Rather, a collaborative leader meets project goals by involving the entire team through team problem solving. The premise is that project roles and work procedures depend upon mutual support, team spirit, and cooperative efforts. By exercising collaborating leadership, each virtual team member has the ability to influence, direct, and motivate others in order to achieve project goals and objectives. Personal relationships are valued as much as the project outcomes. Further, if the project team members' participation and input are valued, then the team as a unit can focus on incremental and obtainable goals and milestones for the benefit of the project deliverable.

In a collaborative environment, a reasonable amount of risk taking is considered desirable. In this environment, conflicts are viewed as prob-

lems to be solved, and mistakes are seen as learning opportunities. Thus, a collaborative leader will be able to obtain optimal, rather than compromise, solutions. The goal of a collaborative leader is to inspire others to a mutual commitment, mutual action, and mutual facilitation. In turn, the team would naturally gravitate toward a value-creating mentality through recognizing the contributions of others and celebrating their contributions to the project. Appendix 4C can be used to assess whether you, or one of your virtual team members, meet the characteristics of a collaborative leader.

4.5 VIRTUAL TEAM PROJECT SUCCESS

Independent of how team members rank on the relationship and motivation scales, the ultimate test is how they execute the various processes of the project. Project success is primarily measured in terms of the triple constraints. These success factors deal with the nature and attributes of the product or service as viewed by the client, or with the outward appearance of the product. Thus, success factors are derived from delivery of the project on time, within budget, and according to performance specifications (Figure 4.5). Additional success facets involve general client satisfaction, responsive product development or service delivery, the use of the full suite of the product's features by its intended clients, a positive impact on those who have used the product or service, and use of the product or service toward an improvement in organizational performance. Other important facets, which are usually not easily quantified or verbalized, include repeat or follow-on business, enhanced credibility with the client as a supplier, and referrals to other potential clients for future products or services. Team success factors can be grouped into management of things issues and people issues. Things issues include time management, cost management, scope management, risk management, change management, and integration. People issues include communication, collaboration, and conflict management. One must not lose sight of the fact that people issues affect things issues in indirect and profound ways because they are inextricably linked together. However, people issues are more difficult to measure and more subjective, even though they represent a significant weight in the overall success of the project (Rad and Levin, 2002).

Success of the team will depend on effective execution of all project management processes. To that end, for each element of Figure 4.5, three subelements must be identified, measured, and monitored (Figure 4.6): the existence of procedures and guidelines for that specific element, conform-

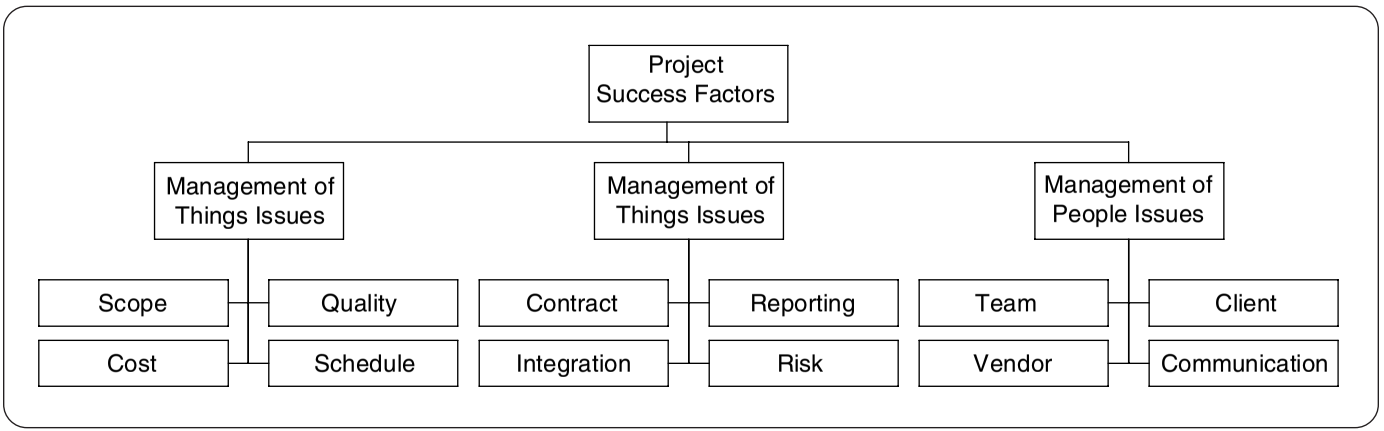

Figure 4.5 Project Team Success Factors (Adapted with permission from Rad, P.F. and Levin, G., *The Advanced Project Management Office: A Comprehensive Look at Function and Implementation,* St. Lucie Press, Boca Raton, Florida, 2002. Copyright CRC Press, Boca Raton, Florida.)

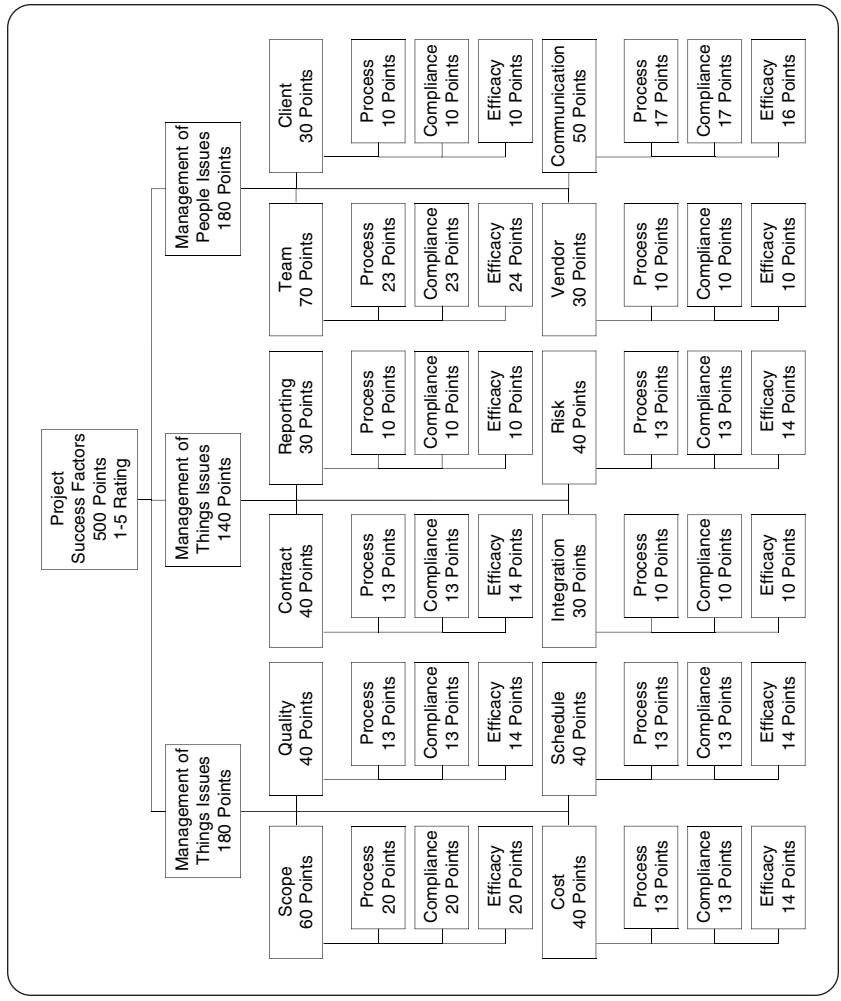

Figure 4.6 Project Team Success Factors (Adapted with permission from Rad, P.F. and Levin, G., *The Advanced Project Management Office: A Comprehensive Look at Function and Implementation*, St. Lucie Press, Boca Raton, Florida, 2002. Copyright CRC Press, Boca Raton, Florida.)

ance of team members to these procedures and guidelines, and the efficacy of these guidelines when they are duly followed. Mature organizations place significant importance on following the process guidelines, as well as on the efficacy of these guidelines. With respect to the efficacy issue, if the objectives were not achieved even when the procedures were followed, the question would be whether the situation is a reflection of the lack of sophistication of the crew or a reflection of the appropriateness of the procedures. Conversely, if there was success in meeting the objectives of that element, one would need to know whether the success could be traced to the procedures or to sheer luck. Therefore, a detailed model of the success factors would need to rate the performance of each knowledge-area element based on all three subelements of existence, compliance, and efficacy of the processes for that knowledge area. Appendix 4D displays an instrument that can be used to determine the success factors of a team's activities based on the team attributes that are described here. It must be stressed that the results of such an instrument should be treated as a first approximation. A definitive evaluation of the team would involve extensive interviews with each of the team members and in-depth observation of the members' interaction pattern.

4.6 SUMMARY

Sophistication of the virtual team is measured in terms of how well the team responds to the client's wishes in the areas of scope, cost, and schedule. However, the success of the team in achieving project results depends on how well team members relate to each other and to the project as a whole. This chapter presents instruments that can be used to determine the behavioral attributes of the team.

APPENDIX 4A VIRTUAL TEAM MEMBER ATTRIBUTES 360-DEGREE ASSESSMENT TOOL

1 = Never 2 = Seldom 3 = Sometimes 4 = Often 5 = Always	1	2	3	4	5
1. Possesses a strong COMMITMENT to the goals and objectives of the project					
a. Completes assigned tasks according to the project schedule when faced with competing priorities between the work of this project and other assigned work					
b. Recognizes how his or her assigned tasks support the project's goals and objectives and the organization's strategic goals and objectives					
c. Establishes objectives for the project that are aligned with the overall organizational goals and objectives					
d. Keeps track of details, and follows up on action items and tasks					
e. Affirms priorities frequently so less important tasks do not dominate more important ones					
f. Considers risks to be opportunities to enhance overall project value					
g. Plans ahead and follows through to complete work on schedule					
h. Considers organizational and project constraints and project assumptions in planning and executing assigned tasks					
i. Completes requests from others on the project team in a timely manner					
j. Puts forth more effort and takes more initiative than expected in order to complete assigned project work					

APPENDIX 4A VIRTUAL TEAM MEMBER ATTRIBUTES 360-DEGREE ASSESSMENT TOOL (CONTINUED)

1 = Never 2 = Seldom 3 = Sometimes 4 = Often 5 = Always	1	2	3	4	5
k. Takes corrective action as required to ensure that all work is done on schedule and meets performance specifications					
l. Works to ensure that he or she is considered to be among the most reliable and dependable in all aspects of the work of the project					
m. Actively works to prepare the project team's charter and other accompanying policies and procedures					
n. Takes initiative to identify and resolve any project-related problems that need to be solved					
o. Works to improve one's own results on assigned tasks in order to fully contribute to the work to be done by the project team					
Commitment summary					
2. Establishes and supports a COLLABORATIVE environment for project work					
a. Encourages cooperation and teamwork on the project					
b. Seeks the opinions of others on work in progress or completed					
c. Seeks the advice of others who are perceived as subject matter experts in areas of the project in which he or she may lack expertise to advance knowledge					
d. Makes it easy for others to disclose information, share ideas, and openly talk about problems and concerns					

APPENDIX 4A VIRTUAL TEAM MEMBER ATTRIBUTES 360-DEGREE ASSESSMENT TOOL (CONTINUED)

1 = Never 2 = Seldom 3 = Sometimes 4 = Often 5 = Always					
	1	2	3	4	5
e. Takes initiative and offers both informal and formal assistance to others on the team					
f. Develops cooperative, rather than competitive, working relationships with others on the team					
g. Involves others in his or her decision-making and problem-solving tasks when appropriate					
h. Maintains friendly relationships with other team members					
i. Determines innovative ways to optimize cooperation among project team members					
j. Strives to unite the team in common actions and rewards					
k. Ensures all team members participate in discussions concerning the team's mission, scope, and deliverables and how best to work toward success					
l. Encourages team members to work toward consensus before decisions are made					
m. Expresses confidence in the team's ability to meet or exceed the project's goals and objectives					
n. Examines different perspectives and alternatives concerning issues that are being discussed					
o. Develops an appreciation for the views and ideas of other team members					
Collaborative summary					

APPENDIX 4A VIRTUAL TEAM MEMBER ATTRIBUTES 360-DEGREE ASSESSMENT TOOL (CONTINUED)

1 = Never 2 = Seldom 3 = Sometimes 4 = Often 5 = Always	1	2	3	4	5
3. Demonstrates CREDIBILITY in all aspects of project work					
a. Appears to be thoughtful in personal interactions in team situations					
b. Shows respect for other team members					
c. Helps team members establish a foundation of trust among one another					
d. Handles issues that arise on the project according to procedures defined by the team					
e. Provides information to others promptly on developments that may affect project work					
f. Expresses confidence in the skills and abilities of others					
g. Displays a nonjudgmental attitude toward the ideas and work of other team members					
h. Prepares for project team meetings					
i. Is able to cope in situations that are ambiguous or uncertain					
j. Takes time to gather and analyze information before making decisions that affect the project					
k. Demonstrates high performance standards, acting as a role model for others on the team					
l. Organizes and manages time productively					

APPENDIX 4A VIRTUAL TEAM MEMBER ATTRIBUTES 360-DEGREE ASSESSMENT TOOL (CONTINUED)

1 = Never 2 = Seldom 3 = Sometimes 4 = Often 5 = Always	1	2	3	4	5
m. Takes responsibility for statements and points of view					
n. Has a well-developed sense of personal standards and principles to guide behavior					
o. Works to ensure that the project's technical and performance goals are met, even if this requires compromises in terms of cost and schedule					
Credibility summary					
4. Promotes effective COMMUNICATION among project team members and stakeholders					
a. Recognizes the most important information and communicates it to others effectively, concisely, and clearly					
b. Summarizes what others have said to clarify understanding					
c. Prepares written communication in a way that all members of the project team easily understand					
d. Seeks additional information by asking for information to clarify items					
e. Provides clear, concise, and logical answers to questions from other team members					
f. Encourages the expression of diverse points of view in communication with other team members					
g. Avoids the tendency to dominate project team meetings					

APPENDIX 4A VIRTUAL TEAM MEMBER ATTRIBUTES 360-DEGREE ASSESSMENT TOOL (CONTINUED)

1 = Never 2 = Seldom 3 = Sometimes 4 = Often 5 = Always					
	1	**2**	**3**	**4**	**5**
h. Listens to what others say in a way that expresses understanding					
i. States opinions in a persuasive, clear, and logical manner					
j. Establishes processes for interpersonal communication among project team members					
k. Appreciates and recognizes individual differences in communications with project team members					
l. Asks open-ended questions to encourage information exchange					
m. Establishes and manages formal and informal communications networks with project stakeholders					
n. Considers the nature of the alliance with the people involved in the communication					
o. Relates to other team members as a person of equal worth and value so that communication is based on reciprocal and mutual respect					
Communication summary					
5. Establishes a sense of COMMUNITY within the project team with a focus on professional responsibility in all activities					
a. Shows an awareness of the social and cultural contexts of problems					
b. Shares information appropriately within the professional community					

APPENDIX 4A VIRTUAL TEAM MEMBER ATTRIBUTES 360-DEGREE ASSESSMENT TOOL (CONTINUED)

1 = Never 2 = Seldom 3 = Sometimes 4 = Often 5 = Always					
	1	2	3	4	5
c. Shows sensitivity to project confidentiality requirements					
d. Elicits and respects the values of others					
e. Exhibits sensitivity to others who are from a different culture					
f. Shows awareness of the impact of different values, obligations, moral rights, and personal principles in choices and decisions that are made					
g. If there is evidence of unethical behavior, identifies it and suggests the most appropriate corrective action					
h. Exercises tolerance and compromise in interaction with team members and project stakeholders					
i. Adheres to legal requirements and ethical standards in project work					
j. Demonstrates the desired skills, behavior, and attitude to follow on project work					
k. Exercises appropriate judgment in order to protect the community and project stakeholders					
l. Gathers, analyzes, and integrates information in order to determine methods of fair resolution if there are competing requirements and objectives					
m. Exhibits empathy toward other team members, especially in the face of competing pressures among project objectives					

APPENDIX 4A VIRTUAL TEAM MEMBER ATTRIBUTES 360-DEGREE ASSESSMENT TOOL (CONTINUED)

