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WORKING IN A VIRTUAL WORLD

As Jeremy Bouchard adjourned his weekly team meeting, he paused to reflect how much his project environment had changed in less than six months. Until that time, the projects that he managed were traditional in that the project team was co-located, allowing the team members to conduct their team meetings across the table from one another and Jeremy to "manage by walking around" on a daily basis. Today, as he adjourned the meeting while sitting alone in his office staring at his computer screen, he realized how drastically things had changed now that he is the manager of a virtual project.

Jeremy's story is one of sudden change—change that was driven by the acquisition of his company by a much larger company with a global presence, Sensor Dynamics, a manufacturer of specialized sensor products in an emerging technology segment called the Internet of Things. Unlike many of his colleagues, he welcomed the change and looked forward to applying his well-honed project management skills on a larger scale with Sensor Dynamics.

That opportunity came quickly. Jeremy was assigned the project manager role for a new human biometric sensor product—an emerging market with rapid growth potential. Through a recent company reorganization, which is common following an acquisition, Jeremy is now reporting to the Project Management Office director, a veteran employee of Sensor Dynamics. His project team is a combination of people from his old organization and the new one. They are distributed across three locations in his home country and three locations in other countries.

He now finds himself leading a team of people, most of whom he has never met personally. Six weeks into the project planning process, Jeremy is trying to come to terms with the increased difficulty associated with managing a virtual project versus a traditional project. As he says, he is feeling like a "fish out of water" while trying to learn the nuances associated with changes in common project management practices and the complexities associated with leading a distributed, and mostly virtual, project team.

Even the most common project management tasks, like creating the project charter, are proving to be monumental challenges. In particular, Jeremy has continual disagreements regarding team member roles and responsibilities. Despite repeated attempts, he has not been able to establish team consensus. Additionally, there is growing conflict between two key project team members on the goals of the project. The conflict is threatening to cause wider team dysfunction. Because the individuals are separated by geographical distance, the conflict is escalating in every email exchange between the two.

Jeremy is also learning about people's reluctance to collaborate with one another on a distributed team. He has tasked two team members to develop a combined task plan since their deliverables will be intertwined. Two weeks into the effort, it has become apparent that they have not yet begun to communicate, let alone collaborate in any way to create the task plan. Team members seem very reluctant to share information. Jeremy cannot determine if the problem is a lack of trust or if there is

an underlying sense that "information is power" to the owner. Hence, they are keeping information to themselves.

Then there is the technology problem. Jeremy has had to revert to the use of phone conversations and email in order to communicate and collaborate reliably. Even though Sensor Dynamics has deployed an enterprise-level team collaboration system, some team members are either unable or unwilling to adapt to the technology. This is especially true of team members in countries other than Jeremy's.

The most frustrating thing to Jeremy, however, is the realization that management by walking around is now impossible. He has not been able to establish a new method for connecting with his team members or for staying on top of project progress.

Jeremy decided to raise his issues with his manager, Brent Norville. Norville, the Project Management Office director of Sensor Dynamics, has been with the company for over a decade and has experienced the transformation of the company to a virtual organization firsthand. As Bouchard and Norville began their conversation, Bouchard shared that he was having trouble adjusting to the virtual project environment he was now working within.

Norville explained that he understood that the virtual project environment in which Sensor Dynamics executes its projects is significantly different than what Bouchard was used to. He also explained that he understood that the sudden change from traditional to virtual project management is the exception rather than the norm. Sensor Dynamics as a company has been transitioning for more than a decade, and most project managers who come into the organization have had some experience working on or managing virtual projects. Norville explained that it takes time to understand and effectively work in a virtual project environment. He also explained that many of the factors that make managing a virtual project so different have little to do with the project management fundamentals that Bouchard is well versed in. Rather, the differences come in understanding how those fundamentals have to be practiced differently and how more focus, time, and personal effort have to be applied toward leading the virtually distributed team. Norville also offered to act as a coach to Bouchard when needed to accelerate his transition from traditional to virtual project manager.

This conversation led Bouchard to realize that he was playing a game of catch-up to many of his project management peers who had at least some experience managing a virtual project and leading a distributed team.

Now, we have to recognize that Bouchard's story is an extreme example. Fortunately, the majority of project managers are not introduced to the world of virtual project management in such a sudden and abrupt manner. That does not mean that we did not each experience all or many of the perplexing problems facing Bouchard. We more than likely encountered them over time instead of all at once. Much like wading from the shallow end to the deep end of a swimming pool when learning to swim, most project managers can transition from traditional to virtual project management practices at a measured pace as their virtual awareness and confidence increases. However, we still hear stories of people being thrown in the deep end of the pool and struggling to learn and apply best practices to be effective.

Truth be told, nearly all projects today are at least partially virtual in nature. If your company outsources some of its work, or allows employees to telecommute, or is distributed in multiple locations (even in the same city), you are working for a virtual organization. Of course, distributed team members and the work they perform is not new, but to view our companies as virtual organizations is a paradigm shift for many. Even teams that are co-located work somewhat in a virtual manner through the prolific use of email, instant messaging, collaboration sites, social media technologies, and other forms of mobile applications. How often have you sent an email or instant message to people on your team whose offices are in the same building or possibly right next to your own? Likewise, how many times do we engage in teleconferences where we can hear a person speaking who sits near us in one ear

and then a few milliseconds later in our other ear through the telephone receiver? For some, like Nora Bennington, this is a strange new world:

> I just don't understand it sometimes. I'm constantly getting IMs [instant messages] from people sitting no more than 30 feet from me, wanting to engage in a conversation on a particular topic. When I get up and walk over to their offices to have a real conversation, they react with complete surprise. Like I'm violating some unwritten policy that we can't engage in real conversation anymore.

