

2009

PACIFIC NW SOFTWARE
QUALITY
CONFERENCE



MOVING
QUALITY
FORWARD

OCTOBER 27-28, 2009

Conference Paper Excerpt

From the

CONFERENCE
PROCEEDINGS

Permission to copy, without fee, all or part of this material, except copyrighted material as noted, is granted provided that the copies are not made or distributed for commercial use.

Distributed Team Collaboration

Kathy L. Milhauser
kathym@pdx.edu

Abstract

Working in distributed teams is becoming increasingly common as companies extend and diversify their operations across geographic boundaries. Learning to form and sustain high-performing distributed teams with members in multiple locations, time zones, and representing diverse cultural perspectives requires new skills and new approaches to project team collaboration. This paper will outline the drivers causing this transformation in project work, introduce a variety of models that represent distributed team configurations, summarize some of the challenges inherent in leading and contributing to distributed teams through a set of case studies, and suggest practices that are emerging to optimize distributed team performance.

Biography

Kathy Milhauser has worked in Information Technology and Human Resources Management for over 20 years, with specific experience in product development, manufacturing, supply chain, and marketing for a Fortune 500 company, as well as in government and health care industries. Kathy is currently a Program Director at City University of Seattle where she manages programs in Project and Technology Management online and internationally. Kathy is also an adjunct faculty member of the OMSE program, where she teaches the Professional Communication Skills and Distributed Software Team Collaboration courses. Kathy is a doctoral student at George Fox University, where her research is focused on globally distributed team challenges and best practices. Her work has appeared in the Software Association of Oregon newsletter and in a book on Managing Learning in Virtual Settings.

Introduction

In the global business environment, every organization, team, and individual has the potential to compete for opportunities. What Friedman refers to as the flattening of the world has truly created a level playing field for many industrious individuals, teams and organizations (Friedman 2007). It is not surprising that the trend toward distributed organizations has increased in recent years. Organizations of all sizes and in a wide range of industries have found ways to cross geographic boundaries. This broadening of scope and focus is allowing large and small organizations to expand from a local and regional perspective to a global one. Change drivers such as developing economies, increased competition, and changes in political and trade relationships have facilitated an increase in the ability of organizations to globalize their operations just as advances in technology have accelerated the pace of global connectedness.

Globalization not only affects how organizations interact with each other, but even how they interact internally, as distribution of the organization creates new workgroups who must learn to work together effectively. As organizations diversify and distribute, so do the belief systems, values, and eventually the behaviors of their members. While maintaining a focus on an organization's mission and goals is challenging for all organizations, it is especially daunting when the workforce becomes dispersed in multiple locations. This can create tension between local perspectives and those of the overall organization as remote teams form their own sense of identity.

The distributed team phenomena is both born from opportunity and created out of necessity. On the one hand, organizations are distributing their operations because they *can*. Permeable economic boundaries, trade agreements, and maturing technologies have made distribution profitable. On the other hand, organizations are distributing their operations because they *must* in order to compete in this new landscape where every organization, team and individual has just become empowered to compete. As this trend will no doubt continue to accelerate, now is a good time for organizational leaders to develop plans for how to lead distributed teams effectively.

1.1 Background

Research into team development models has its roots in the study of sociology and the formation of group norms. The idea that there might be a science to organizing the work of individuals into teams reaches as far back as the early 1900s when Frederick Taylor published his research on scientific management methods (Taylor 1911). What is unique in recent years is the ability of individuals to work in teams without being in the same physical location or even time zone. This presents a variety of obvious challenges, such as communication, coordination of tasks, and adapting to cultural differences. New opportunities for collaboration are just now coming into focus as researchers look at this emerging phenomenon.

Martinelli, Raschulte, and Wadell refer to a trend toward individuals becoming global managers by accident as their organizations distribute operations (Martinelli, Raschulte, and Wadell, 2009). Managers in this situation typically find themselves responsible for individuals that are broadly scattered around the globe in an often loosely coordinated fashion. As these managers interact with their teams, they are faced with the need to develop new approaches to leading their teams effectively in the distributed environment.

Deborah Ancona suggests that traditional team development practices are insufficient when applied to the distributed team (Ancona 1990). Ancona reviewed a study of 100 sales teams and the notable difference between perception of team satisfaction and actual team performance. The teams in the study that were focused on internal efficiency and experienced the most harmony in their teamwork were not the ones performing at the highest level. The highest performing teams were those with an external focus on their customers, suppliers, and industry, often resulting in high degrees of creative tension inside the team, but also opportunities for more innovative ideas. The external focus of the highest performing teams raises the question of whether the traditional focus on internal efficiency is

not only inadequate, but also potentially limiting to the distributed team. This work resulted in the assertion that the evolving distributed team environment with a flattened structure and broader range of cultural and geographic diversity calls for a new team leadership model.

