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The Critical Role of Global Virtual Teams

Virtual teams have become essential units in successful organizations. Where they do not exist, opportunity is lost. Where they are not functioning effectively, opportunity is lost. International virtual teams are the key to some of the biggest successes and failures in the global workplace while organizations learn to operate as complex webs of people. Organizations that successfully employ global virtual teams can access the human resources that allow them to compete internationally.

Core Concept

Because people must work through technology and across cultures, it is important that they understand the new nature of communication as it passes through these filters.

Virtual teams, by definition, do much of their work across distances facilitated by technology as opposed to doing much of their work in face-to-face contexts. They can work across small or large distances and can comprise as few as two team members or as many as can be effectively managed for a specific purpose. Technology facilitates communication at a distance and also acts as a filter through which communication must flow. International boundaries present yet another filter through which communication must flow. Because people must work through technology and across cultures, it is

important that they understand the new nature of communication as it passes through these filters.

> **Definition**
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> *Virtual team*—a team that does much of its work across distances facilitated by technology as opposed to doing much of its work in face-to-face contexts.

Needless to say, along with increased opportunities for success in online communication come increased opportunities for miscommunication. All miscommunication is costly to organizations. Consider the following questions as you assess your organization's current use of global virtual teams:

- Do you recognize the value of global virtual teams but find that you do not know how to establish them?
- Does your organization use global virtual teams, but you have a sense that they are not working well? Could they be working better?
- Do you observe intercultural communication impacting the success of your virtual teams but find yourself unsure how to solve intercultural problems online?
- Are you overwhelmed by the number books and articles out there on virtual teams and do not have the time to filter through them?
- Would you like to train your people to work effectively in global virtual teams but you do not know how to create or find effective, targeted training?

This book provides essential information on creating and maintaining successful global virtual teams for those who manage, participate in, or train others in global virtual teams. Based on new studies in engineering communication, this book provides processes and principles that can help establish global virtual teams that work, assess your virtual team climate, and maintain the effectiveness of your virtual teams across cultural boundaries.

In addition, this book provides you with the knowledge and tools necessary to understand the variable contexts of global virtual teams, so that your organization is able to respond to inevitable changes in technology and the global marketplace. Ultimately, effective virtual teams are able to collaborate in ways that work within the context of their organizations.

1.1   Unique Features of This Book

The growth in organizational use of virtual teams has resulted in a corresponding growth in the number of books available on the topic. While this book covers basic virtual

team theory in order to provide a complete guide to using global virtual teams, it offers additional elements not provided in other texts:

- an emphasis on international virtual communication
- guidelines that are based heavily on empirical data
- the most current data from engineering workplace research where over 70% of responses come from outside the United States, thus providing a global perspective
- a problem-solving approach to using and communicating in virtual teams
- application of virtual team communication guidelines to the field of engineering
- structured approaches to establishing, assessing, and maintaining global virtual teams

Definition

Empirical data—data based on observation or experience that has been collected and analyzed systematically.

You can have confidence in the discussions, methods, and ideas about global virtual teams as well, because the information presented in this book is based on evidence from three sources:

- a survey of engineering professionals
- seven case studies of professionals who work in virtual workplaces
- information gathered and analyzed by many researchers in virtual communication

Basing the information in this book on empirical data and my original research means that I bring you reliable information that is focused on the most current international engineering practice. Throughout this book, I refer to data from a 2013 survey of engineering professionals as Study A. The methodology is reported in Appendix A. I refer to data collected in case studies in 2007 and 2008 as Study B. The methodology for this study is reported in Appendix B.

1.2   Growth in International Virtual Workplaces

Virtual teams serve as a foundation for rapid growth in today's marketplace. Relying on technology to deliver communication, virtual teams connect companies globally and enable rapid growth; they are often constructed of employees working across national boundaries. Consider a few statistics that track global growth of the economy:

- The number of internet users worldwide now numbers over 2 billion which is over 34.3% of the world's population [1], with Internet usage growing significantly in

Africa, Asia, Europe, the Middle East, North America, Latin America/Caribbean, and Oceana/Australia. Asia has the highest total number of Internet users with 44.8% of global users [1].

