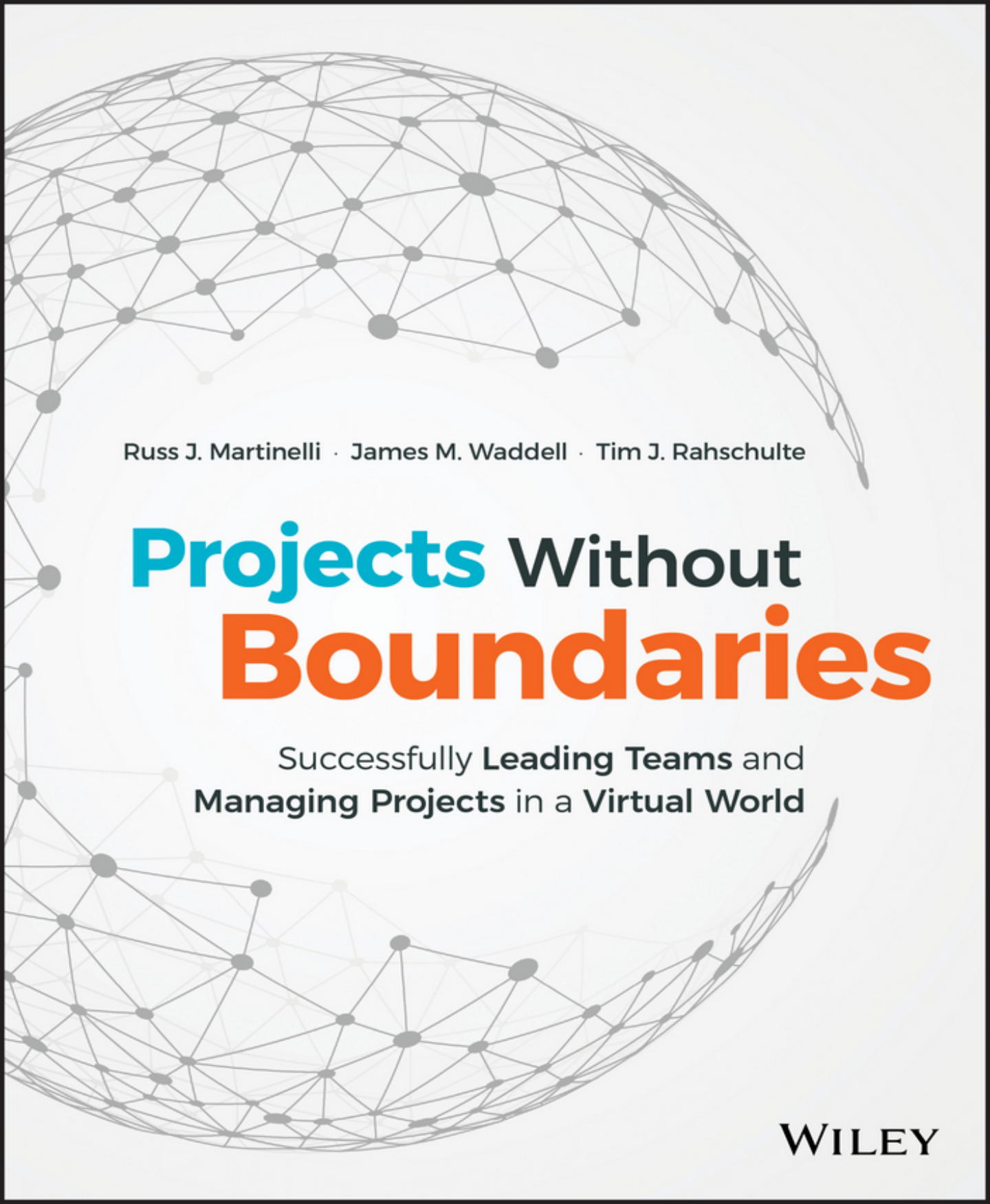

Russ J. Martinelli · James M. Waddell · Tim J. Rahschulte

Projects Without Boundaries

Successfully **Leading Teams** and **Managing Projects** in a **Virtual World**

WILEY

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PREFACE

Life can be serendipitous at times. Most of the projects I have managed in my career as a new product development program manager have been virtual in nature and made up of geographically distributed teams. However, about five years after my last virtual project, I received an email requesting that I step in as the project manager for a project aimed at creating a secure cell phone for the government. The team, I was told, consisted of members of two organizations that had never worked together before, the software security group and the mobile devices group. Further, I was told that the team was highly distributed across the globe, with development centers in two locations in India, three locations in the United States, and one location in each of the countries of Ireland, Israel, and Germany.

The timing of the request is what was serendipitous. We had just begun the writing process for this book and were working through the primary differences between traditional and virtual projects. As I assumed my new virtual project manager role, the differences immediately began to emerge. So too did the various techniques for managing those differences. Personally managing a virtual, multinational, multicultural project while writing a book on the very same topic provided a wonderful opportunity to establish a practice-based foundation for the information found in the chapters that follow.