For Bennington and others, getting used to working on a virtual project is a slow process. Some don't even realize that the project world has changed so rapidly around them. In September 2015, Global Workplace Analytics, a company that helps organizations understand emerging workplace strategies such as telecommuting, open office, and flexibility work, updated its statistics on what it calls distributed or mobile work in the United States. It is showing some significant growth in this measure. From 2005 to 2014, this demographic of the workforce doubled from 1.8 million to 3.7 million. This statistic includes both nonprofit and profit-based organizations.[1]

But what defines a virtual project? By itself, the use of technology to communicate and even collaborate does not define a virtual project. Rather, a virtual project is one in which its resources are separated by geographic or temporal space.[2] In extreme cases, the members of a virtual project are separated by organizational boundaries, national borders, continents, and multiple time zones.[3] In such situations, it is highly likely that the members of a project team will never meet face-to-face. For many of us, this has been a major shift in the way we participate on project teams. For others, especially those who entered the workforce over the past 10 to 15 years, project work has always been conducted virtually. Within the next decade, the topic of virtual projects and virtual teams likely will no longer garner such attention, just as topics such as project scope and the triple constraints have moved from interesting to sleeper topics. Managing virtual projects will be ingrained in the way we do business. Until then, however, many project managers will still experience a transition from the practices of managing traditional projects to new and modified practices required to manage virtual projects. The transformation will cause us to redefine our companies and the projects within our companies as collaborative systems with networked structures, and work outcomes that are not built on organizational hierarchy but on trust, relationships, and communication.[4] Integration and collaboration are now more than technological capabilities; they are central to how virtual project work is performed.

The purpose of this introductory chapter is to broaden awareness of the factors that contribute to the creation of virtual organizations and subsequent virtual projects, expose the primary differences between traditional and virtual projects, and help accelerate people's transition from being effective traditional project managers to virtual project managers.

Forces Driving Virtual Transformation

A common question being posed by many project managers is: "Why does the pace of transformation to this new virtual project paradigm seem to be accelerating?" The reasons are important for project managers to understand because the transformation to virtual projects is testing the viability of many traditional project management practices and methodologies. Further, the answer to that question does not lie within the world of project management. Rather, the accelerated pace of the transition to virtual projects is being driven by the globalization of our economies and our businesses.

As companies participate in the global marketplace, business operations (including project operations) expand beyond their corporate boundaries. In 2009, the Economist Intelligence Unit,

an organization that provides executives with practical business information on macroeconomics, conducted a survey of executives to evaluate the extent to which companies in Europe are using virtual teams. The survey included 407 firms from various industries with annual revenues of greater than $100 million. Of the survey participants, 78% indicated that they use virtual teams in their firms. The survey authors concluded that working in virtual teams is growing and that the majority of the business executives surveyed are positive regarding their use of virtual teams to perform the work of their firms. The authors also indicated that the use of virtual teams has enabled these firms to gain access to a global talent pool and has been a factor in improving their organizations' performance against their competitors.[5]

This expansion requires everyone within an organization to develop a broader view of the environment in which businesses operate. This is particularly true of project managers, who are on the front lines of globalization. Project managers must develop a worldview—an awareness of the business environment outside of their own region, industry, and country that includes social, economic, and political factors and trends that can affect the businesses they work for. It is from a worldview that managers can develop an understanding of how economic, political, and technological forces that are driving today's global marketplace interact, how that interaction creates new strategic opportunities, and how those new strategic opportunities lead to the virtualization of projects. We call these forces the *globalization forces*.

Knowledge of the three primary forces—economic, political, and technology—provides virtual project managers a greater context of the dynamics in play within their project environments. This greater context and awareness is important because it frees project managers from feeling as if the virtual challenges they may be experiencing are a result of poor decisions on the part of their senior corporate leaders or of their own inabilities to manage a virtual project effectively. Instead, the broader awareness helps managers realize they are now part of a very dynamic business environment that is being played out on a global scale.

Economic Forces

The basis of global economics involves the creation of economic interrelations across geographical boundaries as defined by national borders through the production, exchange, and consumption of goods and services. Global free-market economics is stimulated by the flow of money and capital between nations by large and small transnational corporations, international economic institutions, and trading systems that create interdependencies between national economies.[6]

World economics of the past several centuries has been dominated by two philosophies: free-market economics and Keynesian economics. Free-market economics is rooted in the view of Adam Smith (1723–1790), who defined markets as self-regulating mechanisms that drive toward a balance between supply and demand of goods and services.[7] Within a free-market system, trade in goods and services between nations is unhindered by government-imposed restrictions such as taxes, tariffs, and quotas. Free-market economics is characterized by free access to markets, free movement of labor between nations, and free movement of capital between nations.

Keynesian economics, conversely, advocates nation-state influence of world economic policy. John Maynard Keynes (1883–1946) believed that economic systems would not automatically balance by themselves; therefore, macroeconomic control by government institutions is needed to ensure balance and equity within an economy. Macroeconomic control includes control of money supply, control of interest rates, and control of market access. Keynesian theory recognizes that economic systems will realize points of downturn and even depression and that these systems are not self-correcting; rather, they need support and influence from government interventions to boost the system in recovery.[8]

Whether dominated by free-market policy, Keynesian policy, or a combination of the two—today's most common method—economics is the primary driver that motivates corporate leaders to explore beyond their traditional strategic boundaries. It is economics that drives the world's entrepreneurs and business leaders to seek new markets for their goods and services, to find new suppliers for their raw materials, to develop worldwide sources for production and distribution, and generally to evaluate the world's resources for potential competitive advantage and product optimization. Economics therefore is the driving force that creates our virtual organizations and virtual project work.[9]

Political Forces

World politics is the second primary force that affects globalization. Rarely have economic globalization forces been able to operate independently from political forces. Most often, global economic expansion and contraction is set in motion by a series of political actions. The basis of world politics is the generation, distribution, and control of power and influence.[10] For many centuries, control of power has been achieved by creating territorial lines that defined national borders. In doing so, artificial boundaries have been created that allow us to view the world as a series of "domestic" and "foreign" relationships.