- The top 10 internet usage countries as of June 2012 ranked from most to least were China, the United States, India, Japan, Brazil, Russia, Germany, Indonesia, the United Kingdom, and France [1].
- While Asia now has the greatest number of internet users in the world, it has a below average percentage of users for its population at just 27% [1].
- *Business Insider*, *Economy Watch*, and the International Monetary Fund report that the countries which will have the most rapid economic growth in the next 40 years include India, Iraq, Sri Lanka, Qatar, Turkmenistan, and China [2].

Refer to Table 1.1 for a look at some of the most influential economies of the future based on size and speed of growth.

TABLE 1.1. Ten economies are in the lead for a healthy future based on size and speed of growth.

Business Insider (10 largest economies of 2050 based on GDP) [3]	*The Economist* (10 fastest growing economies based on GDP) [4]
China	Mongolia
United States	Macau
India	Libya
Japan	China
Germany	Bhutan
United Kingdom	Timor-Leste
Brazil	Iraq
Mexico	Mozambique
France	Rwanda
Canada	Ghana

Between the two lists identifying size and speed, you can see how virtual teams are a critical tool for connecting the global market.

1.3 The International Nature of Virtual Teams

The international nature of engineering in a growing global economy creates the need for functioning virtual teams. Some of the following statistics on virtual workplaces have emerged over the past 15 years:

- Eighty percent of the workforce uses meetings that involve off-site workers [5].
- Global virtual teams enable organizations to get better products and services to market faster [6].

- Organizations indicate, on average, that 27% of their employees work virtually [7].
- Forty-six percent of surveyed European executives use virtual teams to improve communication and collaboration within their organizations [8].
- One in three people who works in European IT and telecommunications companies spends 80% or more of his/her time working virtually [8].
- Fifty-six percent of surveyed executives identified the most significant challenge to virtual teams as miscommunication resulting from differences in culture and language [8].

Core Concept

Research indicates that miscommunication occurs no more often in international online interactions than it does in domestic online interactions. However, people are less certain about how to prepare for and resolve international miscommunication. Thus, international miscommunication often has more severe results.

This international dimension brings with it new opportunities and problems for information that is communicated in the online workplace. Some professionals feel confused and discouraged by the problems encountered in international online communication. You may be among them. However, my research indicates that miscommunication occurs no more often in international online interactions than it does in domestic. People are just less certain about how to prepare for and resolve international miscommunication.

1.4 The Value of Information

Definition

Knowledge—information that has been processed in such a way that it is usable.

In the quickly growing and vast web of communication, information has value. In fact, some would argue that information is the most important asset in market economies [9]. As information is passed back and forth in virtual teams, shaping and being shaped into knowledge, products, and services, it gains value. As early as 1997, the impact of virtual teams was being noticed: "In virtual teams, power comes from information, expertise, and knowledge, the foundations of wealth" [10, p. 73]. However, information has value in the market only as it benefits stakeholders. In order to benefit stakeholders, it must be usable despite challenges such as going unnoticed in a world with too much information, retaining clarity across cultural boundaries, and being understood by people with too little time. Because virtual teams create and manage much of today's technical information, they significantly affect whether or not that information becomes valuable.

Core Concept

Three issues threaten the value of information as it is processed through virtual teams:

- risk of important information going unnoticed
- loss of clarity as information passes through technology and across cultures
- lack of understanding by people who have too little time to process the information

This concept of information as valuable, as an asset, is significant. Let us look at it a bit more closely. Information is exchanged as units of rhetoric. Here, the term "rhetoric" refers to online communication that can be composed of written or spoken words as well as such elements as silences, emoticons, abbreviations, and so on. All of these elements of rhetoric communicate information in virtual workplaces, thereby increasing value for organizations unless that information is corrupted in some way—most often by a misunderstanding. Misunderstanding threatens knowledge transfer and, thus, the value of the information. In virtual workplaces, many challenges have the potential to turn a valuable transfer of knowledge into a loss.

1.5   Foundations of Global Virtual Team Theory

Research in both computer-mediated communication (CMC) and face-to-face intercultural communication is plentiful, and research at the intersection—intercultural computer-mediated communication—is growing. It is at precisely this intersection that organizations are experiencing tremendous growth and trying to construct successful global virtual teams.

The largest part of international (often referred to as "intercultural") communication research has been performed in face-to-face communication, but there is a growing body of research that indicates once communication is taken online, the characteristics change in some ways. (In Chapter 3, I discuss the approaches to understanding intercultural communication in detail, as well as how those approaches change for online communication.)