Part I stresses the importance of taking on the management of virtual projects with your eyes open. A keen awareness of the virtual project environment and the factors that create that environment are more than *helpful* to a project manager, they are completely *necessary* to help create a new worldview. A virtual project environment is one that is characterized by separation of time and distance, by the inclusion of multiple national and potentially company cultures, and by a complete reliance on technology to facilitate team communication and collaboration. Part I brings forth the forces that drive the continuous increase in virtual organizations and projects, and the key differences between traditional and virtual projects that project managers must be aware of and use to their advantage.

All project managers must be prepared to assume two critical roles: being the manager of the project and being the leader of the project team. On a virtual project, there is often a shift in the balance of effort between these two roles. This shift in effort is caused by the distributed nature of the team, which demands significant focus on team leadership in addition to one's core project management responsibilities. Part II brings forth the key aspects of these two roles during the early stages of a virtual project. In particular, we describe crucial aspects of planning a virtual project (Chapter 2) while at the same time forming and building a high-performance virtual team (Chapter 3).

Part III continues the discussion on the two roles of the virtual project manager with focus on project execution (Chapter 4) and sustained virtual team leadership (Chapter 5). Attention then shifts to the importance of establishing a strong project

network that connects the virtual team and enables the distribution of work, responsibility, and accountability on the part of those performing the work and empowerment to make necessary decisions locally (Chapter 6).

The final section of the book, Part IV, delves into a number of organizational factors that have to be established for a firm to experience sustained success in managing virtual projects. As a firm expands its project management activities to include international participants, the organization and its project teams become multicultural entities. Chapter 7 describes how national culture and company culture must converge to create the project culture and how virtual project managers must adjust their leadership tactics to account for multicultural factors.

Unlike co-located teams, virtual team members have to communicate and collaborate in a nearly exclusive asynchronous manner, and do so through the use of technology. Chapter 8 focuses on the primary role of technology for distributed project teams. We describe the various types of technology that are available to the virtual project manager today and then suggest a method for developing a strategy for choosing a suite of technological tools that will help the team overcome the challenges created by separation in time and distance.

Much of the pressure to succeed in managing virtual projects is unfairly placed on project managers. To address this situation, Chapter 9 presents the critical organizational factors that must be addressed to create a sustainable environment for virtual project success. These include instituting effective organization and team structures that foster collaboration and empowerment, changing recognition and reward systems to reinforce new behaviors and practices, and investing in new skills development for people thrust into the role of the virtual project manager.

Finally, a number of assessments are included throughout the book. Each assessment can serve as a survey, checklist, or tool to baseline and improve an organization's virtual project management and team leadership capabilities. The virtual project readiness assessment included in the Appendix will help an organization evaluate their readiness to enter the virtual project management arena, or to create a capability gap analysis and change transformation plan to increase their virtual project maturity. Virtual project readiness is assessed from organizational, team, and personal perspectives.

On behalf of the co-authors, our heartfelt thanks to the future readers of this book. I hope you find it both enjoyable and useful in your virtual project endeavors.

Russ Martinelli

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We are truly blessed to be associated with such a wonderful and supportive community of people.