1 = Never 2 = Seldom 3 = Sometimes 4 = Often 5 = Always	1	2	3	4	5
n. Recognizes that a team decision will generally be more complete than a decision made solely by one person on his or her own and works to involve others as appropriate					
o. Shares lessons learned and best practices with other team members in a manner that is unobtrusive in order to contribute toward overall team success					
Community summary					
6. Emphasizes CONTINUOUS IMPROVEMENT in personal and team skills and knowledge					
a. Leverages the contributions of others and available resources to the greatest extent possible in order to increase personal knowledge and skills					
b. Redefines problems so they are viewed as possible opportunities					
c. Looks for opportunities to continually upgrade knowledge and skills					
d. Performs a self-assessment of his or her strengths and weaknesses					
e. Actively seeks feedback from others on the project team on project performance					
f. Values feedback that is received on working relationships					
g. Provides feedback to other team members regarding working relationships and project performance in a nonthreatening manner					

APPENDIX 4A VIRTUAL TEAM MEMBER ATTRIBUTES 360-DEGREE ASSESSMENT TOOL (CONTINUED)

1 = Never 2 = Seldom 3 = Sometimes 4 = Often 5 = Always	1	2	3	4	5
h. Uses those constructive comments that are provided by others to their maximum extent					
i. Applies new information and practices to improve project performance					
j. Determines changes to the team's procedures as defined in its charter to increase their effectiveness					
k. Determines changes to the organization's project management methodology to increase its effectiveness					
l. Identifies lessons learned throughout the project and communicates them to other team members as appropriate					
m. Compiles internal and external best practices in project management and makes them available to project team members					
n. Provides mentoring and coaching to other team members, as appropriate, in order to transfer knowledge and best practices					
o. Strives to keep options open, and looks for new alternatives or breakthroughs to obtain desired performance results on technical project issues					
Continuous improvement summary					
7. Strives for effective CONFLICT RESOLUTION among team members					
a. Seeks agreement on specific actions when conflicts arise among team members					

APPENDIX 4A VIRTUAL TEAM MEMBER ATTRIBUTES 360-DEGREE ASSESSMENT TOOL (CONTINUED)

1 = Never 2 = Seldom 3 = Sometimes 4 = Often 5 = Always					
	1	2	3	4	5
b. Discusses possible win–win solutions to help resolve conflicts on the project team					
c. Helps the team members involved generate possible alternatives if asked to help resolve a conflict					
d. Remains neutral when asked to resolve a conflict between other team members					
e. Focuses on issues and not on personalities					
f. Tries to avoid the need to escalate the resolution of conflicts to those outside the project team					
g. Displays openness and flexibility to conflicting opinions when presenting points of view					
h. Resists reacting defensively, and keeps an open mind when others disagree with his or her point of view					
i. Uses creativity to resolve differences among team members					
j. Identifies conflicts to maximize achievement of project objectives					
k. Exercises judgment in determining the fair resolution of project conflicts among team members					
l. Productively challenges existing paradigms when conflicts arise, so that they are viewed as opportunities rather than solely as problems to be solved					

APPENDIX 4A VIRTUAL TEAM MEMBER ATTRIBUTES 360-DEGREE ASSESSMENT TOOL (CONTINUED)

1 = Never 2 = Seldom 3 = Sometimes 4 = Often 5 = Always	1	2	3	4	5
m. Fosters an attitude among team members that conflict can be useful in reducing the risk of intellectual compliance or a tendency toward groupthink					
n. Ensures that conflicts are addressed in a way that people do not withdraw from one another and in a way that overall team motivation is strengthened					
o. Considers a resolution approach that is most appropriate given the specific phase of the project life cycle					
Conflict resolution summary					
8. Demonstrates CURIOSITY and CREATIVITY in project activities					
a. Strives to generate new ideas and creative solutions to problems					
b. Suggests changes to existing processes and procedures in order to minimize bureaucracy and maximize effectiveness					
c. Identifies any team-related barriers in order to remove them to improve effectiveness					
d. Determines innovative ways to optimize cooperation among project team members					
e. Seeks opportunities for adding value to the project's product or service					
f. Considers alternatives and generates contingency plans when solving problems					

APPENDIX 4A VIRTUAL TEAM MEMBER ATTRIBUTES 360-DEGREE ASSESSMENT TOOL (CONTINUED)

1 = Never 2 = Seldom 3 = Sometimes 4 = Often 5 = Always					
	1	**2**	**3**	**4**	**5**
g. Pilots the use of new tools and technologies to facilitate project work					
h. Challenges existing approaches in order to determine optimum ways to meet project objectives					
i. Acquires new knowledge to refine/expand potential alternatives to problems					
j. Seeks innovative solutions to meet the project's goals and objectives					
k. Shows genuine interest in the work under way by other team members in order to contribute new ideas whenever appropriate					
l. Experiments with new approaches in order to later inform team members of possible changes in team processes to promote effectiveness					
m. Helps the team to establish guidelines, rather than strict rules and procedures, to promote flexibility and innovation in project work					
n. Asks probing questions during team meetings or one-on-one communication with a genuine interest in taking the discussion beyond the general level					
o. Listens to as many stakeholders as possible, even to those people who may not have a direct interest in the project's outcomes, in order to broaden perspectives					
Curiosity and creativity summary					

APPENDIX 4A VIRTUAL TEAM MEMBER ATTRIBUTES 360-DEGREE ASSESSMENT TOOL (CONTINUED)

1 = Never 2 = Seldom 3 = Sometimes 4 = Often 5 = Always	1	2	3	4	5
9. Recognizes the CONTRIBUTIONS of other team members to the project's goals and objectives					
a. Sends personal e-mails to or telephones others on the team when they accomplish something significant on the project					
b. Acknowledges and recognizes the contributions of other team members to his or her work					
c. Recognizes those team members who champion ideas as well as those team members who support the ideas of others					
d. Relates to team members by recognizing and appreciating individual differences					
e. Analyzes internal and external influences on team performance to remove any barriers that may hinder performance					
f. Takes action to reduce any negative impact on project performance					
g. Compares project outcomes against the defined scope and uses this information to recognize the work done by other team members					
h. Works with the team to establish agreed-upon performance measurement criteria for the team and each individual member					
i. Provides feedback to team members in a way that is both constructive but also recognizes success					

APPENDIX 4A VIRTUAL TEAM MEMBER ATTRIBUTES 360-DEGREE ASSESSMENT TOOL (CONTINUED)

1 = Never 2 = Seldom 3 = Sometimes 4 = Often 5 = Always					
	1	2	3	4	5
j. Works to help unite the team in common actions and rewards					
k. Develops win–win strategies for both individual and team goals					
l. Works to make sure that everyone has an opportunity to contribute ideas and concerns					
m. Requests information from others in order to fulfill assigned responsibilities in a timely manner					
n. Works to ensure that all types of project tasks, even administrative ones, are considered essential to overall project success					
o. Recognizes that one's personal success is dependent on the overall team's success in terms of project goals and objectives					
Contribution of others summary					
10. Shows CONSIDERATION toward other team members during the project					
a. Treats other team members in a fair and consistent manner					
b. Shows a willingness to take time to listen to and understand the points of view expressed by other team members					
c. Shows genuine concern and interest even if he or she disagrees with another team member					
d. Avoids making personal accusations toward other team members					

APPENDIX 4A VIRTUAL TEAM MEMBER ATTRIBUTES 360-DEGREE ASSESSMENT TOOL (CONTINUED)

1 = Never 2 = Seldom 3 = Sometimes 4 = Often 5 = Always					
	1	2	3	4	5
e. Realizes the importance of taking the appropriate time to provide advice and direction to others					
f. Provides feedback focused on problems or solutions, not on personalities					
g. Remains attentive and interested in team meetings and conference calls even if one's own work progress is not being discussed					
h. Demonstrates empathy toward others					
i. Communicates in a manner that is not condescending to others on the team					
j. Shares beliefs and feelings with others on the team so as to be self-disclosing					
k. Appears to be in control of any personal differences in interpersonal relationships					
l. Provides opportunities to promote long-lasting relationships among team members					
m. Volunteers services and support to others from the very early stages of the project					
n. Works to ensure that other team members recognize his or her assistance as instrumental toward their success					
o. Refrains from attributing self-serving motives to other team members					
Consideration summary					
TOTAL SCORE					

APPENDIX 4B MOTIVATION INSTRUMENT

Of the three choices given, select the one that most closely approximates your own approach to each situation.

1. Assume that you are working on a project. You are meeting with the project manager, who is going to give you some feedback on your work thus far. Ideally, you would prefer that this feedback reflect how:
   a. Cooperative or helpful you are
   b. Your work contributed to project success
   c. Your performance on assigned tasks was received in terms of its quality

2. On a project, do you tend to have a:
   a. Tendency to take risks, believing that risks typically are opportunities
   b. Moderate tolerance for risks, taking only calculated risks
   c. Low tolerance for risk, avoiding risks if possible

3. Assume that you are working on a project and have a conflict with another team member over a technical issue. In this situation, do you typically resolve the conflict through a:
   a. Competing or win–lose type of approach
   b. Collaborating or win–win type of approach
   c. Compromising or giving in for the short term type of approach

4. Do you prefer to work on a project performing roles that involve:
   a. Interdependent tasks in which you often work with other team members
   b. Tasks for which you are primarily responsible for the outcome, from beginning to end
   c. Interactions with stakeholders both internal and external to the project

5. Assume that you are in a meeting with your project team, and it is time for the team to make a decision. In this situation, do you tend to:
   a. Take the lead and strive to bring the issue to closure
   b. Provide technical input to the decision but not feel that you should be responsible for making the final decision
   c. Work to make sure that everyone involved has an opportunity to contribute their ideas and concerns

APPENDIX 4B MOTIVATION INSTRUMENT (CONTINUED)

6. There are many ways to receive approval for the work that is done on projects. On your work, would you prefer to receive approval from:
   a. Subject matter experts
   b. Project sponsors and external stakeholders
   c. Team members

7. Assume that you are working on a project, and several tasks have been assigned to you as your primary responsibility. Do you:
   a. Often try to show people, regardless of whether they are peers or superiors, a better way to complete the work
   b. If requested, help team members complete their work even if you realize this may delay completion of your own assigned tasks
   c. Tend to think about how to accomplish something significant and difficult even if it is outside your own assigned tasks and responsibilities

8. During your project kickoff meeting, assume that your team prepared a team charter and set team norms as to how work is to be done and how conflicts and issues are to be resolved. Do you then tend to:
   a. Follow the group norms explicitly
   b. Experiment with new approaches and then inform the team of a better way to get things done
   c. Follow your own plan and approach to complete your assigned tasks even if they differ from the group's norms

9. In setting goals, do you tend to:
   a. Favor goals that are attainable (e.g., neither too high nor too low)
   b. Set hard personal, but attainable, and challenging goals
   c. Clarify the team's goals in such a manner that they represent your own goals and then persuade others to work toward these goals

10. Assume that you are meeting your fellow project team members for the first time. At this point, do you typically:
    a. Trust that because they have been assigned to the project they will complete their assigned tasks on schedule and according to plan
    b. Expect others to devote as much time to each task as you do
    c. Talk about past projects or tasks in which you were successful and suggest that people follow these approaches

APPENDIX 4B MOTIVATION INSTRUMENT (CONTINUED)

11. When working on a project, are you interested in:
    a. Participating in as many decisions as possible that affect the project even if the decisions involve issues that are outside of your directly assigned tasks
    b. Working primarily on the tasks that are your assigned responsibility, as they are ones over which you have the greatest control
    c. Working primarily to encourage teamwork and cooperation among team members

12. Assume that you have had a disagreement with another team member over a technical issue for a task that is one of your assignments. In this situation do you:
    a. Try to resist reacting defensively to your teammate's concerns and keep an open mind
    b. Tend to view this team member in a competitive way
    c. Typically react positively to the information about your work, even if it is somewhat negative

13. On a project, in terms of rewards and recognition, do you:
    a. Feel rewards are as essential as the accomplishment of the work itself
    b. Focus primarily on your own personal achievement rather than the overall rewards of project success
    c. Want to be recognized as the person who makes the greatest overall contribution to the project's success

14. When assigned to a project team, do you feel frustrated more by the:
    a. Tasks that remain to be completed
    b. Inability to make friendly and long-lasting relationships with team members
    c. Lack of opportunities to meet and interact with internal and external stakeholders

15. In a team meeting, do you view your role primarily to be one of:
    a. Soliciting thoughts, opinions, feedback, and ideas from other team members
    b. Stating complex information, thoughts, and ideas simply, clearly, and concisely
    c. Taking the initiative to identify and resolve any work-related problems that need to be solved

APPENDIX 4B MOTIVATION INSTRUMENT (CONTINUED)

16. In order to complete your assigned tasks as efficiently as possible, do you:
    a. Follow the overall project schedule as closely as possible
    b. Prepare your own detailed schedule for your assigned tasks, striving to complete your tasks ahead of schedule
    c. Focus first on completing work due today and in the near term and then focus on work to be done in the future

17. If you could select a project to work on, would you prefer to work on one that was authorized because of a:
    a. Technological advance
    b. Social need
    c. Customer request

18. If you do not believe that you are contributing to the work to be done by your project team or if you do not believe that your work is valued, then:
    a. Overall, your productivity tends to decrease
    b. You will spend a lot of time thinking about how you should be doing your assigned tasks in order to improve your results
    c. You will approach your team members and clearly express your concern and request information from them that will enable you to fulfill your assigned responsibilities

19. If you are making a presentation to your customers, do you tend to:
    a. Express your ideas in a way that persuades others to accept your points of view
    b. Explain your work as clearly and succinctly as possible
    b. Restate and clarify important points and questions

20. If a team member approaches you and asks you for some assistance, such as mentoring or training, do you tend to:
    a. Drop your own assigned tasks to come to the aid of your team member
    b. Openly volunteer such services early on in a project
    c. Explain that you are pleased to help once your own tasks are completed

APPENDIX 4B MOTIVATION INSTRUMENT (CONTINUED)

21. Assume that you are working on a project. Are your own personal goals ones that are:
    a. Carefully measured so that they can be accomplished
    b. In line with those of the project team
    c. In line with the organization's strategic goals

22. Unfortunately, on your current assignment, you just cannot seem to master the technical intricacies of the work involved. Whatever you do does not seem to work. If you are in such as situation, do you:
    a. Ask team members for assistance
    b. Simply try harder
    c. Ask to be reassigned to a task to which you are sure you can make a contribution and achieve recognition

23. In receiving feedback, are you most interested in knowing how:
    a. Well you are doing on your assigned tasks
    b. Much your team members like and value your contributions
    c. Your work is viewed by the project sponsor and other internal and external stakeholders

24. Assume that two of your team members only can seem to agree to disagree. They have asked you to help them resolve a current conflict. In this situation, do you tend to:
    a. View the conflict in terms of its technical issues and point out why each person's opinions may not be correct
    b. Work with the team members collaboratively and help them resolve the conflict, even if it means that the overall working relationships that the team has established may need to be changed as a result
    c. Work with the team following a confrontational-type approach to conflict resolution that fosters a forthright discussion of the issues at hand

25. Assume that you are working for a company that has a Project Management Center of Excellence. It has developed a project management methodology that is to be followed on all projects in your company. You are using it on your current project. In this situation, are you typically:
    a. Not very concerned about the methodology that is to be used, focusing instead on your own tasks that are your responsibility

APPENDIX 4B MOTIVATION INSTRUMENT (CONTINUED)

b. Interested in following the methodology, as you feel it is essential to achieve the project's goals and objectives
c. Interested in the project management methodology only if you believe you can significantly enhance it and be recognized for your contributions in this regard

26. When working on a project team, do you experience a sense of frustration if you:
    a. Cannot take charge
    b. Feel that your efforts to help other team members are rebuffed
    c. Cannot complete your assigned tasks to your expected level of quality

27. Do you feel that, in general, team decisions should be based on:
    a. Consensus among the team members
    b. The goals and objectives of the project and the organization
    c. The available technical information supporting the decision