One study indicated that the effects of including or excluding contextual information online does not support the face-to-face theories of Edward T. Hall, who is one of several well-known researchers in intercultural communication [11]. Ulijn et al. found that while cultural factors may be similar in face-to-face and online contexts, the effects may vary between the two contexts. Many other factors ranging from quantity of communication, to concepts of "face," to turn-around time affect communication across cultures in face-to-face situations and are likely to affect online situations as well—but not necessarily in the same ways.

Core Concept

Trust is critical to high-functioning teams. However, you must build trust differently in the elusiveness of online space.

For example, trust is a critical element that must be present in high-functioning teams of all kinds. In face-to-face interactions, I might earn trust with non-verbals that indicate my sincerity and reassure coworkers of my commitment to the team. I might leave the door to my office open so that colleagues feel welcome and can ask me questions quickly and so that I can deliver responses quickly.

In online teams, trust is just as important, but I cannot establish it in the same ways. Thus, I have to ask myself, "How can I exhibit commitment online? How do I build trust?" I might try to meet with colleagues occasionally using both audio and video media. I should also respond quickly to messages and let colleagues know when they can expect me to meet their requests. By letting my colleagues know what to expect from me and by meeting those expectations predictably, I build trust online.

Similarly, intercultural communication patterns online vary from intercultural communication patterns in face-to-face situations because of differences between online and face-to-face contexts. The online environment offers the opportunity for more contact with more people and more information than face-to-face communication because time and distance are so easily traveled. But the online environment also offers something less than the face-to-face environment: fewer cues, slower process of trust development, less personal contact, less familiarity, and less depth [10–14]. Organizations and team members can make their communication succeed by taking a structured approach to constructing the activity in online spaces. This structured approach should be based on team goals and cultural expectations as you will see throughout this book.

Case Study

The Sound of Silence: The Cues We Must Interpret in Virtual Workplaces
Pam Estes Brewer, Ph.D., Mercer University

Alden works for computer engineering giant Apex (all case studies are based on real cases but use fictitious names for companies and people). When Alden provides training to employees in his company, he does so in both online and face-to-face contexts. In face-to-face contexts, when people fall silent, Alden receives cues from them as to the meaning of that silence. Maybe they are taking notes; maybe they leave the room briefly; maybe they are confused. In most cases, he receives clear physical cues and can respond accordingly; however, when he is met with silence online and he has no physical cues, how does he know what the silence means? Has he completely lost the attention of his audience, or are they taking notes? Are they confused? His confusion grows because he knows that among the members of his multinational audience, silence can mean different things. Without physical cues, how does Alden know how to respond?

This case study illustrates the complexity of communication when it is taken online and across cultures. Within this book, you will begin to understand strategies that could help Alden in preparing for, interpreting, and responding to situations such as online silences.

1.6   Global Virtual Team Basics

It is useful to note some basic characteristics of virtual team communication in this first chapter though I will go into more detail in Chapter 2. Remember, virtual teams are teams that do much of their work across distances, facilitated by technology. Virtual team communication is largely dialogic in nature; this means that the communication flows back and forth. Team members rely on such technologies as e-mail, instant messaging, VoIP (for example, Skype), web boards, content management systems, and other online media. Online communication that flows back and forth is decidedly different than other forms such as websites where much of the information flows one way.

Because of this back and forth flow of a large amount of information, virtual teams must be efficient and flexible. Characteristics of virtual organizations are reported in many sources, and the following five characteristics identified by Guimaraes [15] are reasonably representative of the descriptions found in many articles and books. Virtual teams typically display the following characteristics:

- They share a common vision of the work or project.
- They cluster activities around core competencies.
- They work jointly in groups.
- They process information quickly through systems in real time.
- They delegate from the bottom up. [15, p. 322]

Definition

Colocated—physically located close together. People who are colocated can work in face-to-face contexts.

These characteristics may not seem so different from those for *colocated* teams with the exception of the bottom-up flow of information; however, each of these characteristics must be considered very deliberately in the elusiveness of virtual space. Throughout this book, you will learn how to build effective virtual teams by responding to these characteristics.