The political force pressuring globalization involves the partial permeation of these national boundaries in order to expand the trade of goods and services. Fledgling entrepreneurs have not been able to achieve expansion of their businesses on a global basis without the support of their governments and of the governments of their trading partners.[11]

Although recently we have seen the world influenced by the decisions of the Global20 nations, over the past 50 years, governments have funded the early development of technologies that were later commercialized and are now common in our personal and work lives today. Many of these advancements came out of the competition and conflict between the U.S. and Russian governments in trying to win the race to the moon and the Cold War. Today we are witnessing competitive business wars beyond Russia and the United States. Businesses from around the world are competing to be first to market with a sustainable product base and growing customer demand. Those with the most compelling offerings and most effective globalization strategy/execution combination will win, and the followers will be forced to resort to reactive strategies for survival. Because of these competitive conditions, political forces directly affect globalization and virtual project work.[12]

Technology Forces

Technology is the third primary globalization force. Although economics is the true driving force for globalization and politics is mainly a guiding force that either stimulates or contracts globalization, technology is the force that makes globalization both more effective and efficient. Said another way, the *speed* of globalization is dependent on the conditions for technological use and advancement of technology development.

The basis of technology as a globalization force is in the development and dissemination of new ways to expand our global reach, to facilitate the interaction and interdependencies of humans across the globe, and to enable the flow of monetary exchange across national borders.[13]

Early technology development focused on more effective forms of transportation to help explorers overcome geographical barriers that prevented them from opening new trade routes to expand their markets. Later, new power technologies, such as coal, steam, and petroleum, helped to make transportation of goods and services much more efficient.[14] This led to the invention of mechanized shipping, railway systems, and automotive and air transportation. Additionally, the introduction of electricity spawned new communication technologies, such as the telegraph, radio, television, telephone, and electronic money exchange.

Today, much technological development has been focused on the introduction of collaborative technologies that have resulted in such deep permeation of national boundaries that those boundaries no longer prevent people from collaborating and participating in the exchange of goods and services. These technologies include internet technologies, business-to-business technologies, and work-flow technologies that enable knowledge work to be disaggregated, distributed, and reintegrated across the globe. Collectively recognized as "technology," this force speeds the rate at which globalization can expand, and it also accelerates the potential of virtual project teams.[15]

Interaction among the Globalization Forces

It helps to look at each of the three primary forces of globalization separately to better understand their influence on globalization. However, the forces themselves do not operate independently. It is the interaction among economic, political, and technology forces that has historically had the most dramatic influence on globalization.

We use the tricircle model shown in Figure 1.1 to graphically demonstrate the interactions among the globalization forces and the resulting impacts on the world economies. We provide this analysis to help virtual project managers become more aware of the dynamic forces in play within the environment in which their projects operate.[16]

Globalization can be characterized by drivers, enablers, and accelerators. Economics is the globalization *driver*, meaning the quest for greater economic gain has fueled the human desire to connect with others across the globe to expand the production and sales of goods and services primarily for prosperity, but also for human connection.

Politics is the globalization *enabler*. Political policy is driven by the agendas of the world's nation-state leaders, which in turn either positively or negatively affect global economic interconnection between nations.

The third force, technology, is the globalization *accelerator*. Historically, significant advances in various technologies have increased the pace in which people and economies have become interconnected.

These three forces are not static. Rather, each is very dynamic and always in flux. When the globalization forces are independent in nature, as demonstrated in Figure 1.1, it represents a period of slow globalization expansion or, more likely, globalization contraction. When the globalization forces become highly integrated, as demonstrated in Figure 1.2, a state of globalization exists where all three forces are at work to facilitate the wide and rapid expansion of globalization. Such is the state of globalization today, where most world economies

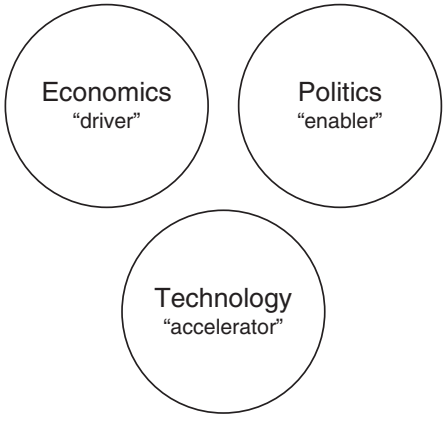

Figure 1.1: Primary Globalization Forces

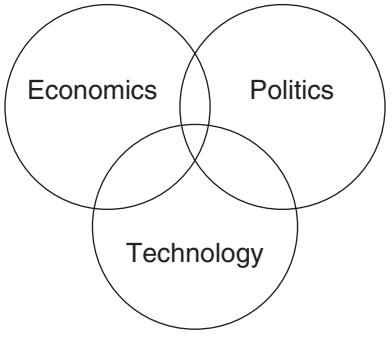

Figure 1.2: Integration of the Globalization Forces

and monetary exchanges are driving globalization, political stability, and alignment are enabling continued globalization into new and larger markets, and the advent of new work-flow technologies has accelerated knowledge work activities, allowing work to be distributed digitally to workers across the globe.[17]

The integration of the globalization forces is causing changes that will continue for the foreseeable future despite continual resistance to the trend as well as constant challenges associated with executing in a global environment. For those of us caught in the changing tide, it is time to adjust our perspectives and sharpen our skills to ensure our personal success—and the success of our companies—in this wave of globalization that is fueling the virtualization of our companies and our projects.

Rise of Virtual Organizations and Projects

For a large number of companies, participating in the global marketplace has become a matter of survival and sustainability. In order to compete in a global marketplace, these companies have had to develop new business strategies that break traditional organizational and strategic boundaries. In the process, virtual organizations and virtual projects are formed, and new capabilities and tools are developed that enable virtual project work to be performed.

The central purpose of most enterprises is to provide value to their stakeholders. Whether an enterprise has a mission to make a profit for its shareholders or to reinvest it profits in services that benefit its customers or clients, many senior enterprise leaders find it necessary to compete in a global marketplace in order to continuously create and deliver value. To remain relevant in this game of value creation, senior leaders have to look beyond their organizational, company, geographical, and cultural boundaries when establishing future business strategy. Today, corporate leaders need to think in terms of *strategic* boundaries, not *physical* boundaries.[18] If their competitors are playing on a global scale, so must they.