28. You are most pleased as a project team member when you perceive that:
    a. Your ideas and approach to the task at hand are the correct ones to pursue
    b. Your leadership in a difficult and important situation with project stakeholders has proven to be effective
    c. Your efforts to assist others in completing their assigned tasks are viewed as instrumental to their success

29. Typically, in working on a project, do you tend to:
    a. Want to help others even to the degree that you may get in their way
    b. Want to be independent and often rebuff the attempts of others to assist you
    c. Act in a way so you can direct others and exert your authority over them

30. If you are having a conflict on a technical issue with people on your team who you respect for their technical expertise, do you:
    a. Work to maintain harmony rather than asserting your own point of view
    b. Strive to dominate regardless of their opinions and feelings
    c. Strive to keep your options open and acknowledge their feedback in a constructive way

APPENDIX 4B MOTIVATION INSTRUMENT (CONTINUED)

31. If something goes wrong on a project, do you believe it is primarily due to:
    a. Lack of dedication and hard work
    b. Lack of teamwork
    c. The failure of others to acknowledge your approach or point of view

32. Ideally, you feel best about your work on a project team when you:
    a. Believe your work has resulted in a technical breakthrough or innovation that otherwise would not have occurred
    b. Have been able to provide leadership to others on the project and to guide them through some difficult moments during the project
    c. Have been able to mentor some other team members in their work to enable them to complete their work on the project in a successful way

33. Assume you are working on a project team. During the kickoff meeting, are you more interested in:
    a. Determining what you need to do to accomplish your assigned tasks
    b. Getting to meet and know the other team members
    c. Seeing how this project fits in with the overall organizational strategic goals

34. When you are working on a project team and it appears that the project is in trouble in terms of meeting its planned schedule or it may exceed its budget, do you tend to work:
    a. With the team to redefine the project's goals and objectives
    b. With the team to suggest that it meet and mutually agree on better ways to work together
    c. Harder yourself to see if you can get the project back on track

35. Assume that your team is meeting to discuss the status of the project and the upcoming milestones. During a team meeting, do you tend to primarily:
    a. Work to ensure that everyone has an opportunity to participate in the meeting, often drawing out those people who may tend not to speak up
    b. Provide information about the technical issues affecting the project
    c. Focus the team on the goals and objectives of the project and on what must be done to ensure overall project success

APPENDIX 4B MOTIVATION INSTRUMENT (CONTINUED)

36. When working on a project team, would you prefer that your team members perceive that you are the person who:
    a. Can best provide leadership if it is a self-directed team
    b. Will want to support the other team members and provide assistance whenever requested
    c. Is respected for your technical abilities and your desire to meet the project's performance requirements

37. Recognizing that decisions made by the team will tend to be more complete than a decision made by one team member alone, do you strive during team problem solving and decision making to:
    a. Provide technical data to assist in the decision-making process
    b. Make sure the atmosphere is a cooperative one in which everyone can freely participate and each person's contributions are valued
    c. Focus the team on the objectives at hand and on the specific issues to be resolved

38. The ideal role for you to assume on a team is one in which you are:
    a. Perceived as being assertive and forceful in helping the team meet the project's goals and objectives
    b. Considered the technical expert and also are viewed as consistently completing your work as assigned
    c. The person that others feel is thoughtful and who team members tend to contact whenever they might have a personal problem

39. If you have a disagreement with another team member on a technical issue, do you tend to:
    a. Be open-minded throughout the disagreement, working to find an answer that represents a middle ground between the two positions
    b. Look objectively at the data the other person presents in order to understand his or her point of view
    c. Consider the opposite view but push for your solution to the problem

APPENDIX 4B MOTIVATION INSTRUMENT (CONTINUED)

40. Assume that you are working on a project team. The team has established some ground rules to follow in terms of the working relationships among the team members. Three of the team members now feel that the approach that is used to ensure participation at team meetings is not working. They are concerned that one person tends to totally dominate the discussions, and they believe that their ideas and concerns are not being addressed. Basically, you do not feel this is a major issue on your team, but they just asked you for your view of the situation. Do you:
    a. Suggest a way to ensure that everyone participates with a quick-fix to the problem at hand
    b. Tell them that you do not really perceive this to be a problem and try to refocus them on the technical tasks that need to be completed
    c. Make a strong case for your position that the group process is working well and does not require a change at this time

41. If you are in a meeting with a group of project stakeholders and if there is a heated discussion about a possible change in scope to the project, do you tend to:
    a. Organize your thoughts logically and make a strong case for your position
    b. Be sensitive to the issues the other project stakeholders raise and, as a result, not take a firm stand
    c. Try to gain the trust of the stakeholders and then lead the group in merging their perspectives

42. Assume that your project has the opportunity to be the first in your company to use new technology in its work. The alternative is to remain with the current approach, which has been used successfully on many projects in the past. If the new technology is selected, it may be possible to complete the project in half the time. However, if it doesn't work, it is estimated that the schedule will slip, and the project will not be completed on time; in fact, there probably will be a three-month delay. In this situation, would you:
    a. Favor using the new technology
    b. Favor using the new technology in parallel with the current approach to make sure it can be employed without serious problems
    c. Favor using the current approach, which has been successful on so many projects in the past

APPENDIX 4B MOTIVATION INSTRUMENT (CONTINUED)

43. When working on a project team, would you prefer to be able to:
    a. Have little external structure except to know the general goals and objectives for the project and when tasks need to be completed to keep on schedule
    b. Have the opportunity to establish a defined structure for the team's work and work to encourage team members to adopt it
    c. Work within a defined structure for your work, with someone available for consultation whenever desired

44. Are you interested specifically in tasks:
    a. That have high levels of responsibility characterized by challenging, varied, and integrative work
    b. That have clearly defined objectives but enable you to determine how best to accomplish them
    c. In which you believe you can succeed and afford you the opportunity to work closely with others

45. Would you prefer to be recognized for your achievements that stress your:
    a. Specific contributions to the project team and your steady performance
    b. Ability to get results
    c. Technical contributions in your field of expertise

46. When working on a project team, there are a number of administrative tasks that need to be done. If you are asked to do these tasks on a team, do you generally feel that:
    a. They are necessary to perform but not enjoyable or desirable tasks to pursue
    b. You should complete these administrative tasks in a manner that shows that you can handle them effectively and efficiently
    c. These are necessary tasks that must be done, and accordingly, you approach them in a positive way to show that you are contributing to the overall success of the team

47. If you could select the type of project to work on in your organization, would you tend to pick a project that provides an opportunity to:
    a. Work closely and interdependently with others in the company
    b. Personally contribute to the success of the organization
    c. Perform work that you feel is personally challenging

APPENDIX 4B MOTIVATION INSTRUMENT (CONTINUED)

48. Are you more concerned with the:
    a. Intrinsic context of the work
    b. Technical content of the work
    c. External environment in which the work is done

49. Do you primarily value approval from:
    a. Someone who can understand and relate to the type of work that you do
    b. Your project manager or project sponsor
    c. Other project team members

50. Do you tend to identify principally with:
    a. The organization and its overall success or failure
    b. The other members of the project team
    c. Your professional peers

Interpreting the Questionnaire

Use the following grid to determine where you rank in terms of your preferred motivational approach. To calculate your total score, assign a value of 1 for each of your answers. Then, add the values that appear in each of three columns. The total numbers thus derived will give you an indication of your motivation profile.

	Answers		
Question	**Affiliation**	**Power**	**Achievement**
1	A	B	C
2	C	A	B
3	C	B	A
4	A	C	B
5	C	A	B
6	C	B	A
7	B	A	C
8	A	B	C
9	A	C	B

APPENDIX 4B MOTIVATION INSTRUMENT (CONTINUED)

Question	Answers		
	Affiliation	Power	Achievement
10	A	C	B
11	C	A	B
12	A	B	C
13	A	C	B
14	B	C	A
15	A	C	B
16	A	C	B
17	B	C	A
18	A	C	B
19	C	A	B
20	A	B	C
21	B	C	A
22	A	C	B
23	B	C	A
24	B	C	A
25	B	C	A
26	B	A	C
27	A	B	C
28	C	B	A
29	A	C	B
30	A	B	C
31	B	C	A
32	C	B	A
33	B	C	A
34	B	A	C
35	A	C	B

APPENDIX 4B MOTIVATION INSTRUMENT (CONTINUED)

Question	Answers		
	Affiliation	**Power**	**Achievement**
36	B	A	C
37	B	C	A
38	C	A	B
39	A	C	B
40	A	C	B
41	B	C	A
42	C	A	B
43	C	B	A
44	C	A	B
45	A	B	C
46	C	B	A
47	A	B	C
48	A	C	B
49	C	B	A
50	B	A	C
TOTAL			

APPENDIX 4C COLLABORATIVE LEADERSHIP INSTRUMENT

	Yes	No
During the project's kickoff meeting, do you make sure the other team members contribute to insights concerning:		
1. What our mission is		
2. What is scope statement is		
3. Who our customers are		
4. What our customers value		
5. What our deliverables are		
6. What our plan is		
During other project team meetings, do you encourage team members to:		
7. Reach a consensus before a decision is made		
8. Evaluate options objectively based on fact rather than feeling		
9. Feel comfortable with the decisions that are reached		
10. Think about the project's goals and objectives as alternatives are discussed and decisions are made		
11. Take project constraints seriously but to find ways to best handle them		
12. Limit the number of assumptions that are made, since they will limit the team's options later in the project		
13. Consider new alternatives and innovative ways to solve problems and resolve issues		
14. Participate fully and offer ideas and suggestions in areas in which they can contribute		
15. Provide information that may challenge the existing plan in order to suggest opportunities to further the project's goals and objectives		
16. Inform others if they do not agree with the decisions that are made		

APPENDIX 4C COLLABORATIVE LEADERSHIP INSTRUMENT (CONTINUED)

	Yes	No
Do you feel that it is important for you to:		
17. Set high standards of performance based on your own goals and objectives		
18. Describe the broader implications of the team's decisions and actions		
19. Express confidence in the team's ability to meet or exceed the project's goals and objectives		
20. Specify the importance of each team meeting		
21. Look for different perspectives on the various issues that are under discussion		
22. Emphasize the importance of working together as a team even though the team does not work together in a collocated setting		
23. Help develop an appreciation for the views and ideas of other team members		
24. Seek alternative and innovative ways to accomplish the project's goals and objectives		
25. Place a high priority on learning and experimenting with new approaches and ideas		
TOTAL		

APPENDIX 4D TEAM SUCCESS FACTORS

1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree	1	2	3	4	5
MANAGEMENT OF THINGS ISSUES **Scope**					
1. Project requirements were defined succinctly and remained fairly constant from the beginning of the project.					
2. The project's concept was translated into business terms.					
3. A market study was conducted prior to project planning.					
4. Technical goals remained stable throughout the project.					
5. The project was considered technically challenging within the organization.					
6. Project assumptions and constraints were identified and documented.					
7. A detailed project work breakdown structure was developed and used for project planning, execution, and control.					
8. A detailed product description was prepared and used to document the product characteristics.					
9. A project scope statement was prepared and used to make project decisions and confirm understandings among stakeholders concerning project scope.					
10. Formal acceptance of project scope was obtained from the customer.					
Scope summary					
Cost					
1. The project met or exceeded sales expectations.					
2. The project met or exceeded volume expectations.					

APPENDIX 4D TEAM SUCCESS FACTORS (CONTINUED)

1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree	1	2	3	4	5
3. The project met or exceeded return-on-investment expectations.					
4. The project came in at or below the cost estimate.					
5. The project was launched within or under the original project budget.					
6. In general, adequate funding was available for the project.					
7. Cost performance was monitored throughout the project.					
8. Cost estimates were prepared after budgetary approval was provided but before project execution.					
9. Causes of variance in terms of cost performance were analyzed to determine whether corrective action was warranted.					
10. Budget updates were not required since scope changes were minimal.					
Cost summary					
Quality					
1. The project met or exceeded technical performance expectations.					
2. It was considered to be more important to complete the technical goals even if compromises were required in terms of cost or schedule.					
3. Project performance was evaluated regularly to ensure that quality standards were met.					
4. Project results were monitored to identify ways to eliminate any causes of unsatisfactory performance.					

APPENDIX 4D TEAM SUCCESS FACTORS (CONTINUED)

1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree	1	2	3	4	5
5. Rework was minimal.					
6. The cost of preventing mistakes was much less than the cost required to correct them.					
7. The product or service satisfied real needs.					
8. The emphasis was in terms of planning for quality rather than on inspections to see if standards were met.					
9. Quality audits were conducted to identify lessons learned to improve project performance.					
10. Actions were taken to increase product effectiveness to provide added benefits to customers and other stakeholders.					
Quality summary					
Schedule					
1. The project was completed in less time than expected according to the original schedule.					
2. Schedule performance was monitored throughout the project.					
3. Causes of any variances were analyzed to determine whether corrective action was required.					
4. Rebaselining was not necessary since schedule delays were not severe.					
5. Schedule updates were such that they did not necessitate any other adjustments to other aspects of the project.					
6. Specific activities were identified that were required to produce the project deliverables.					

APPENDIX 4D TEAM SUCCESS FACTORS (CONTINUED)

1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree	1	2	3	4	5
7. Discretionary dependencies were minimal so that later scheduling options were not affected adversely.					
8. Duration estimates considered the quality of input data and were refined throughout the project as additional data became available.					
9. Imposed dates were few and did not serve as limiting constraints in terms of the project schedule.					
10. Project and resource calendars were synchronized so that schedule efficiency was achieved.					
Schedule summary					
Contract					
1. Contract terms and conditions did not hinder project execution.					
2. Statements of work clearly identified objectives and the scope of work.					
3. Responsibilities were specified and known between members of the project team and those in the contracting unit.					
4. Contract completion and final acceptance criteria were defined and explicit.					
5. Partnering agreements were established with contractors and subcontractors to focus all parties on the project's goals.					
6. Make-or-buy analyses were conducted with an emphasis on balancing least-cost and project-specific considerations.					
7. Clear lines of responsibility were established with contractors and subcontractors.					

APPENDIX 4D TEAM SUCCESS FACTORS (CONTINUED)

1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree	1	2	3	4	5
8. The procurement process was streamlined so that timely decisions were made on project issues.					
9. Decisions concerning the number and scope of contracts were made in terms of impact on the project organization, management systems, and necessary interfaces.					
10. Decisions on the type of contract used did not hamper the project team in managing and monitoring contract performance and in project execution.					
Contract summary					
Integration					
1. The project provided a platform for future opportunities.					
2. The project met or exceeded senior management expectations.					
3. The project added to the overall credibility of the company with its customers.					
4. The project was considered to be important for the success of the organization.					
5. The project's priority within the organization remained unchanged during the time period of performance.					
6. There was an integrated project plan.					
7. An integrated change control system was established and used.					
8. The various elements of the project were properly coordinated.					
9. Trade-offs among competing objectives were made to ensure that stakeholder expectations were met or exceeded.					

APPENDIX 4D TEAM SUCCESS FACTORS (CONTINUED)

1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree	1	2	3	4	5
10. The work of the project was integrated with other efforts under way in the performing organization.					
Integration summary					
Reporting					
1. Mechanisms were in place to track the project's progress.					
2. Mechanisms were in place to track the project's costs.					
3. Stage-gate decision points were established for the project, and reviews were conducted.					
4. Project review sessions were routinely conducted, and results were distributed to team members.					
5. Actual progress was regularly compared with plans.					
6. A stakeholder analysis was conducted to determine information needs.					
7. Performance reports were distributed as planned and requested to project stakeholders.					
8. Project reporting was considered a routine activity by all team members.					
9. Project results were compared over time to see if performance was truly improving.					
10. Performance reports provided information required by stakeholders.					
Reporting summary					

APPENDIX 4D TEAM SUCCESS FACTORS (CONTINUED)

1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree	1	2	3	4	5
Risk					
1. Throughout the project, "what-if" analyses were conducted.					
2. The project's overall risk in terms of its objectives was known.					
3. Project risks were identified and analyzed.					
4. Periodic project risk audits were conducted to assess overall risk management effectiveness.					
5. Risk management was an agenda item at project reviews.					
6. Workaround plans as a risk response were minimal.					
7. A risk database was established and used to provide lessons learned for continuous improvement.					
8. Project risk owners were appointed for identified risks. They analyzed, tracked, and monitored them. Responsibilities were known throughout the team.					
9. Contingency plans were prepared for identified risks that did arise during the project.					
10. Risks to the project were accepted when they were in balance with possible opportunities that were afforded by taking the risk.					
Risk summary					
MANAGEMENT OF PEOPLE ISSUES **Team-Building Activities**					
1. A dedicated "team room" existed for project activities.					