INTRODUCTION

1

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

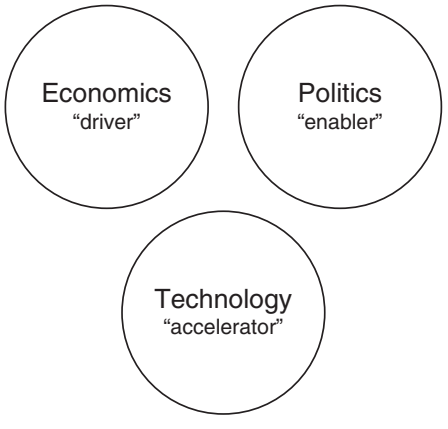

Figure 1.1: Primary Globalization Forces

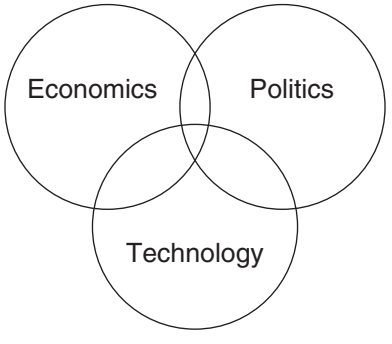

Figure 1.2: Integration of the Globalization Forces

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

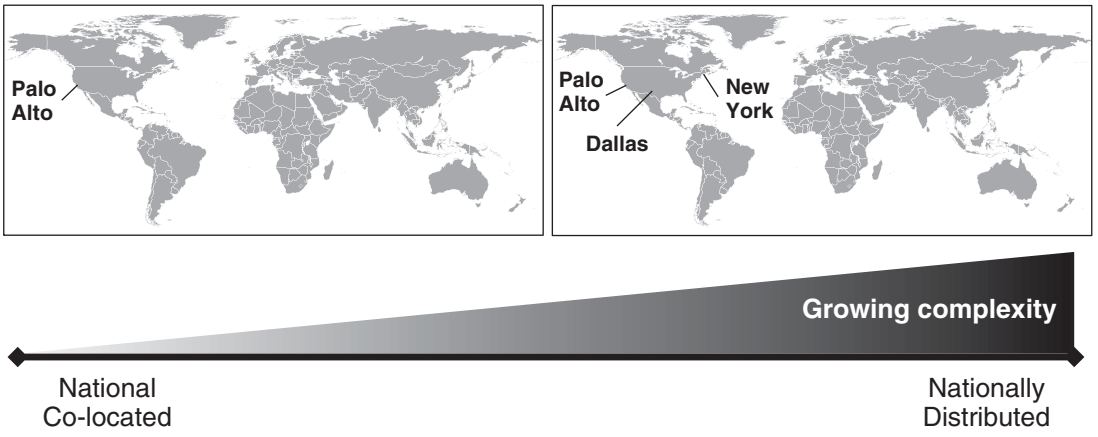

Figure 1.3: Growing Complexity with Added Distribution

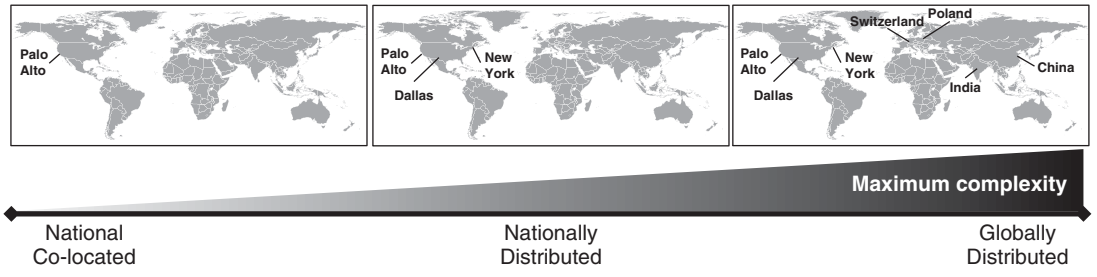

Figure 1.4: Maximum Complexity with Global Distribution

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.

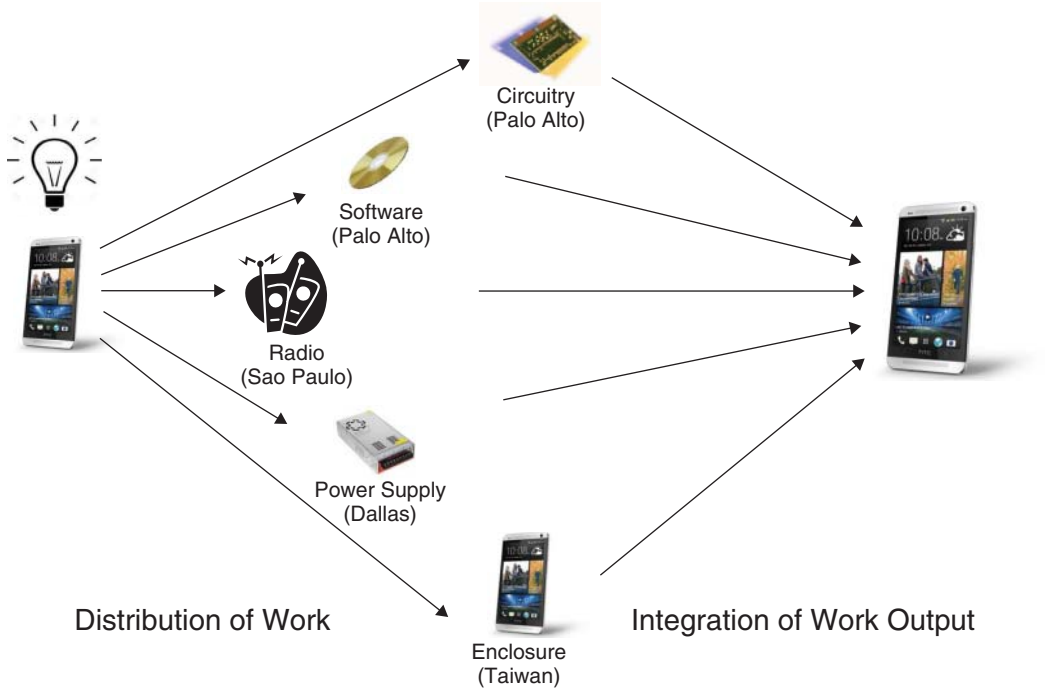

Figure 1.5: Distribution and Integration of Virtual Work

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