Crossing strategic boundaries means taking actions such as acquiring other organizations (or allowing themselves to be acquired), developing strategic alliances with partners that complement and expand their current capabilities, outsourcing some of their processes to outside firms that can perform the work more efficiently, moving portions of their operations to new locations to reach new markets, and looking abroad to acquire talent outside one's home location. Any of these strategic actions can immediately create a distributed organization or further expand an already distributed one. In the process, a virtual organization is created or expanded. For an example of how strategic business actions can create a virtual organization, see the box titled "Virtual Telecom."

Virtual Telecom

With security breaches continuing to climb, Juniper Networks realized it lacked key security protection capabilities in its products that threatened the future of its product lines. Company leaders developed a strategic goal to bolster the security capabilities of company products within the next two years and spawned a discussion of whether to develop the needed capabilities or buy them.

In 2005, the California-based Juniper made the strategic business decision to acquire a company in Massachusetts named Funk Software in an effort to quickly solve the security problem and integrate the newly acquired capability into its products. Up to this point, security capabilities were primarily developed in-house. The critical time goal was the variable that caused Juniper senior leaders to cross traditional strategic boundaries and acquire Funk Software.

As a result of this strategic decision, Juniper became a virtual enterprise consisting of organizational entities on the West Coast and East Coast of the United States. The decision to integrate the newly acquired network security capability into its products had an immediate impact on a number of Juniper project teams as well. All projects involving the security capability became virtual in nature, with resources and team members suddenly separated by 3,000 miles and three time zones.[19]

As this example shows, strategic business decisions can expand a company beyond its traditional organizational boundaries and, in the process of doing so, create a virtual organization. In like manner, since project structure and composition directly mirrors organizational structure, these same strategic business decisions create virtual projects that also lack traditional boundaries.

With a political and business environment that supports the expansion of enterprises to nearly all geographies of the world, physical location is no longer a constraining factor to creating and implementing business strategies. Because of this, the virtual organization is rapidly evolving to be the new norm.

As companies redefine themselves by optimizing the implementation of their strategies across company and geographical boundaries, it has a direct effect on their projects. As described in the "Virtual Telecom" example, the virtualization of projects can be immediate and sudden. This is why many project managers are surprised by the new virtual paradigm shift and find themselves inadequately prepared even though they have honed their project management knowledge and have years of experience. Because virtual projects have some significant differences associated with them, management of virtual projects requires retooling our project management practices, processes, tools, and skills. In some cases, the differences just require project managers to refocus on practices, processes, and tools for which they have been trained but that take on a higher degree of importance for virtual projects. Two examples are project chartering and clearly documenting project team members' roles and responsibilities. In other cases, the differences may require new practices, processes, and tools, such as influencing virtual stakeholders and using collaboration technologies. Before project managers can make adjustments to their practices, processes, and tools, they need to understand the primary factors that make managing virtual projects so different.

Virtual Projects Are Different

There are, in fact, *many* differences between virtual projects and traditional projects. Attempting to discuss all the differences would be overwhelming. However, a number of significant differences create major changes in the role of project managers and how they manage a virtual project differently from a traditional project. The differences are evident in both the management of the project management processes and in the leadership of the project team. The key differences that create the most impact to the management of virtual projects include:

- Distribution of project team members
- Higher level of complexity to contend with
- Greater focus on integration of work
- Distributed decision making
- Greater hesitance to share information
- Difficulty in maintaining alignment to strategic goals
- Difficulty establishing cross-team connections
- Greater reliance on technology for communication and collaboration
- Greater challenge to monitor and control project work

Virtual Project Teams Are Distributed

The most obvious difference between virtual projects and traditional projects is the fact that team members are geographically distributed on virtual projects. Our first attempts at leading virtual projects normally involve trying to replicate the team and resource management practices used for traditional teams in the virtual team environment with little consideration for the effectiveness of the fit.[20] This approach usually faces challenges because different approaches are required in the virtual project environment for team building, communication, collaboration, and integration of distributed work. This is not to say that all traditional practices and processes for managing a project have to be modified for virtual projects. As we explain in chapters to follow, the key is knowing which can carry over, which need to be modified, and which need to be replaced with new practices.

The overwhelming amount of literature and training over the past 15 years on the subject of virtual projects has focused on the people side of project management. This is probably due to the fact that historical approaches to training and certifying project managers has left a vast gap in knowledge required for managing the people side of projects. As project managers transition from managing traditional projects to managing virtual projects, people issues become amplified because they affect team cohesiveness and trust between team members. The people issues then in turn affect how well traditional project management methods and processes work on a virtual project.

In the chapters that follow, we focus on the necessary practices for building a virtual team with a sense of common community and purpose, making changes necessary for increased team monitoring and feedback, managing across multiple time zones, dealing with virtual conflict and differences in language and culture, communicating asynchronously via technology, and changing reward systems that are necessary for geographically distributed project teams.

Virtual Projects Are More Complex

Virtual projects are built on interconnectivity of organizational, human, and electronic networks. This high level of interconnectivity makes virtual projects more complex by nature than traditional projects.

After years of working with complexity, Richard Cook, the deputy project manager of the Mars Science Laboratory at NASA, concludes that the word *complexity* "is frequently thrown around as a sort of synonym for difficult."[21] Cook notes, however, that "complexity is the quality of being intricately combined." He distinguishes complexity from *difficult* based on "the number of interconnected elements that are tied together technically, programmatically, and organizationally."

This gives us great perspective on why virtual projects are so complex. Virtual project teams perform much of their communication and collaboration through a highly interconnected technology platform. Further, the various outcomes and project deliverables generated by the distributed team are highly interdependent and need to be integrated programmatically to create a holistic solution. Finally, the ability to distribute project work across the globe opens the opportunity for interconnected collaboration between partner organizations. The more distributed the virtual project, the more complex it becomes, as illustrated in Figure 1.3.[22]

When project teams are co-located in a single location—Palo Alto, California, in our example—the workplace is physical. Even though some elements of the project have virtual characteristics (such as electronic communication), complexity is strictly related to the project structure itself.

If we look at the next logical step in creating a virtual organization, expanding nationally, complexity associated with working in a virtual environment becomes additive to the base complexity of the project. Now interconnectedness becomes separated by time and distance and must be held together by human, organizational, and technological networks.