APPENDIX 4D TEAM SUCCESS FACTORS (CONTINUED)

1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree	1	2	3	4	5
2. Action items from team meetings were recorded and tracked to completion.					
3. Results and early deliverables were shared within the team.					
4. A project kickoff meeting was held.					
5. Team members generally understood each person's role and expected contributions to the team.					
6. Team members had job descriptions that were available and shared throughout the team.					
7. The team established an orientation process for new team members in terms of the team's operating procedures and communication protocols.					
8. There was a supportive culture within the team.					
9. Team members identified with the project's goals.					
10. The team functioned through collaborative leadership.					
Team-building activities summary					
Skills and Experience					
1. The team has the right composition with the requisite skills represented.					
2. The team has the right experience so that a critical mass of experienced people was available on the team.					
3. Team members felt that assigned tasks were in concert with their specific skills and expertise.					

APPENDIX 4D TEAM SUCCESS FACTORS (CONTINUED)

1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree	1	2	3	4	5
4. Team members supported continuous improvement in terms of personal skills as well as in terms of overall team skills.					
5. Team members provided ideas, suggestions, and best practices to others in order to further the expertise of the entire team.					
6. A resource breakdown structure was prepared.					
7. A responsibility assignment matrix was prepared.					
8. A project team directory was prepared.					
9. A seamless process was in place when new team members joined the project or people left when their tasks were complete.					
10. The specific resources and quantities necessary were determined as part of overall project planning.					
Skills and experience summary					
Conflict Management					
1. During project planning, possible conflicts were considered and discussed.					
2. Team members acknowledged conflict when it existed.					
3. Team members worked to resolve conflict as required.					
4. There were no interpersonal or other issues that prevented the team from working together effectively.					
5. Team members generated alternative solutions to overcome problems encountered on the project.					

APPENDIX 4D TEAM SUCCESS FACTORS (CONTINUED)

1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree	1	2	3	4	5
6. Team members assessed the advantages and disadvantages of different approaches before selecting an alternative to implement.					
7. There were few conflicts in terms of project performance evaluation and rewards among team members.					
8. Team members knew the process to follow if conflicts needed to be escalated outside of the team in order to resolve them.					
9. A collaborative, win–win solution was preferred whenever conflicts did arise.					
10. The focus was on issues rather than on positions whenever conflicts occurred.					
Conflict management summary					
Team Spirit					
1. The team acted like a team, demonstrating interest and enthusiasm during team activities.					
2. The team had a common sense of purpose, values, and goals.					
3. Team members supported the project's vision and worked together to support a unified goal.					
4. Team spirit and team norms were considered important throughout the project.					
5. Team members encouraged the exchange of diverse perspectives and different points of view.					
6. Team members acknowledged the contributions made by other team members.					

APPENDIX 4D TEAM SUCCESS FACTORS (CONTINUED)

1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree	1	2	3	4	5
7. Team members assisted others on the team by sharing knowledge and information.					
8. Team members were trustworthy.					
9. Team members were considerate of others' feelings and were friendly.					
10. The team felt that success on this project was paramount and so were motivated in terms of project participation.					
Team spirit summary					
Processes and Procedures					
1. The team adopted a project management process for this project similar to that used throughout the organization.					
2. The team consistently followed its plan with measurable milestones.					
3. Team members identified technical problems throughout the project so they could collectively resolve them.					
4. The team spent time together establishing a process for its operations and decision making.					
5. The team had the authority and discretion to make the decisions that impacted the project.					
6. The team established a project management information system for the project, which it used consistently.					
7. The project team knew the activities that had slack in the schedule so they could best allocate their time and ensure tasks on the critical path were completed as planned.					

APPENDIX 4D TEAM SUCCESS FACTORS (CONTINUED)

1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree	1	2	3	4	5
8. The team assessed its processes and procedures on a periodic basis to determine if changes were needed to increase effectiveness.					
9. Individual performance was evaluated in a 360-degree-type fashion.					
10. Team goals were established as performance incentives and evaluation criteria, and the link between performance and rewards was clear.					
Processes and procedures summary					
Leadership					
1. The team had an effective leader.					
2. The leader continually worked to build the team.					
3. The leader provided direction to the team.					
4. The leader was visible to the customer.					
5. The leader had the formal authority necessary to complete the project.					
6. The leader was involved in specifying project goals.					
7. Project goals were clear to everyone on the team.					
8. The project had an executive champion or sponsor who was accessible when needed.					
9. Management made constructive remarks versus discouraging remarks when present at team meetings.					

APPENDIX 4D TEAM SUCCESS FACTORS (CONTINUED)

1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree	1	2	3	4	5
10. Management provided guidance to the team when requested, allowing autonomy at other times when help was not solicited.					
Leadership summary					
Communication					
1. The team defined its communications channels at the start of the project.					
2. E-mail protocols were followed throughout the project.					
3. Incisive discussions frequently occurred within the team during meetings so that meetings were viewed as productive activities.					
4. Data concerning the project were easily accessible by all team members.					
5. During the project, the team used a common vocabulary in project discussions.					
6. Team members informally communicated throughout the project with one another.					
7. Points of contact were established for various issues on the project so that team members and the client knew whom to contact.					
8. When changes were made that affected the project, they were communicated to all team members.					
9. The project team actively participated in project reviews, and results were shared among all team members.					
10. Team members consistently demonstrated effective listening skills.					
Communication summary					

APPENDIX 4D TEAM SUCCESS FACTORS (CONTINUED)

1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree	1	2	3	4	5
Customer					
1. The team has good chemistry with its counterparts in the customer's organization.					
2. The team recognized and understood the customer's specific needs, wants, and requirements.					
3. Because of the team's relationship with the customer, the customer's preferences did not change significantly during the project.					
4. With the close interaction between the project team and the customer, the customer did not require extensive training in use of the new product once the project was completed.					
5. Products were submitted to the customer for testing and review prior to actual delivery, and customer reactions to prototypes and concepts were sought and encouraged.					
6. Team members showed curiosity about understanding customer's needs and requirements.					
7. Customers were considered to be active team members.					
8. The team actively worked to uncover and correct any product problem areas that could cause customer dissatisfaction.					
9. The team worked to understand how the customer viewed the solution and engaged in joint planning to best understand customer needs and requirements and also any project limitations so there were no misunderstandings as to what the project was and was not to perform.					

APPENDIX 4D TEAM SUCCESS FACTORS (CONTINUED)

1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree	1	2	3	4	5
10. The team worked to integrate points of view from diverse stakeholders, including identifying potential conflicts of interest and assessing competing alternatives.					
Customer summary					
Vendor					
1. Vendors were considered active team members.					
2. Vendors submitted products or delivered services on time, within budget, and according to specifications.					
3. A standard process for contract change control was used.					
4. Vendors worked with the project team to set up an issue resolution process, including processes for escalating problems.					
5. There was a clear definition of roles and responsibilities between the project team and vendors.					
6. Project performance commitments of both parties (buyer and vendor) were documented after contract award.					
7. Mutual goals and objectives between the buyer and vendors were prepared and agreed to in order to promote clarity and avoid the need for later scope changes.					
8. Project risks were shared between buyer and vendors.					
9. Joint reviews of project progress were conducted according to agreed-upon evaluation criteria.					

APPENDIX 4D TEAM SUCCESS FACTORS (CONTINUED)

1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree	1	2	3	4	5
10. Open and honest communication was the norm between the buyer and vendors.					
Vendor summary					
MANAGEMENT OF PEOPLE ISSUES SUMMARY					
OVERALL SUMMARY					

5

A MATURITY MODEL FOR VIRTUAL TEAMS

Maturity, according to the Random House dictionary, is defined as full development or a perfected condition. In terms of project management, this relates to capabilities that can produce repeatable success in project management processes and to the skills that prevent common problems in project implementation (Schlichter, 1999). It also connotes the viability and strength of an organizational infrastructure that supports consistent success of projects.

There is no question that the maturity of a given team and the maturity of the parent organization of that team are closely linked to each other. It is highly unlikely that a mature team would survive in an immature organization. It would be equally surprising to find a very immature team within a very mature organization. However, it would be instructive to determine the maturity of a team as an entity separate from the maturity of the organization. If the maturity of the organization as a whole and the maturity of each team are determined independently of each other, the analysis of the resulting data will provide a wealth of information on best practices and enhancement opportunities. A maturity model, and its accompanying assessment tool, will enable the team to construct a program of continuous improvement. The maturity assessment will also assist the team in setting priorities for those immediate actions that are consistent with the team's current maturity level, typically expressed as one of five ascending levels of maturity (Figure 5.1).

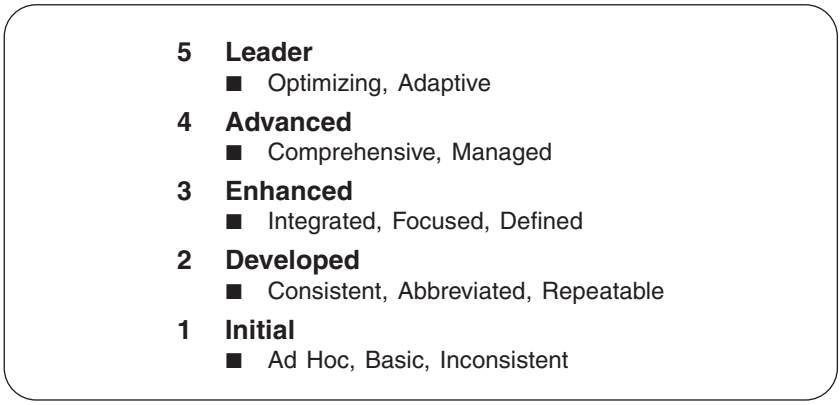

Figure 5.1 Maturity Levels

5.1 THE *IDEAL* MATURITY MODEL FOR VIRTUAL TEAMS

In the same fashion that organizational maturity assessment models measure the sophistication of an organization in carrying out its mission, a team maturity model would measure the collective ability of a project team to deliver projects in terms of meeting specifications, on time and on budget. Primarily, a team maturity model would describe the key attributes of a fully effective project team environment. In addition, the model would categorize these attributes in progressive stages that signify maturity levels. The maturity model can be used for benchmarking among different teams, across divisions of an organization, and across different organizations. Considering the presence or absence of a certain amount of sophistication for these attributes, one can arrive at a ranking of Levels 1 to 5 for the maturity of the project team in executing project management processes. It bears highlighting that a scale of 1 to 5 has been used here in the team maturity model in order to keep the results in line with most maturity models and success structures (Rad and Levin, 2002). The established ranking scale of the maturity model will provide plateaus for the purpose of continuous improvement of project management capabilities for virtual teams. These plateau level indicators are usually based on the assessment of the sophistication of key attributes of the team's behavior. The expectation in establishing these maturity level designations is that higher maturity values will become a source of pride and that lower maturity values will provide incentives for improvement and refinement.

The model described here is the IDEAL model, and the five levels of

5 Leader
- There Is Use of Quantitative Data to Conduct Continuous Improvement

4 Advanced
- The Team Commits to a Project Management Culture and Captures Quantified Performance Data

3 Enhanced
- The Team Implements Successful Project Management Processes

2 Developed
- There Is Isolated Implementation of Formalized Project Management Processes among Team Members

1 Initial
- The Team Uses Inconsistent Procedures and Lacks Formal Guidelines

Figure 5.2 Maturity Level Descriptions

the models are Initial, Developed, Enhanced, Advanced, and Leader (Figures 5.1 and 5.2). The IDEAL model describes team characteristics in terms of behavioral properties of the team. Naturally, the sophistication of these attributes will be different for different maturity levels. Therefore, the maturity level of the team is related directly, although not necessarily linearly, with the appropriateness of the processes used in the everyday activities of the team. For purposes of clarity, the attributes of the virtual team have been grouped under the following three major categories:

- **Enterprise attributes:** This category addresses the environment in which the virtual team must operate. The implication is that a virtual project, or any other project for that matter, does not thrive, or even survive, in an unfriendly environment. The attributes listed in this category describe the organizational friendliness toward virtual teams, involvement of virtual teams in organizational strategies, and recognition of the virtual team concept by the parent organization.
- **People attributes:** This category addresses the team members' interrelationships with one another, with a focus on teamwork issues such as trust, collaboration, competency, communication, and conflict.

- **Things attributes:** This category addresses the performance of the team in terms of efficiency, productivity, and deliverables. It includes treatment of topics such as progress monitoring, procedure enhancement, historical data collection, and development of best practices.

5.1.1 Level 1: The Initial Level

This level is called Initial and might also be referred to as ad hoc, basic, or inconsistent. At this level, the team does not have, nor does it use, any standard processes or procedures. The use of proven practices is rare and unexpected, primarily because processes cannot be improved if they cannot be specified, documented, or repeated. Most processes are ad hoc and are reinvented for every project. Processes appear chaotic because managers have no reliable way of estimating the project's scope, schedule, costs, or resources. Projects that are conducted by a Level 1 team tend to lose control of requirements, scope, cost, and schedule. Some project team members make personal sacrifices, such as overtime and lost vacation and holidays, in order to finish projects with satisfactory results. Project deadlines are unreasonable, and the team agrees to them unwittingly or unwillingly. Project recovery often involves sacrificing sound technical practices, thus delivering an abbreviated product or a product that might not meet customer requirements and specifications. Additionally, there is a high likelihood that the recovered project's product will have overruns in the time and cost areas.

Teams that are at this level apply inconsistent work force practices during the team formation and team development stages. As a result, team members generally have poor attitudes and exceptionally low morale, as manifested by the team's high turnover rate. It is evident in casual discussions that most of the team members would prefer to be working someplace else. It is rare for the project manager to even consider dealing with human resource problems, partly because managers lack the tools and training necessary to deal with these problems. The focus is on the things aspects of the project and not the people aspects of the project. Not surprisingly, specific human resource practices are not documented or specified. There are some forms available for some specific processes, but typically there is no guidance in how to use them, so managers instead must invent their own practices. The processes then depend on that specific project manager's personal orientation, experience, and people skills.

If a project team member is successful in some of his or her duties, it

is likely that he or she has informally observed, and learned from, other successful project teams. It is also possible that the occasional success is sheer luck. Some team members work harder and more diligently than others, possibly with the same inconsistent results. Improving the competency of personnel is not a top priority item. Competency levels throughout the organization are mismatched, and thus there is a serious shortfall of competencies in some areas. Many practices are conducted without real attention to their purpose or effectiveness. Even if training is provided, it is not customized to impart skills for a particular end result.

A virtual team is ranked at Level 1 if the team's operational emphasis is on individual accomplishments and individual objectives, rather than on team objectives. In such a case, the prevailing view among the team members is that the project might be completed through additional integration of individual contributions, rather than through collective efforts. There is no shared vision among the team members. At this level, miscellaneous project management tools are used sporadically throughout the team during the life of the project. Project managers of a Level 1 virtual team tend to develop their team management skills through on-the-job exposure. On Level 1 teams, quality shortcomings, cost overruns, and schedule delays are common. The attributes of the Level 1 team in the IDEAL model are presented in the following list. Specific characteristics of this level are categorized into enterprise attributes, people attributes, and things attributes.

Level 1 Enterprise Attributes

- Some of the team members follow some procedures for some of the success elements, but performance of activities is inconsistent. Action items that are identified may or may not be completed.
- At times, team members support the virtual project, but primarily their commitment is to projects located in their on-site environment. Accomplishment of virtual team objectives is not regarded highly by the team members' on-site managers. Consequently, team members tend to work on the virtual project only when absolutely necessary.
- Little guidance is available to the virtual team members as to how to best perform their work. Training is not provided in the use of technology for communication and collaboration, nor is training provided in methods of self-motivation and self-management.
- Staffing decisions are made on the basis of availability rather than specific expertise. Roles and responsibilities are not clarified.