1.7   Targeted Benefits of Global Virtual Teams

The use of virtual teams is growing, which is tangible evidence that these teams offer value to organizations. Consider some of the following significant benefits:

- Organizations have benefited from the growth of international online access in their ability to increase outsourcing and offshoring activities as well as to globalize their operations with offices in multiple countries. Globalization through virtual teams increases the marketplace for organizational talent as well as for sales of

services and goods. Companies are experiencing rapid growth as they cater to the outsourcing and offshoring markets. The market in global outsourcing is worth billions worldwide.

- With their ability to cross boundaries of space, time, organizations, and hierarchies, organizations can assemble teams that are best suited to a task.

- Virtual workplaces have the potential to be open 24 hours a day, 7 days a week, though this benefit may provide less value than originally projected. In fact, France and Germany have gone so far as to outlaw contacting workers outside of the workday and on weekends [16].

- Virtual workplaces are more democratic and less centralized; like a free marketplace, they are best able to maximize benefit by enabling organizations to direct resources to their most productive use [17]; virtual teams enable this flow of resources globally. They greatly reduce the cost of moving intellectual property from place to place because no physical movement is necessary. Organizations can hire and retain the best people for a job with fewer constraints, particularly with regard to location. Flexibility for organizations means that, like an efficient marketplace, they can swiftly self-correct and redirect resources as needed.

- Innovations and knowledge transfer are products of virtual teams that can be dispersed more quickly throughout global organizations.

- Virtual workplaces also make more time and resources available. If workers do not have to spend time and money traveling (for work or to work), they can redirect those freed resources to add flexibility to their schedules—time they can use elsewhere in their professional or personal lives. These benefits can increase productivity through a reduction in stress in workers' lives and through a reduction in distractions when they work apart from company workplaces [18]. Employee productivity and satisfaction can increase.

Core Concept

Global virtual teams provide support for organizations much like that provided by market economies; they enable the swift flow of resources to the points at which they are most needed.

1.8 Challenges of Global Virtual Teams

With so many resources available, international organizations and the virtual teams that support them are only likely to grow. However, with the opportunities come two broad challenges:

- Online communication is more complex than face-to-face communication.

- Many people who work in global virtual teams are unprepared for the newness of virtual team communication.

Communication grows more complex as it is mediated by technology, as it takes place at a distance, and as it crosses cultural boundaries. Virtual workplaces are increasingly multinational, and participants are often non-native speakers of the languages used.

Data collected from engineering and communication professionals in Studies A and B indicate that very few people who work in global virtual teams receive effective preparation for doing so. They may receive some general cultural training, but most people indicate they are given a computer and a task and told to get to work. In fact, participants in Study B indicated that they received *no formal training* to prepare them to work in global virtual teams. In addition, of the engineering professionals who responded to a question on virtual team training in the Study A survey, 60% indicated that their engineering organizations still offer no formal training. To say that the successes and failures of the work within these teams *can impact* the success of the supporting organizations is to greatly understate their importance. Organizations need to deliberately plan their virtual team communication strategies to include the inherent challenges.

Addressing these complexities is the primary goal of this book. By planning and implementing success strategies for virtual team communication, organizations can mitigate the challenges of global virtual teams and better realize the benefits.

1.9   Connecting Global Engineering Talent

Engineering professionals are often driven by numbers; however, many will acknowledge the critical impact of communication on the numbers of an organization—when communication succeeds and when it fails.

As engineering professionals take part in critical tasks such as product design and development, quality control, and documentation development, they use virtual teams both for intra-organizational and inter-organizational communication. In fact, as an occupation, engineering is more accepting of offshoring and remote employment than many other fields. A survey reported by the McKinsey Institute indicates that 52% of engineering employers are accepting of remote employment. Trend predictions also indicate that outsourcing rates in engineering are accelerating and that both developing and developed countries will supply the same number of young engineers to the future economy [19] further supporting the need for virtual teams to bring a talented distributed workforce together.

Global opportunities in engineering, often facilitated by virtual teams, are also easily identifiable in many industry profiles that affect the flow of goods and services in engineering. I provide a few examples in the following list:

- In the global electrical components and equipment industry, Asia-Pacific accounts for 51.6% of the industry; Europe for 23.1%; the Americas (North and South) for 21.3%; and the rest of the world for 4.1% [20].

- In the global control systems market, emerging economies are expected to contribute the largest revenue growth because they will emphasize upgrades to infrastructure and manufacturing operations [21].

- One of the key factors that will contribute to future growth in the AC and DC drives market will be demand from the Asia-Pacific region [22].