Since international boundaries are no longer a constraint to business expansion and partner

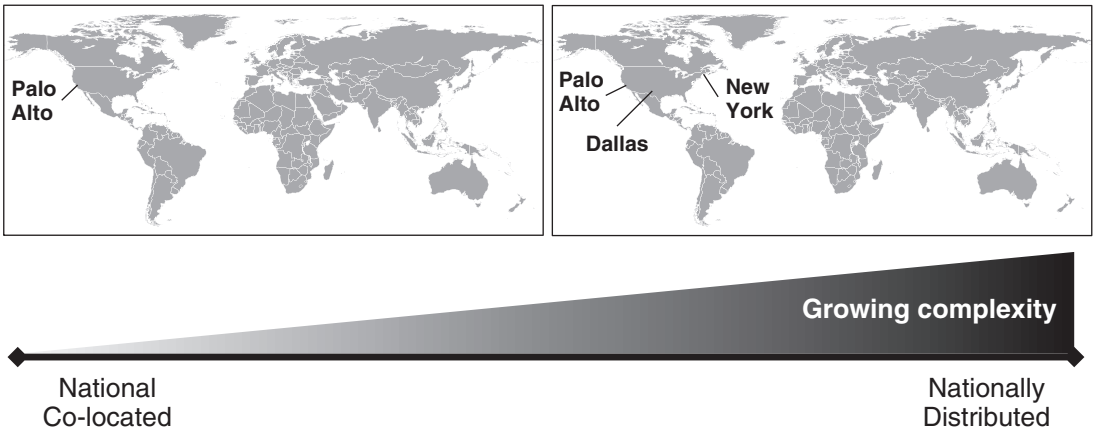

Figure 1.3: Growing Complexity with Added Distribution

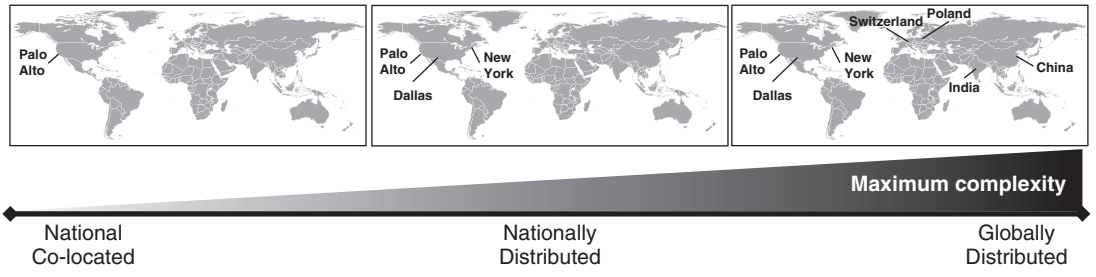

Figure 1.4: Maximum Complexity with Global Distribution

alliances, when organizations expand their virtual organization internationally, project complexity once again increases, as depicted in Figure 1.4.

In globally distributed virtual projects, additional cultural, language, and time zone challenges emerge. These factors create an environment of maximum project complexity that has to be comprehended and managed.

The criticality of performing a project complexity assessment is a distinguishing difference between virtual and traditional projects. A complexity assessment (Chapter 2) should be performed early in the life cycle of a virtual project. The information gained from the assessment will assist project managers in determining the level of complexity of their projects. The information also aids project managers in determining the skills and experience levels required of project team members and in guiding the implementation of key project processes, such as change management and risk management, evaluating the amount of contingency reserve to incorporate into the project schedule and budget, and adapting their management style to the complexity level of the project.[23]

Greater Focus on Integration Required

As complexity increases, the need for more work interdependencies between virtual project team members also increases. Managing a virtual project means designing and managing a network of interdependencies among distributed team members.

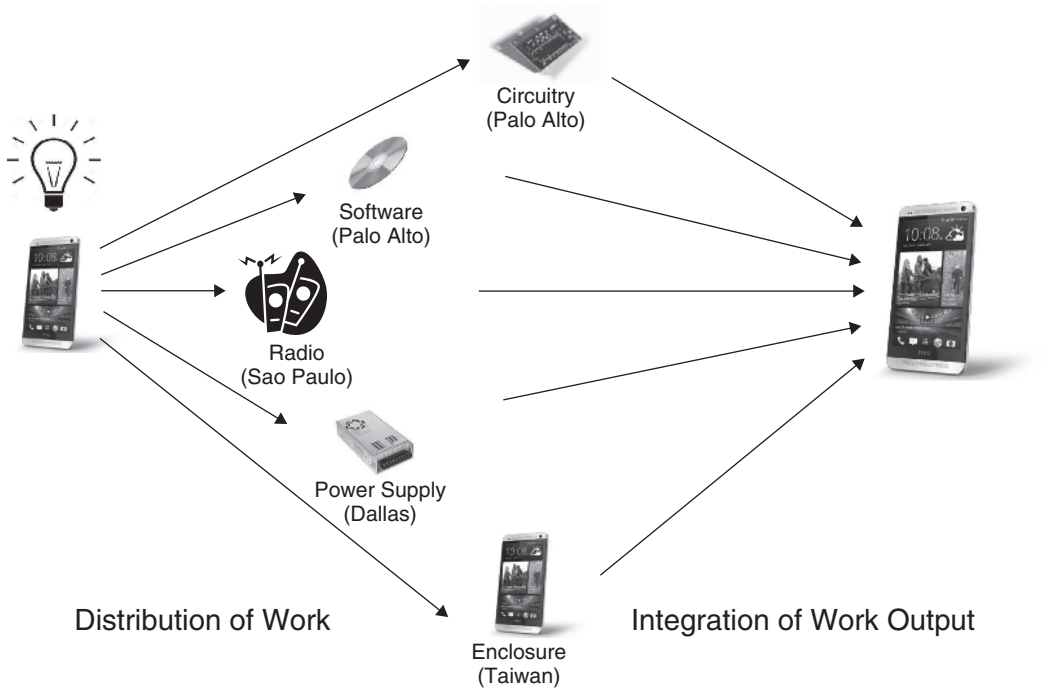

Figure 1.5: Distribution and Integration of Virtual Work

As project work becomes more distributed, it becomes more decentralized. This is illustrated in Figure 1.5, which shows a simplistic view of the distribution of work packages for a globally distributed project team chartered with designing and developing a mobile device, such as a smartphone.