Level 1 People Attributes

- There is an atmosphere of cynicism and mistrust, with interpersonal attacks common among team members, who undermine each other's contributions. In order to avoid sharing credit, virtual team members might purposely exclude others from routine communications. Team members do not try to remove any obstacles that may be in the way of others, because their focus is not to promote effective performance for others but rather to highlight individual performance. Team members lack knowledge of one another's capabilities.
- Team members work independently on the project. Team interaction is infrequent because most of the traditional team meeting functions are inappropriately replaced by e-mail. Typically, group e-mail, in its most impersonal state, is used for status and for one-on-one communication, which in turn fosters singular problem solving.
- Confidence in other team members is lacking. With distrust as the norm, any meetings that are held are reactive, as opposed to proactive, with one-sided discussions that lack direction. On-line meetings that are held concentrate on status or an upcoming milestone to conserve time. It is easy for people not to be active team participants.
- Conflicts are seen as personal attacks, leading to greater polarization among team members. Conflicts are considered destructive, not constructive. Individual differences can become magnified in areas where possible cultural diversity could facilitate sharing of insights in order to promote innovation.

Level 1 Things Attributes

- As a result of a lack of common purpose for the team, individuals are left unguided. Thus, team members perform their technical and cost/schedule duties according to their own personal agendas. Because of the absence of a common mission, opportunities are pursued by individuals rather than by the team as a whole.

5.1.2 Level 2: The Developed Level

At Level 2, there are sporadic uses of best practices. These best practices can sometimes be specified, documented, and repeated. Project team members are able to repeat the successful practices if by chance they can

identify those practices that have worked in previous projects. Each project is allowed to establish repeatable practices for itself.

The project manager is in charge of project definition in terms of scope, cost, and schedule. However, with no organizational guidelines, it becomes incumbent on the project manager to take responsibility for managing and developing his or her people. The project manager is responsible for obtaining needed staffing, coordinating commitments, negotiating for resources, managing performance, developing skills, and making compensation recommendations. The project manager accepts personal responsibility for implementing good human resource management practices, such as interviewing effectively, providing feedback, and conducting performance evaluations. There are localized consistencies among project managers throughout the organization.

Individual units or departments in the organization have some autonomy in developing project work balance and determining project skill needs. The project manager focuses on individual performance and individual contributions to improve the unit's overall performance. If there is success, it is achieved only by ensuring that project team members have the appropriate competency for the assigned task. There is a system for regular performance reviews.

This maturity level is characterized by having a process to instill basic discipline into the team's activities. On a Level 2 team, most team members use procedures for some of the project elements. There is some emphasis on effective performance of the team members, which indirectly signals recognition of the fact that performance of the project depends on the collective performance of individual team members as a unified team. There is some acknowledgment of the need for mutual accountability and common commitment. Sometimes, the team establishes charters to govern performance. The manager of the virtual team might have been trained in team building as applicable to virtual teams. The virtual team manager has knowledge of the use of technologies to support the project, and training is provided to team members in the use of the technologies that are selected. In the IDEAL maturity model, this level is known as Developed. It also may be referred to as consistent, abbreviated, or repeatable. Specific characteristics of this level are categorized into enterprise attributes, people attributes, and things attributes as follows.

Level 2 Enterprise Attributes

- The project manager secures organizational support for implementing the virtual team concept. This support is announced for-

mally through an organizational policy statement which deals with virtual teams and virtual projects.
- There are some policies regarding collection of project data and compiling the data for future use.

Level 2 People Attributes

- Team members establish communications principles.
- Team members plan the project work collectively, estimate the time required to accomplish their work packages, and agree to commitments collectively.
- Team members have a sense of personal responsibility to support the virtual project. They are motivated to support the project.
- Individuals are integrated into virtual teams through standard processes.
- Simple and direct communication is used to reduce the risk of misunderstanding. A system of regular communication is established. A system of regular reporting and reviews is established.
- There is some effort to provide a smooth transition for the team members as they look ahead to the next project.

Level 2 Things Attributes

- The team prepares a somewhat sophisticated team charter. The charter might include some, although not all, of the following items:
  - □ Statement of the project's mission
  - □ Project commitment statement
  - □ Objectives
  - □ Special factors
  - □ Scope and boundaries of the team's work
  - □ Project sponsor
  - □ Project manager and team members
  - □ Time frame for the project
  - □ Deliverables
  - □ Operating procedures designed to instill basic discipline into the team's activities, including administrative activities, methods to handle conflict, procedures for escalating problems and issues to the next managerial level, and communications principles, including standards for availability and responsiveness
- Roles and responsibilities of virtual team members are known. Assignments consider skills, expertise, and availability.
  - □ A responsibility assignment matrix is prepared and disseminated.

  - □ A resource breakdown structure is prepared and disseminated.
  - □ A virtual team organization chart is prepared and disseminated.
  - □ A virtual team directory is prepared and disseminated.
- ■ A common data interchange format is available.
- ■ A system for compiling and maintaining virtual team information is established and can be accessed by any team member at any time.
- ■ Project lessons learned are documented and include ideas for improving the effectiveness of working on the virtual team.
- ■ The team participates in establishing objective performance criteria, against which both team and individual performance can be measured, considering the project plan, the roles and responsibilities of the team members, and the project's schedule, cost, and quality objectives.
- ■ The team reviews its progress against its commitments and makes changes as required.

5.1.3 Level 3: The Enhanced Level

At Level 3, the best practices are integrated into organizational guidelines and policies that are disseminated and used throughout the company. Team members are trained in these best practices. This signals the fact that there is widespread consistency of procedures. Project progress data are routinely collected, analyzed, and archived. There is a culture of common practice, because there is a general trust in those common practices. While it is recognized that the same practice may be conducted differently in different areas to reflect unique circumstances and situations, an organization-wide structure for these practices is developed.

The organization has developed a catalogue of work force competencies, and these categories are used in the formation of work groups that align these competencies with overall business strategic objectives. The focus is on identifying common practices among skills across organizational units in order to identify those that are the most effective. Results are matched with business success in order to build an organizational framework for competencies. Strategic plans and specific action items are prepared for developing specific competencies. This approach enables the organization to accelerate development in areas that are more critical.

At this level, the team and/or the organization has an established career path for project professionals. Because of the organization's focus on best practices, individuals are mentored and coached in terms of their career advancement. Competent people are empowered and given freedom and

responsibilities. Business performance data are readily provided and accessible. This maturity level is characterized as one in which the team successfully proves the viability of the use of virtual teams and virtual projects in support of the overall organizational strategic goals. Based on the success of the virtuality of the team, the organization formally recognizes the desirability of virtual project teams for its continued and expanded success. The team members value their association with a virtual team in the same way as they would value working on a collocated team, maybe even more so. The distinguishing characteristic of this level is the emphasis on team discipline and self-management. In this environment, the team routinely sets and/or modifies its collective goals and disseminates feedback on its collective and individual performance. At Level 3, all team members use procedures for the project success elements. In the IDEAL model, this level is named Enhanced. It may also be referred to as integrated, focused, or defined. Building on and including the attributes of a Level 2 team, specific attributes that are characteristics of Level 3 follow.

Level 3 Enterprise Attributes

- The virtual team plays a key role in defining and shaping the organizational management strategy.
  - □ Managing virtual teams has become a specialty unto itself.
  - □ The project manager of the virtual team does not also manage a co-located project team.
  - □ The project manager is empowered to acquire the funding necessary to enable virtual teams to enhance their communications.
  - □ The project manager has funds available for training virtual project team members and for team-building activities on the virtual team.
  - □ Experienced managers of virtual project teams are made available for consultation and mentoring.
- Training is provided to assist individuals in working in the virtual environment in terms of communications skills and in the use of selected technologies.
- Open communication without fear of reprisal and that supports communications flow in all directions is fostered as part of a documented set of values for work on virtual teams.
- The work environment enables individuals to concentrate on work of the virtual project without unnecessary, or inappropriate, distractions from the on-site environment.

Level 3 People Attributes

- Team members share a common sense of purpose.
  - Expectations between team members are known.
  - A team vision of the project outcome is created, with specific goals established to achieve this outcome.
  - Team members agree with the project's goals and objectives, have a common definition of the project's scope, and support the project plan to achieve the goals. They are committed to schedule, cost, and performance goals.
  - With a common focus on goals and schedules, team members monitor their own personal goals to be aligned with the project's goals. Each person feels ownership for his or her assigned work packages.
- Standards for decision making are established. These standards outline when individual decisions can be made, when coordinated decisions are required among different team members, and when consensus decisions are necessary among the entire team.
- Team members receive training in self-management and self-motivation. Team members participate in a self-assessment of their own individual personality styles and motivational approaches to enhance communication and understanding.
- Team formation is smooth and quick for virtual teams.
  - Resources are deployed in such a way that each team member can handle specific tasks in a timely manner.
  - New members join the virtual team in a seamless fashion so that the team can quickly bond. Notwithstanding, if circumstances warrant it, roles among team members shift gracefully.
- A participatory culture is established among team members.
  - Input from team members is obtained during problem-solving and decision-making sessions. Thus, commitments are made in a collaborative fashion.
  - Open interaction is encouraged with fact-based problem solving.
- Team members share information freely.
  - A team orientation session is held to determine communication technologies and protocols to use.
  - Common tools (both software applications and hardware platforms) are available for the virtual work.
- A communications schedule is established that is flexible and can adjust to changing conditions.
  - Team members are willing to modify their availability standards to best fit those of the virtual team.

- □ Standards are established for format, language, and nomenclature for project management processes and for technical components.
- □ Common understandings of terms to be used and protocols are established.

- Cooperation among team members is the norm. Team performance opportunities are a key priority. There is a deep sense of belonging in terms of being a member of the virtual team.
- Team members respect and value the knowledge and experience of their teammates. Problem-solving, administrative, interpersonal, and technical skills are equally valued.
- There is a sense of mutual accountability among team members. Team members are accountable for their individual contributions, their collective contributions to the team, and the overall goals and objectives of the project.
- Conflicts that do occur are resolved by reference to the team charter. Thus, conflicts are considered to be constructive. Conflicts are seen as a way to generate new ideas and insights and as a way to enhance the favorable relationships that do exist among team members. Any conflicts that cannot be resolved within the team are escalated according to procedures outlined in the team charter.
- Team members work to ensure that all views are exchanged and understood. Cultural differences are embraced and understood. Different views are accepted and considered necessary for effective problem solving.
- The team undertakes team-building activities to improve effectiveness.
  - □ There is recognition of both individual and team accomplishments.
  - □ Members of the virtual team feel valued.
  - □ Each individual establishes a personal development plan.
  - □ Individual performance criteria that complement the team's performance criteria are developed.
  - □ The virtual team establishes a plan to satisfy any training needs.

Level 3 Things Attributes

- A standard template is available for the virtual team charter, along with a process for the team to develop its specific charter.
  - □ This template, and its process, might be scaled or tailored to meet the requirements of a specific project.

- □ Team members review the standard template and establish a team charter collaboratively to define and agree on common procedures for project work.
- □ The charter highlights processes to determine how the team's work is managed, how information is stored and shared, how documents are reviewed, and how problems are detected and resolved.

- There are standard virtual-specific templates for requirements definition, stakeholder identification, estimating, scheduling, risk identification, risk analysis, progress monitoring, and change management.
- The standard templates and processes designed for the virtual project are reviewed and enhanced periodically based on lessons learned during their use in each project.
- The team uses a 360-degree performance evaluation system. The 360-degree system is reviewed and approved by the project manager and sponsor. Results-based evaluations are conducted.
- Team and individual performance is measured against objective criteria and is periodically documented.
  - □ Upper management provides formal feedback on team and individual performance.
  - □ Quantified measurements of team performance are collected and analyzed.
- Performance criteria are periodically reviewed to determine if changes are required.
  - □ Ways to improve performance are periodically discussed, and improvement actions are taken.
  - □ Various components of job performance are periodically discussed and analyzed.
- The collection of project data is done systematically and according to prescribed procedures. There is a prioritized list of data that are to be collected and compiled.

5.1.4 Level 4: The Advanced Level

At Level 4, organizational performance is viewed in conjunction with project performance. Project performance is analyzed and characterized for a large number of projects. Corrective actions might be prescribed across the organization based on analysis of data that are specific in terms of knowledge areas and project and organizational success factors. The performance assessment is based on quantitative data. Project planning data and project performance data are readily available.

The organization seeks to integrate organizational work force competencies, empower the project teams, and manage performance based on reliable quantitative data. As a result, the organization benefits from the well-suited competencies of individuals. The organization can accurately predict the success outcomes of projects with quantified indicators. Upper management places a heavy reliance on the results produced by people in the organization, who are competent thanks to organizational planning. Project managers empower work groups within individual projects. Consequently, different competency-based processes are integrated into a single multidisciplinary unit. Since delegation and empowerment are widespread, competent people define their own point of coordination.

The success of the team in previous projects provides documented proof that, given a good match between each virtual team member and the corresponding project component, unusually high effectiveness can be predicted for the project. The team is aware of, and encouraged by, the fact that virtual teams are established as the preferred organizational structure for an increasing number of the organization's projects. In the IDEAL model, this level is called the Advanced Level. It may also be referred to as comprehensive or managed. Characteristics of this level beyond those of the previous levels, grouped by enterprise, people, and things attributes, follow.

Level 4 Enterprise Attributes

- The virtual team receives full organizational recognition by being listed as a key component of organizational strategy. As such, the organizational vision and mission openly support the operations of the virtual project team.
- The project manager and his or her virtual team members are regularly invited to participate in project selection activities and other long-range organizational activities.
- The virtual team has the explicit support of the organization in areas such as training and mentoring.
- The project manager periodically assesses the overall performance of the virtual project team from a process perspective to assess future needed support.
- A position of relationship manager is established on each virtual team.

Level 4 People Attributes

- Team members are able to establish, and change, the environment for their work in the form they believe is most appropriate for the

specific project. Clearly defined performance goals motivate the team members to achieve their objectives, because in this environment people are anxious to truly make a difference for the project and the organization.

- An atmosphere of trust exists among the virtual team members because their concerns can be shared openly, and their workload can be modified easily. The emphasis is not solely on consensus but on working toward approaches that are most effective in terms of the team's mission.
- There is collaborative leadership and shared responsibility among team members of different skills and different levels of technical expertise.
  - □ Team members undertake interdependent tasks.
  - □ There is a sense of cohesion and cooperation among team members.
  - □ Teams take pride in their work.
- Team members establish mentoring relationships.
  - □ The focus is on learning from and helping one another since everyone believes that individual accountability to the team promotes learning.
  - □ Team members model and encourage supportive behavior.
  - □ Learning among team members is valued.
- On-line interaction is so successful that face-to-face communication is not viewed as a necessity.
- A climate of open communication is available, which in turn enhances group problem solving and decision making.
  - □ Team members work to ensure that all people participate in discussion forums and status meetings.
  - □ Information is shared beyond that which is necessary to do one's job.
- The work experience is rewarding and enjoyable for team members on a personal level. Team members want to sustain the relationships they have built with other team members.

Level 4 Things Attributes

- All team members monitor the effectiveness and efficacies of their procedures. The performance focus of the team is such that team members, if they note a skill gap, will collectively work with management to determine how best to fill it.
- Team members are recognized and rewarded for creativity and innovation.

- Team members review processes developed, including task and working relationships, at various intervals throughout the project to enhance the quality of their work. Periodically, reviews are conducted to ensure that all established processes are followed to identify areas in which improvements may be warranted.
- Team members openly communicate about ways to enhance performance and provide feedback to others.

5.1.5 Level 5: The Leader Level

At Level 5, the organization has a clear picture of how virtual projects work in all aspects of their performance and the foundation for their success. Improvement actions can be readily identified. Improvements are either modifications of existing procedures or the implementation of entirely new procedures. Carefully collected data are used to isolate problems and to recommend corrective action in a seamless fashion. Change management is a consistent organizational process.