As these examples indicate, engineering professionals are likely to use virtual teams to connect with all parts of the globe during all phases of the engineering process.

1.10   Engineering Successes and Failures

In my survey of engineering professionals, I asked participants to share examples of successes and failures in their use of virtual teams. In the following Reports from the Workplace, I share with you some of the virtual team experiences of engineering professionals to give you a look at this global phenomenon.

Reports from the Workplace

Virtual Team Successes, Challenges, and Failures

Report 1. Success
With three teams, we designed several facilities in a refinery in 75% of the normal time by working virtually. We developed a lot of tools to help with different teams and make all the documentation.

Report 2. Success
Several years ago, while developing an ERP system using Oracle® products, we were able to establish and utilize a global team of technical problem solvers to provide solutions to problems essentially overnight. Some of the issues took days to resolve, but this was better than the weeks it would have taken had we not used the global team.

Report 3. Success
I participated in a 3-year project in Germany where I transitioned from face-to-face to remote work successfully while delivering critical functionality. This was during the downturn in the United States and allowed our company to be successful while still maintaining our presence in the United States.

Report 4. Challenge
I do not have greatest success or greatest failure stories, but lost opportunities stories. Global organizations will make virtual teams work because they have to make them work to sustain the business globally. I have worked with international publishers more successfully than global organizations, who have more of a "working with" than a "working for" relationship than is often the case within global organizations. Trust is an issue, where regions can see themselves undercut by the lowest bidder.

Report 5. Challenge
I have received reports of major problems in executing projects to the same game plan either due to communication problems or due to cultural disconnects. There is an inability to have key participants accumulate knowledge and insight, beyond the regularly scheduled progress meetings focused on PowerPoint® presentations or site visits. These interactions can limit discovery of worrisome signs and symptoms

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that can be cropped out of the carefully managed graphics, and even live images available through things like teleconferences and other virtual meetings.

Report 6. Challenge
Working with a team in India means you have a contact point, but the contact point is most likely sharing with the entire team in India. This results in communication errors.

Report 7. Failure
The situation involved two design teams on either side of the United States (west coast/east coast) working on the design of a single facility to downblend nuclear waste to a form/concentration that would be accepted at a disposal facility. The owning team was on the east coast. The primary communication was by weekly conference call and e-mails. What went wrong? Everything. Here are some examples: (1) Failure to submit design change requests and get them approved for changes discussed and verbally authorized during calls. (2) Failure to retain (print or PDF) and track e-mails that discussed issues and/or authorized design changes (even minor ones). (3) The east coast team provided inaccurate dimensions of a glovebox room, so the equipment designed for it by the west coast team would not have fit had the facility been built. (4) Failure to track corrective actions to closure, including failure to keep accurate records (by either team) on exactly what was done and whether it was effective. (5) Failure to keep the client (federal agency) informed of major design changes. (6) Failure to keep to the design schedule, which ran up costs. Since the client had not been kept in the loop on the design problems, the rising costs and failure to complete the design in a timely manner killed the project.

Report 8. Failure
We were involved in off-shoring some engineering activity to India. We had the Indian team members here in the United States for training for 6 months. Upon returning to India, one of them left the company for a better opportunity. The other one repositioned within the same company. We lost our training time and dollars.

As one engineering professional summed up, "My greatest failure is working with companies who refuse to accept virtual teams. My greatest success has been working with companies who embrace them. I have worked with successful virtual teams who communicated with each other daily and were able to build camaraderie despite the fact that they worked from different offices."

These workplace examples probably reflect some of the same successes and challenges you have experienced in your organization. Virtual team experiences are remarkably similar across technological and cultural boundaries. The words of these engineering professionals give you some idea of the range of challenge and opportunity that lies in global virtual team structures. I hope what you will gain from this book and from these many professionals is a knowledge that *global virtual teams must be approached in structured ways in order to realize their great potential.*

1.11   A Look Ahead

In the chapters that follow, I build on the overview presented here by providing a detailed look at the nature of virtual team communication and at how culture affects this communication. I then look at patterns of communication and miscommunication in virtual teams and how technology contributes to these patterns. Based on identified patterns, I suggest a structured approach to establishing new global virtual teams and maintaining existing ones. This structured approach is based firmly in effective collaboration strategies. Finally, I present guidelines and ideas for providing training and education in global virtual team communication.

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