Not only does the product have to be designed from a systems perspective, so does the distribution of work to create the product. The illustration indicates that the project work is accomplished in a very fragmented manner on a virtual project, and it will remain fragmented unless the integration of the work outcomes of the various project specialists is purposefully managed and integrated.

Of the nine knowledge areas associated with the Project Management Institute's project management methodology, the integration knowledge area often receives the least attention and focus from project managers. This is understandable for traditional projects because much of the integration of project work is accomplished through the centralized management of tasks and interdependencies. When tasks become highly distributed, which is the case on virtual projects, it becomes challenging to maintain centralized management at the task level. Most of this responsibility is in fact decentralized and distributed to the various locations where the work is being performed. Project managers now must focus on establishing centralized management of the project outcomes or deliverables. An important element of centralized management at this higher level is the integration of the various project outcomes to create a synthesized and holistic solution.

This integration of work is a difficult process for many reasons, one of which has to do with testing base assumptions made by project team members as they conduct their work. Like members of traditional projects, virtual project team members have to perform much of their work, and create their

project deliverables, on a series of assumptions. When incorrect assumptions are made, they are normally discovered and corrected through direct communication and collaboration with other team members. On virtual projects, however, there is a decrease in direct communication among team members, a lack of informal meetings, and limited synchronous collaboration as compared to co-located teams. It is rare, therefore, that incorrect assumptions are discovered through normal means of communication and collaboration. Rather, they usually are found when work outcomes and deliverables are created and then integrated with other elements of the project. Incorrect assumptions emerge in the form of inconsistencies that are discovered between what was created and what was expected by other team members. These inconsistencies then have to be reconciled through the integration process.

Decision Making Is Decentralized

There are hundreds, some say thousands, of decisions that have to be made during the course of a project. Some are small and relatively insignificant, some are big and critical to the success of the project, some are incremental and follow a pattern or trend, while some are ambiguous and have never been encountered before. Whether big or small, nearly all decisions need to involve discussion, debate, and input from various project players. Traditional projects benefit from co-located team members and stakeholders who can assemble and engage in a rich discussion concerning a particular decision. Virtual teams do not have this luxury, and the separation of team members by time and distance can become an inhibitor to timely decision making. Therefore, a common ailment affecting virtual teams is slow decision making.[24] To combat this ailment, modifications to project management decision processes have to be made.

The team charter (Chapter 2) is an ideal project artifact for documenting team decision-making processes.[25] In particular, project decision processes are likely to be different in the virtual project environment as compared with the more traditional project environment that most team members have experienced.

On a traditional project, the project manager is the primary person providing leadership for the project. On a virtual project, however, leadership typically is shared among team members based on location and task at hand. This includes decision-making leadership.[26] A more complex centralized/decentralized decision framework has to be established for virtual projects. (See Chapter 6.) Decisions that directly affect the success of the project, such as those that can change the project schedule, need to remain centralized with the project manager. Other decisions need to be decentralized and moved to where the decision outcome will be implemented. These decisions, such as the hiring of a particular project team member, become the responsibility of the project personnel within the location who can make the decision in a more timely manner.

In order to make distributed decision making possible, two key factors must be present. First, the project manager must assign and document specific decision responsibility to the distributed project team members. Second, distributed decision making can quickly become ineffective if those given decision responsibility are not also given the authority to make and own the decisions. Project managers must *empower* the virtual team members who have been delegated decision responsibility by clearly communicating and documenting their decision authority to all project stakeholders.

Greater Hesitance to Share Information

Because virtual project team members share most of their information electronically, often they hesitate to share information at all. This is especially true early in team formation and engagement. The problem has much to do with trust, particularly trust that the information will be used properly. Unfortunately, project decisions, like all decisions, rely on information. Decision makers on virtual projects have to be more deliberate in requesting, extracting, and brokering the exchange of information that

supports their decisions than their counterparts on traditional projects, where the flow of information is more forthcoming, fluid, and facilitated by verbal conversation.

Virtual project managers also have to be more systematic about the collection of information and repeatedly ask team members if they have anything else to share that hasn't already been supplied. Hoarding information as a source of power is a common phenomenon, and it can be a barrier to success for a virtual project. It is vital for virtual project success that project managers be proactive in searching for information and not passively waiting for it to arrive; it may never be supplied.

Maintaining Strategic Alignment Is Difficult

For any project, success is ultimately measured in some form of return on investment (ROI).There are many ways to measure ROI, but they all boil down to a common formula:[27]

ROI = Identification of strategic goals versus ability to execute

It is important to note that maintaining alignment to the strategic goals for which the project was intended to achieve is in many ways a much more difficult task for virtual projects. Team members on a virtual project are more geographically, physically, and sometimes culturally isolated not only from other team members but from their organization as a whole.[28]

It is the responsibility of the managers of virtual projects to ensure that all team members share a clear sense of how their work fits in with the overall project vision and that they are committed to the strategic success of the organization. Maintaining strategic alignment begins and ends with clear communication on the part of project managers on two primary pieces of information:

1. Where we are going (strategic goals to achieve)
2. How we are going to get there (collaborative planning and execution)

This information is essential for ensuring that the distributed work outcomes and actions taken do not violate a strategic principle or interfere with the strategic direction of the organization. If a violation occurs, there is an increased likelihood that execution outcomes will become misaligned with the strategic goals of the business.

Like traditional projects, virtual projects work within the functional paradigm where team members report to a functional department, or silo, and are "loaned" to the project on a temporary basis. This arrangement can interfere with team members' commitment to project goals as they now have two alliances: one to the functional organization to which they belong and one to the project. Functional work obligations often assume a higher priority, causing team members to lose sight of the project's strategic objectives and how their piece of the project contributes to the overall desired outcome.[29] This is a cultural issue more than a project issue, but it is left to project managers to help team members navigate these dual priorities by establishing a clear and common purpose. The project charter, team charter, project vision, and success measures take on a more critical role on virtual projects and become the most valuable tools for virtual project managers in establishing and maintaining alignment to the strategic goals driving the need for the project.