The organization is recognized for its competent people at all levels. The organization empowers those competent people to conduct continuous improvement in their work processes and to propose organizational changes that support those improvements. The organization focuses on continuously improving and aligning personal, work group, and organizational capability.

Differences in work styles and approaches are identified and quantified, as a prelude to encouraging individuals to make continuous improvements to their personal work processes. Thus, considering all of the projects and all of the business innovations, the organization is collectively recognized as one of the best in its class. Individual performance is in line with organizational objectives. Lessons learned are collected, analyzed, disseminated, and easily accessible. Knowledge profiles are prepared and updated on a regular basis in order to highlight the specific expertise of team members. Individuals are encouraged to make constructive suggestions to one another for improvements in overall efficiency. The organization regularly evaluates the latest practices, participates in benchmarking forums and learning communities, and uses widespread performance data to forge future improvements.

The virtual project team delivers results that always meet, and sometimes exceed, customer requirements. Team performance criteria include proven measures to empower team members. There is shared alignment of differences and similarities among team members. Team members view one another as essential for the team's overall success. The organization

regards virtual teams as a strategic tool toward its success. Finding the best person for each project and sharing people between projects is streamlined, which in turn improves overall organizational performance. When the team is at this level of maturity, each person develops his or her own personal learning agenda in concert with organizational goals. The project manager openly and actively encourages team members to experiment and practice with new approaches. In the IDEAL model, this level is known as Leader. It may also be referred to as optimizing or adaptive. Building on the attributes of previous maturity levels, additional attributes that characterize this level are listed in the usual three categories.

Level 5 Enterprise Attributes

- Virtual teams are recognized as a strategic resource for organizational success.

Level 5 People Attributes

- There is collective acknowledgment of similarities and differences among team members, with a plan developed to take advantage of different contributions to the project.
- Team members earn and maintain high levels of trust.
  - Team members openly share concerns and problems.
  - Any problems in terms of team dynamics are discussed throughout the project, rather than allowing them to escalate into a major conflict.
  - Team members do not have hidden agendas.
  - Team members respect the confidentiality of team issues and concerns.
- Team members are expected to take risks, because risks are viewed as opportunities.
- Team members work together to plan risk response strategies so that risks do not turn into problems.
- Team members enjoy an environment conducive to thinking, sharing, creating, innovating, learning, and community.
  - Open and honest communication is considered essential for success.
  - The environment is such that team members derive satisfaction from their work.
  - The team as a collective entity and team members as individuals promote professional responsibility in their practices.

- Team members want to continue the relationships they have built in the virtual team even when the project is complete. Accordingly, opportunities for future collaborative work are developed for the project team.

Level 5 Things Attributes

- The team charter is considered a key success ingredient, and its continuous enhancement is emphasized.
- Team members regularly conduct continuous evaluations of team operating processes and performance.
  - □ All team members conduct continuous improvements on all success elements.
  - □ The focus of the team is on continuous improvement of methods to develop both personal as well as team competence.
- Individual and team achievements are acknowledged and celebrated throughout the project to increase both individual and team satisfaction. Input is collected on a periodic basis concerning each individual team member's attitude toward work on the virtual team. Suggestions for improvements are provided on a regular basis.
- Individuals, and the team as a unit, quickly learn from their experiences.
  - □ These inputs are analyzed, and feedback is provided.
  - □ Knowledge profiles are established and maintained.
  - □ Feedback on enhancement suggestions highlights the results of the analyses and the subsequent actions to be taken.

5.1.6 A Rank of Zero

What is graciously missing from these rankings is the rank of zero, which describes a team that does not have any procedures, and none of its projects are ever completed near the success mark. One hopes that such a team is not encountered very often, at least not as part of an enlightened and forward-looking organization. Notwithstanding, it is possible for a team to merit a ranking of zero on some of the performance attributes. If that turns out to be case, then the first priority would be to resolve the team performance deficiencies in the affected attributes. Hopefully, these emergency activities will be followed by the development of formal processes and specific procedures in order to continually elevate the performance of this team.

- Requirements
- Scope Definition
- Estimating
- Scheduling
- Document Control

Figure 5.3 Virtual Team Common Metrics

5.2 ASSESSING THE VIRTUAL TEAM

The metrics that would determine the success or maturity of virtual teams, or any other project management activity for that matter, must be formalized and consistent. The virtual team procedures and tools can be divided into three categories: common metrics, modified metrics, or unique metrics. Common metrics are those metrics and tools that have been used for traditional teams and can be used for virtual teams with minor modifications (Figure 5.3). These metrics include those that deal with procedures, guidelines, and overall team performance. Modified metrics are those that have been used for traditional teams, but their use for virtual teams will require major modifications and enhancements (Figure 5.4). These metrics include those that deal with conflict management, communication, and team spirit. Unique metrics are ones that will have to be developed specifically for virtual teams to account for their special features (Figure 5.5). These metrics deal with issues of distance communication and the proper use of technology in handling issues and complications that arise only in

- New Member Orientation
- Team-Building Activities
- Sensitivity to Diversity
- Conflict Identification
- Conflict Escalation
- Conflict Resolution
- Feedback Solicitation
- Project Management Office Involvement

Figure 5.4 Virtual Team Modified Metrics

- Official Language
- Communication Etiquette
- Preferred Software
- Preferred Hardware
- Accommodations for Time Zone Differences

Figure 5.5 Virtual Team Unique Metrics

virtual teams. One needs to be sensitive to this distinction when developing new metrics for a desired aspect of the project management process. However, once the metric has been developed, there is no need to continue to tag it to any specific category.

5.2.1 Assessment Questionnaire

A tool for assessing maturity is useful and helpful for a traditional team, but it is a necessity for a virtual team. Such a tool should provide the capability to determine the effectiveness and efficacy of the team in any and all of the project management functions and activities. An assessment tool should provide an indication of the status of the team based on quantitative and qualitative information that is collected from the performance and behavior of the team. With a detailed diagnosis, the team would be able to develop a program of continuous improvement in order to elevate its level of maturity. The maturity assessment data will provide the foundation for determining priorities for immediate and long-range actions.

One of the more accurate ways to determine the maturity of a virtual team is to use instruments that inquire about the project management facets as they relate to a particular level. Appendix 5A presents such an instrument that can be used to determine the maturity of a team. If most of the statements are accurate for the team in question, then the team has achieved at least that particular level of maturity. The attributes of each level are enhanced versions of the attributes of its preceding level, although in some cases the higher level has features that its preceding level does not. The process of progressive standards is maintained throughout all five levels such that the attributes of Level 5 are higher than those of Levels 3 and 4. In addition, some of the Level 5 attributes are exclusive to Level 5. Figures 5.6 through 5.10 show a topical summary of the items included in the instrument for Levels 2 through 5.

- **Enterprise**
  - ☐ There Is Inappropriate Staffing
  - ☐ There Is Little Organizational Guidance
- **People**
  - ☐ There Is Little Teamwork among the Team
- **Things**
  - ☐ There Are Very Few Procedures

Figure 5.6 Level 1 Attributes

- **Enterprise**
  - ☐ There Is General Organizational Support for Virtual Teams
- **People**
  - ☐ Team Members Communicate with One Another
  - ☐ Team Members Collaborate Frequently
- **Things**
  - ☐ The Team Develops a Detailed Team Charter
  - ☐ Roles and Responsibilities Are Clear
  - ☐ Regular Progress Monitoring Is in Effect
  - ☐ There Is Occasional Historical Data Collection

Figure 5.7 Level 2 Attributes

It is an important point that the instrument included in Appendix 5A is only one component of the overall team maturity assessment. For a definitive evaluation of the team's maturity, this questionnaire must be augmented by in-depth observation of team members, extensive interviews with stakeholders, and an exhaustive review of documented policies, procedures, and support systems.

5.2.2 An Abbreviated Model

As a first approximation, it would be quite useful to have distinct and identified narrative goals for each level in order to guide the team's efforts to elevate its maturity level. These goals identify, in broad steps, what the team must do to meet the next level of maturity. Goals are not described for a Level 1 team, because it would be highly unlikely that a team would

- **Enterprise**
  - ☐ The Virtual Team Plays a Role in Organizational Strategy
- **People**
  - ☐ The Project Manager Is Sufficiently Empowered
  - ☐ Open Communication Is the Norm
  - ☐ Consulting, Training, and Mentoring Are Available on Demand
  - ☐ Team Members Have a Shared Purpose
  - ☐ Team Formation Is Quick and Efficient
  - ☐ Team Members Collaborate Extensively
- **Things**
  - ☐ Templates Are Available for Many Processes
  - ☐ There Is Efficient Progress Monitoring
  - ☐ There Is Formalized Change Management
  - ☐ Performance Criteria Are Continually Enhanced

Figure 5.8 Level 3 Attributes

- **Enterprise**
  - ☐ The Virtual Team Has Full Organizational Recognition
  - ☐ The Virtual Team Members Are Active in Organizational Strategy
- **People**
  - ☐ There Is an Atmosphere of Trust
  - ☐ There Is Aggressive Mentoring
  - ☐ Fully Effective On-Line Interaction Is the Norm
  - ☐ The Work Experience Is Enjoyable and Rewarding
- **Things**
  - ☐ There Is Continuous Enhancement of Procedures
  - ☐ There Is Reward and Recognition for Remarkable Performance

Figure 5.9 Level 4 Attributes

aspire to have ineffective procedures and to anticipate failure in the majority of its undertakings. Therefore, what follows here is a set of goals, expressed as results statements, limited to Levels 2 through 5. These specific goals establish a framework as to how the virtual team can improve its performance to a higher level. On the other hand, reviewing this brief set of goals will provide a rough estimate of the current maturity status of the team. If one knows that none of the team members, nor the

- **Enterprise**
  - ☐ The Virtual Team Is a Key Strategic Resource
- **People**
  - ☐ There Is a High Level of Mutual Trust and Respect
  - ☐ Risk Taking Is Permitted
  - ☐ The Work Environment Is Conducive to Creative Innovation
- **Things**
  - ☐ A Highly Effective Team Charter Is the Norm
  - ☐ There Is Continuous Improvement on All Procedures
  - ☐ Tools for Learning Are Readily Available

Figure 5.10 Level 5 Attributes

project manager, aspire to any of the goals of, say, Level 3, then it would be a good likelihood that the team's maturity is somewhere below Level 3.

Level 2: Developed

Goal 1: Virtual team formation is planned and managed.
Goal 2: Virtual team communication requirements are determined.
Goal 3: Virtual team members meet their commitments according to their plans.

Level 3: Enhanced

Goal 1: Team members consider work on a virtual project to be a valuable and sought-after opportunity.
Goal 2: A common team culture is established as virtual team members are collectively committed to the virtual project.
Goal 3: Virtual team members promote and ensure mutual accountability.

Level 4: Advanced

Goal 1: Virtual team members establish and enhance the environment for their work.
Goal 2: Virtual team members demonstrate a sense of trust, with a focus on shared leadership and professional responsibility for their work.

	Process	Compliance	Efficacy
Scope	5	5	5
Quality	5	5	5
Cost	5	5	5
Time	5	5	5
Risk	5	5	5
Integration	5	5	5
Human Resources	5	5	5
Communication	5	5	5
Procurement	5	5	5

Figure 5.11 Team Maturity Based on Project Management Process: Level 5, Leader

Level 5: Leader

Goal 1: Continuous improvement in virtual team processes and procedures is fostered.

Goal 2: The virtual team environment supports continuous learning and professional and personal development.

5.2.3 Indirect Assessment

Another quick evaluation method can be formulated on the basis of the sophistication of the project management processes. One would examine the existence of, compliance with, and efficacy of the project management procedures in each of the knowledge areas. For consistency with maturity models, a scale of 1 to 5 is used in each of the elements, and one would assign a score for each of the process attributes (i.e., existence, compliance, and efficacy). If these values tend to cluster around 1, 2, 3, 4, or 5, then that is the rating that is assigned to the team (Figures 5.11 and 5.12). It is important not to become overly concerned with precise averaging which might give the illusion of accuracy. This technique is a first approximation and not a definitive assessment methodology, although it can serve as a useful tool.

5.2.4 Implications of Team Maturity

For virtual teams, or for traditional teams for that matter, a success structure can be developed somewhat similar to the success structure for projects

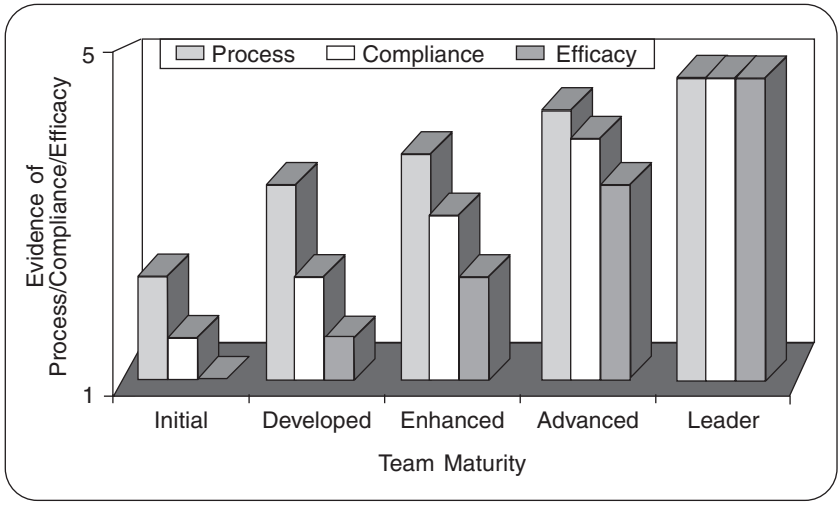

Figure 5.12 Maturity as a Function of Process Sophistication

(Rad and Levin, 2002). Then the maturity of teams can be measured in terms of how well each element of the success structure can be executed. Given that the performance characteristics that reflect process maturity are very closely linked to those that describe the success of projects undertaken by the same team, one can make inferences from one set of observations to the next. Figures 5.13 and 5.14 show stylized depictions of the relationship between the maturity level and the success of the same team in carrying out the various functions that deal with the knowledge areas of project management. The premise is that sophisticated teams are the ones that routinely produce successful projects.

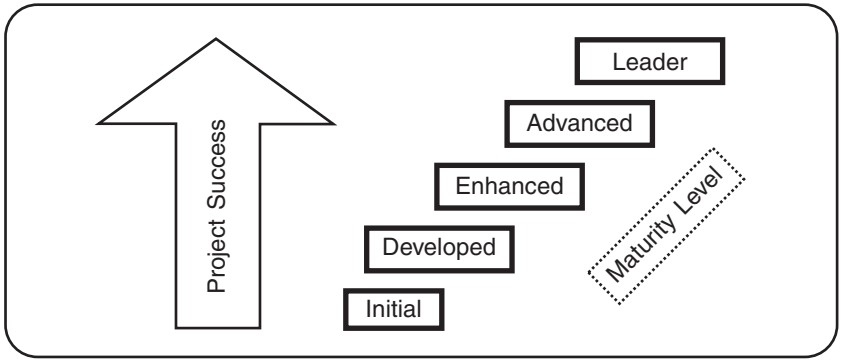

Figure 5.13 Team Performance

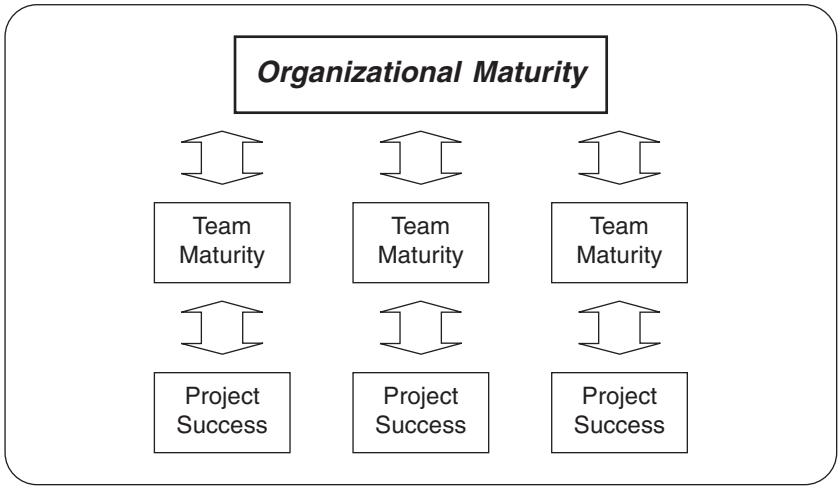

Figure 5.14 Organizational Maturity

There is a direct relationship between team maturity and the success of the projects that the team undertakes. If the maturity of the team is at, say, Level 3, then there is every expectation that the success rating of the team's projects is also at three. Carrying this relationship one step further, if several of the teams in an organization have reached a maturity of four, then there is every indication that the organization has the infrastructure to support a maturity of four for all of its teams (Figure 5.15). Setting such a goal and achieving it is a straightforward matter because organizational examples of metrics have already been established within the more progressive teams. Finally, if all of the teams in an organization achieve a

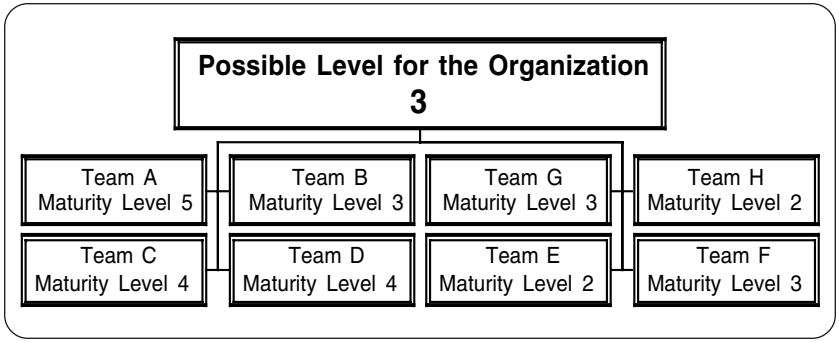

Figure 5.15 Organizational Maturity

maturity of five, then there is every likelihood that the organizational performance attributes are also at Level 5. By extension, the success indicators of the collective suite of projects that are undertaken by the organization will also be at Level 5. Notwithstanding all of these inferences, the most accurate way to determine an organization's maturity is to conduct a formalized maturity assessment. Likewise, the best way to determine the overall success of virtual projects is to sum up the success indicators of individual projects, which in turn have been determined using formalized structures and rating schemas.

5.3 SUMMARY

Team maturity refers to the likelihood of success in the team's future undertakings. The stages of the team's maturity can be described with a five-level model called the IDEAL model. The five levels are labeled Initial, Developed, Enhanced, Advanced, and Leader. The attributes of these levels can be described in relationship to project success factors and categorized by enterprise, people, and things issues. Depending on the required accuracy and reliability of the data, and the amount of effort that can be allocated for the assessment process, a range of assessment tools can be used to obtain an approximation of the team's sophistication in handling project management duties in a virtual environment.

APPENDIX 5A MATURITY QUESTIONNAIRE

No questions are listed for Level 1 of the model, or for Level 0 for that matter, in the hope that virtual teams would be prompted to aspire to the higher levels of maturity.

Level 1: Initial

If the team responds affirmatively to less than 75% of the questions listed for Level 2, then the team, and the organization hosting the team, must take immediate and drastic measures to improve the management and success of the projects conducted by virtual teams.

Level 2: Developed

Your virtual team is operating as a Level 2 team if at least 75% of the answers to the following questions are "yes."

Level 2 Enterprise Attributes

- Has the organization prepared and issued an organizational policy statement that addresses the use of virtual teams and virtual projects?
- Has training in team-building activities specific to the virtual project been made available to the manager of the virtual team?
- Has training in the technologies to be used on the virtual project been made available to team members?
- Is there a smooth transition for team members to be reassigned to other activities and projects in the organization once their assigned activities are complete or when the virtual project is complete?

Level 2 People Attributes

- Has the virtual team established a system of regular communication among its members, which includes standards for availability and responsiveness?
- Is a process in place for identifying issues and escalating them to the next level of management if the team cannot resolve them?
- If conflicts cannot be resolved within the virtual team, is a process in place that describes ways to escalate them to the next level of management?
- Is there a system to prioritize virtual team information so that team members do not have a sense of information overload in order to facilitate communication within the team?
- Do team members suggest on a regular basis ideas for improving the effectiveness of their work on the team?

APPENDIX 5A MATURITY QUESTIONNAIRE (CONTINUED)

Level 2 Things Attributes

- Are the virtual project team members part of the overall planning process for the project?
- Has the team prepared a team charter that describes items such as the purpose of the team, its objectives, any special factors, the scope of the team's work, the project time frame and project deliverables, and operating procedures for the team's activities? Have team members and the project manager signed off on this charter?
- Has a responsibility assignment matrix been prepared and distributed?
- Has a resource breakdown structure been prepared and distributed?
- Does the virtual team have an organization chart?
- Is there a directory of the virtual team members?
- Have each of the virtual project team members participated in determining the time required for their assigned work packages and associated activities?
- Have each of the virtual project team members agreed to their specific commitments in their assigned work packages in support of the overall project?
- Is a process in place so that new team members who join the virtual team are easily assimilated into the team and can quickly learn the processes and procedures to follow?
- Does the virtual team have a system for regular status and progress reporting and project reviews?
- Can virtual team members access the team's information and data in a web-based team room at any time?
- Have team members participated in establishing performance criteria for both individual and overall team performance on the project?
- Do virtual team members periodically review their progress on the project and make any changes that are required?
- Do team members collect data throughout the project and make that information available for use, both on the current project and on future projects in the organization?
- Are lessons learned routinely documented by team members?

Level 3: Enhanced

If the answers to all of the preceding questions are "yes," then your team is a Level 2 team in terms of virtual maturity. Next, answer the following questions to see whether your team can be considered to be at Level 3.

APPENDIX 5A MATURITY QUESTIONNAIRE (CONTINUED)

If the answer to more than 25% of these questions is "no," "don't know," or "does not apply," then you can identify areas of improvement for your team.

Level 3 Enterprise Attributes

- Have virtual team members received training in the practices to follow when they are assigned to work on a virtual project?
- Has the organization officially recognized the desirability of virtual project teams for use on projects as part of its overall strategy for continued success?
- Do people in the organization volunteer for assignments as virtual team members?
- Are managers of complex and long-term virtual projects assigned to work on these projects on a full-time basis, without other assignments to manage traditional, collocated projects?
- Is funding available to train the virtual project team members in policies, processes, and procedures to follow in their work on the virtual project?
- Is funding available for team-building activities for the virtual project team?
- Does the organization have a policy that supports open communication in all directions without fear of reprisal?
- Are people with expertise in managing and working on virtual teams available to mentor and provide consultation as appropriate?
- Have team members received training in self-management and self-motivation?
- Do virtual team members receive training in effective communication skills and in the use of the selected technologies and tools?

Level 3 People Attributes

- Does the virtual team conduct a team orientation session to determine the communication technologies and protocols that will be used on the project?
- Has the virtual team established decision-making processes so that it is clear when individual decisions can be made, when coordinated decisions are required, and when a consensus decision among team members is required?
- Have team members established personal goals for the project that complement and support the overall project goals?

APPENDIX 5A MATURITY QUESTIONNAIRE (CONTINUED)

- Have team members participated in a self-assessment of their own individual personality styles and motivational approaches to enhance communication and understanding?
- When new members join the team, is it easy for them to feel they are part of the team and its culture?
- Has the virtual team prepared a plan to address any training needed for its members?
- Has the team established a schedule for regular communications among team members?

Level 3 Things Attributes

- Does the organization have a standard template for a charter that is available for use by the virtual team and can be tailored to meet the unique requirements of the specific project?
- Have virtual team members signed the team charter to indicate their support and commitment to it?
- Are standard templates available that are designed specifically for virtual projects in areas such as requirements definition, stakeholder identification, preparation of estimates, preparation of schedules, risk identification and analysis, progress monitoring, and change management?
- Is the team organized so that team members are assigned to the specific tasks in their areas of expertise at the time required in the project life cycle?
- Are common tools in terms of software applications and hardware platforms available for work on the virtual team?
- Has the team established specific standards for language and nomenclature of project management processes so that there is a common understanding of the terms to be used?
- Has the virtual team adopted a 360-degree performance evaluation system to collectively evaluate team member performance?
- Has each individual on the virtual team prepared a personal development plan?
- Are individual accomplishments and team accomplishments recognized?
- Are individual performance objectives established that complement team performance objectives?
- Is regular feedback provided by management on team and individual performance?
- Are metrics of team performance collected and analyzed on a regular basis throughout the project?

APPENDIX 5A MATURITY QUESTIONNAIRE (CONTINUED)

- Are ways to improve performance as a team periodically discussed by team members throughout the project and are corrective actions taken as required?
- Does each team member collect data on lessons learned and best practices throughout the project on a systematic basis according to a prescribed procedure?
- Are the standard templates and processes in place in the organization for work on the virtual team periodically reviewed and enhanced based on lessons learned by virtual team members?

Level 4: Advanced

If the answers to all of the preceding questions are "yes," then your team is a Level 3 team in terms of virtual maturity. Next, assess the following questions to see whether your team can be considered to be at Level 4. However, if the answer to more than 25% of these questions is "no," "don't know," or "does not apply," then specific areas of improvement can be determined.

Level 4 Enterprise Attributes

- Is it evident to people in the organization that virtual teams are considered to be the preferred organizational structure for many projects that are undertaken?
- Is the virtual project team considered to be a key component of organizational strategy?
- Does the organization's vision and mission officially recognize the use of virtual teams?
- Do virtual team project managers and team members participate in project selection activities and other long-term organizational planning processes as appropriate?
- Is there an emphasis throughout the organization on recognition for creativity and innovation in project work?
- Is there an emphasis on continuous development of virtual teams in the organization through overall reviews of policies and processes?

Level 4 People Attributes

- Is a team member on a virtual project officially designated as a relationship manager to facilitate and encourage team-building activities?
- Do team members collectively determine ways to provide mutual support and to modify workload and assignments as required so that there is equal participation in project activities in support of the overall project goals and objectives?

APPENDIX 5A MATURITY QUESTIONNAIRE (CONTINUED)

- Is collaborative leadership followed and practiced routinely on the virtual project team?
- Do team members work to formally establish mentoring relationships among themselves to model and encourage supportive behavior?
- Are face-to-face meetings considered unnecessary because of the open communication that exists on the virtual team in the on-line environment?
- Do team members work to ensure that there is equal participation in team meetings and discussion forums by all team members?
- Do team members openly communicate on ways to enhance both individual and overall team performance?
- Is it evident that team members want to sustain the relationships they have built with others after the project is complete?

Level 4 Things Attributes

- Does the project manager periodically assess the overall performance of the virtual team from a process perspective to determine areas in which future support is warranted?
- Do team members undertake interdependent tasks?
- Do team members regularly monitor the effectiveness of the procedures that are in use?
- Do team members regularly review processes developed, including task and working relationships, to enhance the quality of their work?

Level 5: Leader

If the answers to all of the previous questions, and the majority of the following questions, are affirmative, your virtual team has achieved the distinction of being at Level 5.

Level 5 Enterprise Attributes

- Does the organization regularly participate in benchmarking forums and learning communities to identify areas in which virtual teams can be even more successful?
- Is the virtual team recognized as a strategic resource for organizational success?

Level 5 People Attributes

- Do team members collectively acknowledge any similarities and differences and develop a plan in order to take advantage of the different insights and contributions that are possible on the project?

APPENDIX 5A MATURITY QUESTIONNAIRE (CONTINUED)

- Are problems in terms of team dynamics discussed and resolved within the project team, thereby avoiding the need for escalation to higher levels of management?
- Is there an emphasis among virtual team members on ensuring the confidentiality of team issues and concerns?
- Is the atmosphere on the virtual team such that learning, creativity, innovation, information sharing, and a sense of community are the norm?
- Does the team as an entity, and do team members as individuals, promote professional responsibility in their practices?
- Do team members focus on continuous improvement of methods to develop both personal as well as team competence?
- Are opportunities for continued work as a team identified throughout the project?

Level 5 Things Attributes

- Is continuous improvement to the virtual team charter encouraged at all levels in the organization?
- Do team members regularly conduct evaluations of team operating processes and performance in all elements critical to project and team success, from both the client and team views?
- Are individual and team accomplishments acknowledged and celebrated throughout the project?
- Are knowledge profiles established and maintained?
- Are team members encouraged to submit suggestions for enhancements or changes to policies and procedures?
- Is feedback regarding the implementation of these suggestions provided on a timely basis?

6

PROFESSIONAL RESPONSIBILITY AND THE VIRTUAL TEAM

The professional responsibility aspect of project management practices is increasingly receiving a greater amount of attention, primarily because it is being recognized that the behavior and performance of these professionals impact the profit–loss status of the organization in significant ways. Given that professional responsibility is an individual issue, fundamentally it stays unchanged independent of whether the professional is a member of a traditional team or a virtual team. However, the project management professional may have to use modified means in order to discharge these responsibilities when working on a virtual team. Virtual teams create novel ethical and professional situations, whose solution requires exceptional forethought and extraordinary due diligence. The areas of distinction are founded on those behavioral features that make virtual teams a different entity from traditional teams, such as people interaction issues of the team. There is no question that seasoned project managers will be able to adapt to the new ethical situations reasonably well. However, a set of standards, procedures, and guidelines will illuminate the path even to those who have recently entered the profession.

The project management tasks and operations must be guided by two sets of policies and guidelines. One set addresses the project management processes, namely initiate, plan, execute, control, and close (Figure 6.1). These processes address the discipline-independent as well as discipline-specific issues. They are usually clear and relatively straightforward, at

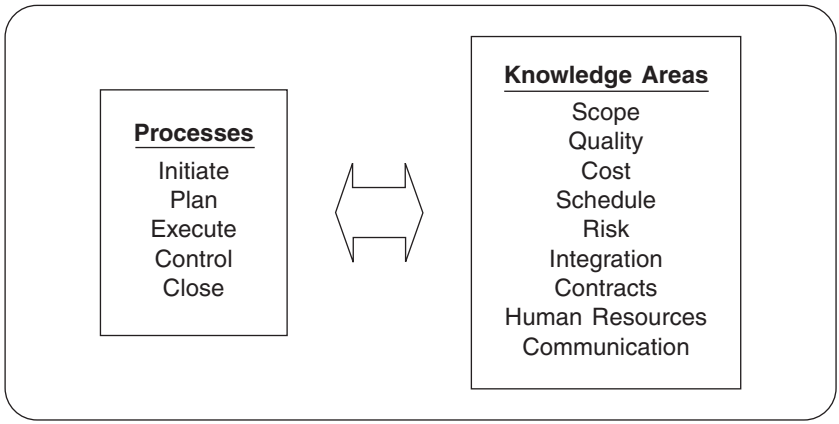

Figure 6.1 Project Management Practices

least once the team members become fully familiar with all of the steps of these processes. These processes in turn cover all project management knowledge and performance areas. However, the manner in which these processes are conducted and the nature of their impact on project stakeholders are usually tempered by subtle personality attributes of the performing team member, which in turn are influenced by the virtuality of the team. The second set relates to the behavioral attributes, which are driven by the team member's interpretation of the legal, ethical, and moral implications of the project's actions and decisions (Figure 6.2).