Cross-Team Connections Are Slow to Develop

We have already explained that virtual projects are primarily established on a series of networks (organizational, technological, and human) and not physical locations. This additional complexity, of course, creates challenges because very few network connections between team members exist on a virtual project, especially in the early stages of team formation. The human network especially takes time to establish because connections are built on trust, personal relationships, and direct communication between team members.

Until network connections between virtual team members are fully in place, it falls on project managers

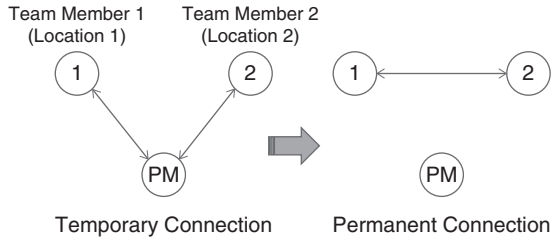

Figure 1.6: Communication and Collaboration Conduit

to personally establish many of the cross-team connections. Project managers find themselves having to directly and purposefully facilitate the communication and collaboration among team members until a point where the networks are sustainable. (See Figure 1.6, where *PM* stands for project manager.)

The need to facilitate connections is the case on traditional projects as well. The difference is that once a network connection is established by project managers of traditional projects, the ability to hold face-to-face interaction quickly takes over and solidifies the connection. On virtual projects, team member interaction is occurring through the use of technology without the benefit of face-to-face interaction. As a result, project managers have to stay involved in the interaction through a larger number of communication exchanges and, therefore, for a longer period of time. Sewa Bhatt, an experienced virtual project manager, explains her personal experience with establishing team connections:

> One thing that has helped me with my virtual teams is making special effort to establish the connections—which also includes social connections and networking. This seems to happen naturally with co-located team members, but not with virtual teams.

Having to act as conduits for cross-team communication and collaboration puts additional pressure on project managers—pressure that demands significantly greater commitment of their time. Project managers new to managing virtual projects often are unprepared for the amount of time and effort required to establish the cross-team network. However, it is a critical role that has to be filled, even though it is outside of traditional project management duties.

Team Interaction through Technology

It is fundamental to project work that all project teams exchange ideas and project data. This exchange requires information sharing across the project team. By nature, virtual project teams have to depend heavily on information technology to share information through communication and collaboration and to assist them in their day-to-day work activities.[30] Core project management and team leadership skills are of course a greater factor in success or failure of virtual projects, but if we didn't have the information technology tools we have today, virtual projects would not be possible.

The heavy reliance on technology is a key differentiator between traditional and virtual projects, even though technology use on traditional projects has increased. The difference is that the separation of time, distance, and sometimes culture requires technological tools that allow for effective *asynchronous* interaction and collaboration. Additionally, *synchronous* tools, such as audio conferencing technologies, must be chosen properly to improve, not inhibit, effective distributed team interaction. (See the box titled "Technology Must be Useful to Be Used.")

Technology Must Be Useful to Be Used

Mona Harmond, a global program manager for a well-known consumer products company, describes what used to be a common sight in her company's globally distributed offices. "Picture a group of people sitting at a table, surrounding a speakerphone in the middle, trying to conduct a team meeting with three

other groups of people in three different geographical locations. If it was a well-run meeting, a common PowerPoint presentation would be projected in each of the three conference rooms and used to direct the conversation of the team."

Though this was a common sight, Harmond agrees that it was not a form of optimal team communication and collaboration. "Even though people were communicating verbally instead of relying on email, this form of communication still presented some challenges," she explains. Among the challenges: the largest group of people typically dominated the conversation; many side discussions took place while other locations were talking; more introverted team members failed to participate in the discussion; and the collective team often failed to fully understand the meeting outcomes, next steps to be taken and by whom, and key decisions that had been made.

"What we learned from these early experiences," explains Harmond, "was that technology, if not selected and used properly, will result in teams reverting to tried and true technologies even though they are not the most optimum solution."

Harmond's learning is consistent with virtual team studies that show that the vast majority of virtual teams rely on email and phone conferences to do their work. It is important to note that while technology will not solve communication problems, it should serve to improve them.

On a day-to-day basis, technological tools enable the generation of work outcomes, online collaboration and review of deliverables, review of tasks completed and tasks to be performed, collection and monitoring of team progress, tracking progress against team metrics, and storing of project information, to name just a few. The primary role of technology in distributed teamwork is one of overcoming the challenges created by time, distance, complexity, and the diversity of participants on a virtual project.[31] Successful use of technology on a virtual project hinges on understanding how the team will communicate and collaborate, understanding how technology can be leveraged to improve team communication and collaboration, matching technology selection to communication and collaboration methods and practices, and then using the technology efficiently to improve the team's performance.

Senior leaders and project managers should select electronic technologies that best meet the needs and usage of the virtual project teams and that integrate with the current suite of tools used within the organization. Note that there is no ideal set of technologies for all teams. A clear plan for matching technology options to the communication and collaboration needs of their project teams must therefore be developed for a virtual project by the management of the organization and the identified virtual project manager. (See Chapter 8.)

Diligent Monitoring Required

As in all projects, monitoring of tasks and project progress in a virtual project is an essential element of managing to a successful outcome. It should be recognized, however, that managers of traditional projects have a distinct advantage when it comes to monitoring progress on their projects because their teams are co-located. The advantage comes in being able to manage by walking around to gain a sense of the project progress on a daily basis, if desired. This management method gives project managers the ability to verify that what the team is doing is similar to what is being reported. For virtual projects, this verification process is more difficult.

Two things are required to adequately monitor progress on a virtual project: a more formal project reporting system and additional effort on the part of

project managers to collect work and project status information.

On a traditional project, project managers can easily call a meeting with little advance notice and preparation to discuss project status on a particular issue facing the team.[32] This, of course, takes advantage of the physical proximity of team members. Managers of virtual projects, however, must be much more organized and proactive because spontaneous or near-spontaneous meetings are rare due to the difficulty in getting the right participants in a meeting on short notice because of the physical and time distribution of the team.