The requirements for a code of conduct and/or guidelines for acceptable and reasonable behavior are more imperative in the virtual environment than they would be in traditional teams. Generally, codes of professional conduct are based on fundamental beliefs that are formulated in keeping with the following duties and obligations:

- Duties in protecting the interest of the public
- Duties in protecting the interest of the client
- Duties in protecting the interest of the profession
- Duties in protecting the interest of colleagues

In most cases, the code of conduct is drafted for the membership of an organization on the basis of the above tenets in a series of do's and don'ts. One of the shortcomings of the listing of do's and don'ts is that it is near to impossible to envision all possible scenarios. Therefore, frequently the practicing professional is placed in a position of falling back on his or her own sense of right and wrong. Beyond the items listed above, or as a

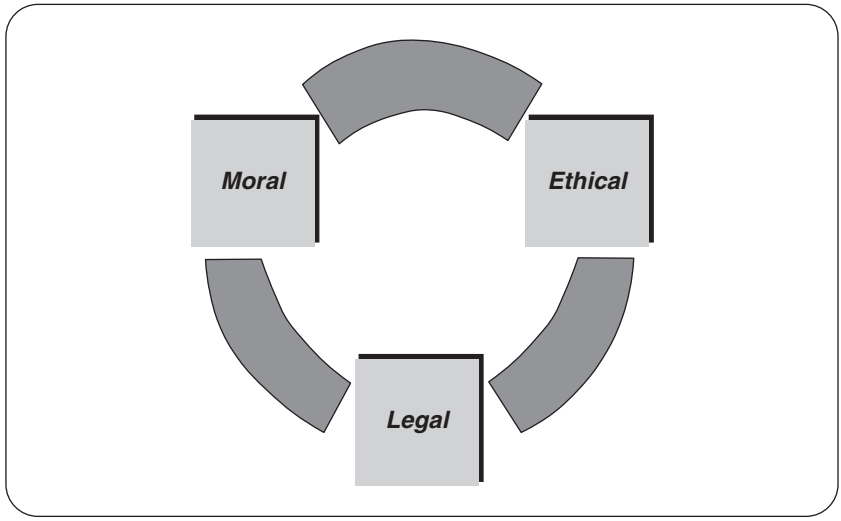

Figure 6.2 Determinants of Right and Wrong

foundation for proper discharge of the above duties, the project professional would be expected to exhibit personal good-character attributes, such as truthfulness, honesty, integrity, and honor.

An unfortunate reality of all codes of ethical conduct is a section dedicated to disciplinary actions. This section typically highlights the means for characterizing a certain behavior as unethical. It then proceeds to outline remedies for situations where the professional has violated one or more of the elements of the code. The disciplinary actions can be predicated on those behavioral symptoms that violate the letter of the code and/or those that violate the spirit of the code.

The virtual team should develop a team-specific code, or modify a typical code, at the beginning of the project when the team is first formed. This code, and the collaborative process of developing it, would foster a collective awareness of responsibility among the project team. It has been shown that team members will observe the team-specific code of conduct if personal responsibility is stressed in the meetings at the start of the project (Guss, 1997). A shared set of values and beliefs, as espoused in such a code of conduct, can help guide team members in situations in which the decision-making process is not straightforward. By being aware that there is a shared set of values and beliefs, it is easier to promote a true sense of a professional community in project management (Wang, 2002).

The Project Management Institute (PMI) conducted two surveys of representative samples of professionals in the field of project management

in order to identify the major content areas or domains in the profession, the tasks performed in each domain, and the knowledge and skills that are associated with each task (PMI, 2000b, 2002). The surveys addressed the importance and criticality of initiating the project, planning the project, executing the project, controlling the project, closing the project, and professional responsibility. The results of these surveys showed that project management professionals place a high level of importance on professional responsibility in dealing with unusual circumstances that are often encountered in projects.

Given that virtual teams are new entities, and that the behavior of virtual team members was not specifically addressed in these studies, the following questions rise to the surface:

- Would the responses of the team members be different when working on a virtual team?
- Alternately, would the responses be different in the virtual environment as a consequence of the special features of that environment?
- Would the responses be the same since much of one's response to situations in which professional responsibility decisions must be made is based on one's own sense of right and wrong?
- Are the tasks, knowledge, skill statements, and issues associated with professional responsibility more acute on a virtual team because of the lack of visibility of the other team members?
- Are the virtual team issues different because of a lack of a setting that is conducive to asking questions, receiving information, and obtaining regular feedback on one's actions?
- Are special incentives required to promote professional responsibility when one is working on virtual teams, or do existing incentives need to be restructured to make it more in the self-interest of virtual team members to behave more responsibly more frequently?

This chapter addresses some of the issues and concerns that virtual team members must face as they maintain a high level of professional responsibility in their project activities. The structure used for this chapter follows the skills statements of the above studies (Figures 6.3 and 6.4).

6.1 INDIVIDUAL INTEGRITY

Project team members must often make tough decisions in dealing with various aspects of the project throughout the project life cycle. Compli-

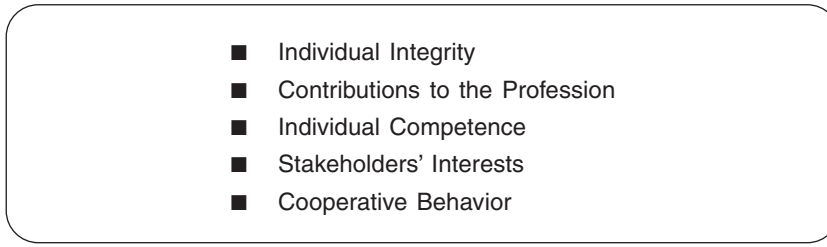

Figure 6.3 Project Management Professional Responsibility

cated project circumstances develop when project team members are expected to make trade-offs in scope, time, and cost of the project while maintaining a focus on customer satisfaction. With this technical backdrop, the project professional must always focus on *the right thing to do.* Fortunately, most of the time, project team members can recognize right from wrong when making decisions that relate to project and technical issues (Harrison, 2002). Identifying the right thing to do, though, becomes more complicated in instances where one needs to go beyond the technical details to consider issues such as social responsibility, economic and environmental sustainability, and safety. In order to protect the project community and all stakeholders, the project team must adhere to all legal requirements, ethical codes, moral obligations, and professional standards. It is only then that the project professional has shown a commitment to ensuring individual integrity and professionalism. That illusive concept known as good judgment will be called upon in situations that lack clear-cut answers. Project team members must have a collective behavioral pattern that emphasizes understanding, supporting one another, and sensi-

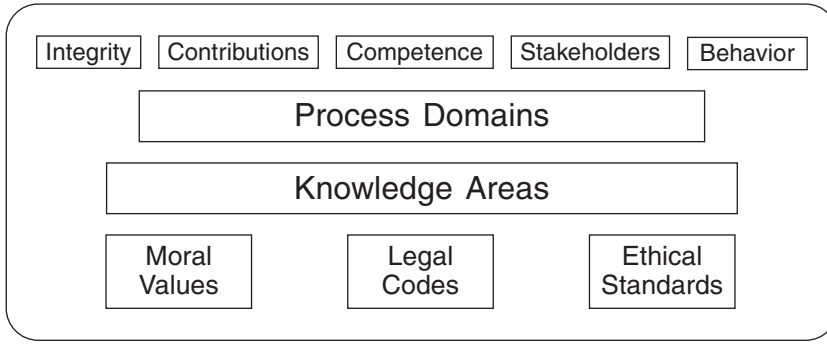

Figure 6.4 Project Management Professionalism

tivity to ethical issues. Such a collective behavior will instill confidence among team members, thus leading to the most beneficial outcomes for all stakeholders (Carter, 2002).

A virtual team is different from a traditional team because regular feedback is scarce in the virtual team. On the other hand, a virtual team is the same as a traditional team because one's behavior still depends on an individual sense of right and wrong. There might be situations during the life of a virtual project where, for a variety of reasons, the decision making is delegated to an individual team member. The team member may not have easy access to other members of the team, or an unconstrained amount of time to think through a difficult situation, in order to determine the best course of action to follow. The immediacy of the event, and the lack of collocated team members when tough choices must be made, may mean that the team member is often on his or her own. Gradually, it may become the norm to take more risks in the virtual environment, since the team members do not have the luxury of holding a face-to-face discussion.

6.2 CONTRIBUTIONS TO THE PROFESSION

The project management professional should make every effort to contribute to the project management knowledge base in the areas of lessons learned, best practices, and empirical research. Such collective contributions will improve project management services, enhance the capabilities of colleagues, and generally further the profession (PMI, 2000b, 2002). Casual conversations among project team members can also bring to the surface informal or implicit knowledge that otherwise might reside in the nondescript planning documents of the project. Virtual teams must take advantage of this behavioral pattern to facilitate informal exchanges, using virtual-specific media, among the team members. Capturing new knowledge and making it explicit is a key leadership attribute that leads to successful global virtual projects.

Since projects involve unique undertakings, it is important for any project team to foster a spirit of inquiry among the team members. Through group interaction, ideas can be discussed, and paradigms can be tested. Further, these interactions will shed light on approaches to follow and technologies to use to achieve stakeholder satisfaction. Such enlightened activities will generally result in positive advances in the overall practice and stature of the profession. Lessons learned must be discussed in detail,

and frequently, so that best practices can be applied to the project under way as well as to other projects in the organization. Further, it is a characteristic of virtual teams that group interactions are less spontaneous, although information exchange is a necessary mode of operation for virtual teams. Therefore, the project manager must put measures in place such that inquiry and information exchange are encouraged.

In a collocated team, the face-to-face interaction of the team members provides an easily accessible mechanism to promote the sharing of ideas, problems, opportunities, and interests. Therefore, a sense of team identity is developed readily. When someone has a question or a new idea to share, he or she can immediately locate others team members who are interested to discuss it. If a "war room" is established for the team, it can be used for team meetings as well as to post items of interest. In a virtual team, the web-based team room tends to mimic the features of this "war room." A virtual team room must have a platform that is stable, user friendly, easy to update, and easy to maintain. These features can bring a healthy amount of openness and visibility to the entire project. However, team members must be made aware of the importance of using this team room, and its available technologies, as a way to foster the development of ideas and as a way to further intellectual collaboration. For example, if discussion threads, rather than face-to-face communication, are to be used as a tool to further ideas in a specific area, people must view them as just that — a way to develop insights. One team member should not use these threads to express his or her opinion on an unrelated topic and expect others to immediately support a new line of discussion. In some virtual teams, much more so than in traditional teams, anonymous participation may be desirable so that team members can express ideas, or even criticism, in a manner that does not involve individual repercussions.

6.3 INDIVIDUAL COMPETENCE

All project team members, whether collocated or virtual, should be interested in ways to enhance individual competence. When a more seasoned member of the team assists another team member, the seasoned member is furthering the personal goals of the other team member while contributing to the overall objectives of the project. Therefore, individuals should be encouraged and empowered to continuously improve work processes, tools, and skills, independent of the immediate focus of that enhancement. However, by comparison, it is easier for collocated team members to

provide feedback in the areas of personal strengths and weaknesses and to mentor other team members.

The project management professional has the responsibility and obligation to enhance his or her individual competence. Enhancement of competence is accomplished by increasing one's professional knowledge base and by applying that knowledge for the benefit of improving the services that are provided to the client. The prerequisites to this process are a clear awareness of one's personal strengths, weaknesses, learning style, and professional competencies (PMI, 2000b, 2002). With this clear understating of one's status, the project professional can develop personalized options for training topics, instructional methods, and learning tools.

Mentoring and coaching in the same shape and form as for traditional teams are impractical and ineffective for virtual teams. However, if the project adopted any of the variations of distance learning tools, then virtual-specific mentoring and coaching can be conducted. Although mentoring and coaching tend to be situation specific, they still improve the overall effectiveness of the individual in the development of new knowledge and skills. The virtual team manager would be well advised to prepare a mentoring and development plan in order to capitalize on the experience of the more seasoned members of the team, even if the team happens to be virtual (Haywood, 1998). This plan might include technical skills, work process skills, and communication skills with appropriate modifications for the virtual environment. The plan should outline means to evaluate whether technical skills training is available through multiple media, such as self-paced web, CD-ROM, or classroom training. This plan should also include documentation of task-oriented work processes and nontask-oriented processes. Finally, the plan should outline the availability of training in the areas of written communication, conference calls, meeting management, and time management.

For the best results, mentoring activities should be highly encouraged for, but never imposed upon, team members. This emphasis will signal the team's willingness to provide personal support and guidance, but allow the prospective recipient to make the decision regarding use of a mentor. Since the virtual team is composed of people with expertise in different technical specialties who reside in scattered locations, a catalogue of each team member's specialties will be extremely useful in identifying teammates for one-on-one consultation. Such information should be generated by the individual team members and made available in a format that is easy to access.

6.4 STAKEHOLDERS' INTERESTS

Another aspect of professional responsibility involves balancing the interests of project stakeholders. Occasions for such optimization arise when a team member is confronted with a situation for which he or she must develop a fair resolution that satisfies competing needs and objectives of the stakeholders (PMI, 2000b, 2002). One of the side effects of a virtual team is that not all stakeholders are physically present during the daily conduct of the activities of the project but can exert influence over those activities at critical times. Project team members need to be skilled in conflict resolution techniques, negotiation skills, ways to generate alternatives, and methods to generate a fair resolution. It is essential for the project team member to build alliances within the stakeholder community and to foster collaborative relationships. However, this mission can be very challenging because often the list of stakeholders is long. Challenges in working with stakeholders tend to increase in the virtual environment because of differences in languages, time zones, cultures, regulations, business processes, and political climates.

Usually, virtual team members are selected for their area of expertise regardless of their geographic location and time zone. Thus, when a technical decision is necessary, the team member may make the decision based on specialized knowledge and understanding of the situation, but nonetheless without extensive consultation and debate with other team members. Therefore, physical location of team members is a major contributor to the decision-making process. On such a team, work in local areas would probably tend to be the principal responsibility of the team members in the same geographic area. These team members typically would be the point of contact with the stakeholders in the local area and therefore may make many decisions on their own without the benefit of immediate collaboration and consultation with other team members. Given the time zone differences and the urgency of the response, the team member who is available may have to make the decision. Thus, the same circumstances that prompted the formation of a virtual team will force a decision even if there is insufficient contact with people inside or outside the team in the local area.

It is exceptionally important to establish a participatory culture on the virtual team. Care must be taken to create an atmosphere in which the team member is expected to act as more than just an individual expert pursuing his or her own specific and independent tasks. An explicit recognition of the various mutual dependencies is needed, more so in the

virtual environment. Each individual team member must build relationships with stakeholders associated with his or her tasks and, where appropriate, in his or her local geographic area. With the benefit of these relationships, the individual team member will be able to resolve emerging project conflicts more efficiently. Additionally, the team member will be able to promptly inform others on the team as to the existence of these conflicts in case these conflicts have an effect on other aspects of the project. Otherwise, areas of conflict that may have a significant impact on the project may remain hidden to some team members.

6.5 COOPERATIVE BEHAVIOR

Finally, a collaborative project management environment will be ensured if team members interact in a professional and cooperative manner with each other and with the stakeholders. This task is accomplished by exhibiting a healthy respect for personal, ethnic, and cultural differences (PMI, 2000b, 2002). This attitude will allow the team members to deal with each other from a sound ethical position.

An organization's culture is highly influenced by the shared explicit and implicit agreements among its members as to what is important in behavior, attitudes, values, beliefs, standards, social activities, and management practices. Thus, a project team culture is a pattern of social interaction that arises out of shared interests, mutual obligations, cooperation, friendship, and work challenges (Cleland, 1999). Therefore, it is logical to expect that each virtual project also has its own distinct culture. Elite project teams exhibit a culture that is reinforced by behavior, which in turn ensures team cohesiveness, integrity, trust, and loyalty.

In the traditional project environment, it is relatively easy to identify and understand the project culture and its influence on one's behavior. Further, the impact of cultural factors on communications is more evident in the face-to-face communications of collocated project teams. On the other hand, in the virtual environment, the presence of cultural differences may not even be apparent. Thus, the value of cultural diversity and the different perspectives and insights it can bring to the project might be lost if virtual-specific communication mechanisms are not in place. Underlying assumptions, views, attitudes, and feelings of team members may be taken for granted. Finally, considering the ingredients of a virtual team, it is easier, for those so inclined, to withhold information from others, be it team members, the project manager, or stakeholders. This can only result in greater communication barriers and a lack of mutual respect, and it

should be avoided at all cost. Therefore, the obligation of the project manager is to recognize the cultural differences as a prelude to using the diversity as a backbone for the professionalism of the team.

6.6 SUMMARY

Appropriate conduct is the foundation of professional responsibility in project management. Guidelines should highlight integrity, knowledge management, individual competence, and stakeholder issues. Although these guidelines will provide tools to highlight delicate situations, the final decision will ultimately depend on one's personal values and one's sense of right and wrong.

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