Virtual projects require the institution of a more formal project monitoring and reporting system to keep team members informed of progress of individual tasks and the project as a whole. A formal system defines a specific sequence of reporting, format, and frequency of data input to the system, meeting requirements, and the type, quality, and frequency of progress reports generated.

A formal reporting system does not free virtual project managers from staying in communication contact with team members. On the contrary, virtual project managers must be diligent about continually pulsing team members, albeit by electronic means, to ensure work is progressing as planned and that no issues are blocking team member efforts. See the box titled "When Managing Virtual Teams" to read one project manager's description of how she changes her practices when managing virtual projects.

When Managing Virtual Teams

Shlomit Shteyer, an experienced project manager in the high-tech industry, explains some of the project monitoring nuances she uses when managing a remote team on her virtual projects.

"When working with a local team, the process of reporting is pretty informal. I have a weekly progress meeting, but I'm much more hands-on during each day. I usually tour the office almost every morning and see what's new."

Shteyer goes on to say that "when working with remote teams, progress reporting is much more structured. We set the days we meet, the days I will receive an email status report, and all data is sent to a formal reporting system. My project analyst then generates weekly and monthly project status reports."

The purposeful follow-up and follow-through on behalf of the virtual project manager is critical for team cohesion and project success. "I still need a sense of proof that tells me how the team is doing compared to what they are reporting on. This is where management by walking around becomes so important. For remote teams, I will check in with team members via instant messaging to ask how things are going, if they need my attention on anything, and so on. How often I check in with team members will change based on the level of trust that the information being supplied to me via the reporting system matches what I believe to be the work that is being performed by team members."

Transitioning to the Virtual World

Following the conversation with his manager, Jeremy Bouchard felt both relief and renewed confidence that he could succeed as a virtual project manager for Sensor Dynamics. The relief came from the realization that his manager understood the paradigm shift that Bouchard was adjusting to in moving from traditional project management to virtual project management. Renewed confidence came from hearing that his manager was aware of Bouchard's credentials as an accomplished project manager and of Norville's offer to directly coach him through this transition period.

That being said, Bouchard also realized that he has a lot of work and learning ahead of him as his journey from traditional to virtual project management has begun. Following the advice of his manager, Bouchard will focus on three primary perspectives: (1) what aspects of traditional project management stay the same for a virtual project; (2) what aspects have to be modified to be effective on a virtual project; and (3) what new project management methods, tools, and practices have to be learned and adopted for use on a virtual project.

Assessing the Virtual Project Manager

The Virtual Project Manager Assessment measures experience and competency. It is used and is useful for matching available virtual project managers to virtual projects based on each project leader's skills and experience. The results give management the opportunity to evaluate the expected difficulty, complexity, and uniqueness of each of the virtual projects to the right mix of skills and experience of the available project managers.

The assessment can also be useful in identifying training and development needs for the organization's virtual project managers and for the recruiting and hiring of new ones.

It is recommended that either one or several managers complete the assessment tool. If more than one manager completes the tool, they should discuss responses to each item and determine how best to align virtual project manager resources to the virtual projects being planned.

Virtual Project Manager Assessment

Date of Assessment: _____

Virtual Project Manager Name: _____

Assessment Completed by: _____

Confidential Assessment: _____ Yes, confidential

_____ No, not confidential

Assessment Item	Yes or No	Notes for All "No" Responses
Project Management Experience		
Has experience managing virtual projects.		
Has over five years of experience successfully managing traditional projects.		
Has the proven ability to manage cross-team deliverables and integration across multiple project sites.		
Has the proven ability to communicate effectively using electronic tools.		
Has demonstrated the ability to apply project management skills successfully in a virtual project setting.		

Assessment Item	Yes or No	Notes for All "No" Responses
Team Leadership Experience		
Is goal-oriented, self-directed, and motivated.		
Has the proven the ability to create and achieve a common purpose.		
Has proven to be accountable and meet commitments.		
Has demonstrated a high degree of personal integrity.		
Has the proven ability to leverage emotional intelligence skills in order to manage situations, people, and deliver business value.		
Has the proven ability to leverage contextual management skills in order to manage situations, people, and deliver business value.		
Has the proven ability to negotiate effectively.		
Has the proven ability to build positive working relationships with distributed stakeholders.		
Has the proven ability to efficiently and effectively manage conflict between virtual team members.		
Has the proven ability to make tough decisions.		
Has the proven ability to resolve problems, remove barriers, and accomplish goals while leading a distributed team.		
Has the proven ability to create shared values and provide recognition selflessly.		
Exhibits confidence and is well respected.		
Virtual Team Skills and Experience		
Has the proven ability to establish team chemistry virtually.		
Has demonstrated the ability to utilize systems thinking skills effectively in the virtual environment.		
Possesses political acumen necessary to influence company leaders virtually.		
Has the proven ability to drive virtual participation and collaboration.		
Has the proven ability to create and manage cross-cultural awareness.		

Assessment Item	Yes or No	Notes for All "No" Responses
Has the proven ability to leverage technological tools to facilitate team communication and collaboration.		
Has the proven ability to build and sustain trust between distributed members of the team.		
Has the proven ability to facilitate effectively across multiple project sites.		
Has the proven ability to network effectively.		
Has the proven ability to empower distributed team members.		
Has the proven ability to select and manage virtual team members.		
Has the proven ability to delegate tasks properly to a virtual team.		
Business/Financial Skills		
Has demonstrated strategic thinking skills.		
Has demonstrated the ability to align project goals to business goals and strategies.		
Has demonstrated the ability to apply business, financial, and cost fundamentals to a project.		
Has the proven ability to apply worldview skills in context to the nations involved with the project.		
Customer/Client Skills		
Has the proven ability to learn customer and client needs and convey those needs effectively to others on the team.		
Has the proven ability to meet customer and client demands.		
Has the proven ability to gain customer commitment.		
Has the proven ability to achieve customer quality expectations.		

Findings, Key Thoughts, and Recommendations

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