1.2 Distributed Team Models

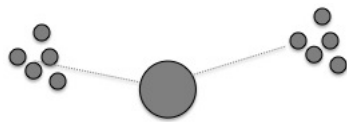
The research to support this paper was conducted in a variety of industries, including product development, marketing and sales, technology engineering and manufacturing, and higher education. Insights for this paper were gathered through semi-structured interviews and observations. All of the participants were members of global organizations with offices in multiple locations in the U.S., Asia, Europe, and the Americas. While the industries were varied, the challenges were found to be quite common.

The term “distributed teams” is used loosely to describe any situation in which people are working without being in the same physical location. While this is a good general description, it can also lead to confusion related to several key elements that distinguish distributed team behavior. For the purposes of this paper, distinctions will be made in three areas when describing distributed team models: the basic organizational structure (central or distributed); the primary team focus (internal or external); and the primary information flow experienced by team members (organization-to-team, organization-to-individual, or team-to-team). These distinctions are depicted in the following models. While still very general, these models aid in differentiating between three unique configurations commonly found in distributed team interaction.

	Decision Model	Team Focus	Information Flow
#1 – <i>Central / Remote</i>	Central	Internal	Organization-to-team
#2 – <i>Distributed Teams</i>	Distributed	External	Team-to-Team
#3 – <i>Distributed Employees</i>	Central	Internal	Organization-to-individual

Regardless of the exact configuration of the distributed team, some challenges are common whenever people are working across distance. Clearly it is more difficult to communicate and coordinate tasks when individual employees or full teams are not located in the same place and able to work face-to-face. Further, people working outside of the organization on distributed teams or as remote employees tend to miss a lot of informal, contextual information that aids other employees in making sense of the information they do receive.

1.2.1 Model #1 – Central / Remote



The first model is not a new one, but has been the default approach organizations have taken to developing presence in local communities. It is especially common for global organizations to create remote teams in local markets or to take advantage of local labor. What is changing is the trend toward creation of remote teams for purposes of employing highly skilled talent from geographies remote to the central organization, as is seen in the outsourcing and off-shoring trends in recent years. In this model, organizational control is still centralized. Strategy is set by a central organization with varying degrees of engagement with local offices and remote teams. For

the most part, the remote team is focused on executing a central strategy while providing input from their local perspective. As this model is often used in large global companies as they distribute operations to local markets, the issue of coordination and alignment is often stated as one of the leading concerns.

As organizations become increasingly global and distribute their operations, teams, and individuals outside of the central location, there is danger of disconnects forming between the organization's mission, vision, values, and goals and those of the distributed team. The central organization runs the risk of becoming an "outsider" from the perspective of the remote team. This is a common phenomenon in remote offices that grow to resist and resent the "headquarters" mentality. Teams performing in remote markets have opportunities to bring their local insights back to the central organization and ensure that decisions consider local perspectives. Doing this, however, requires a sense of "oneness" that extends beyond the central organization into all of the locations where its operations have been distributed.

Another fundamental issue facing many central/remote teams is that of diversity and cultural awareness. This takes on two dimensions as teams experience higher levels of diversity in national culture and geographic location, and also as teams find themselves further and further from the "mother ship" organization that provides their foundational sense of meaning in their work. Appreciating different perspectives on the distributed team becomes a necessity to support understanding and cohesiveness on the team.

Challenges:

- Us vs. them mentality;
- Remote group isolation;
- Cultural differences;
- Risk of remote team disconnecting from organizational goals.

The Case Study in Global Product Development is an example of a Model #1 team configuration and provides some best practices that one organization developed to address their challenges and enhance team performance.

1.2.2 Model #2 – Distributed Teams



The second model is one in which the organization is becoming fully distributed, with complete teams performing outside of the central organization. The focus in this case is on coordination in a point-to-point model between teams. The model connects two or more teams from the same or different organizations in their efforts to collaborate in a distributed fashion. In this case, decision-making is often distributed to team leaders, with higher degrees of authority at the team level.

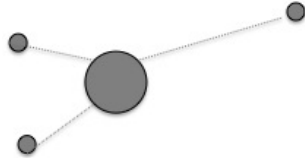
The challenge becomes one of internal integration between the distributed team and the central organization. As authority, autonomy, and empowerment are experienced in the distributed team environment, the central organization must find ways to connect the distributed team to the central mission of the organization in a cohesive and meaningful way. Motivation and extension of organizational culture become the prominent challenges experienced by organizations evolving their distribution model to this extent.

Challenges:

- Coordination of tasks without centralized support;
- Inefficiencies due to lack of clear leadership;
- Cultural differences;
- Conflict management;
- Risk of teams developing separate agendas and goals.

The Case Studies in Technology Teams provide examples of the Model #2 team configuration.

1.2.3 Model #3 – Distributed Employees



The third model is one in which a central organization has a number of distributed employees. This model is becoming increasingly common as organizations begin to allow employees to telecommute and strive to find uniquely skilled employees who do not reside in a central location. An example of this model would be an organization in a large metropolitan area that has decided to allow employees to telecommute. This can be a positive benefit for the employee who avoids the time and expense of commuting to a central work location. This model can also benefit the organization by reducing facility expenses and broadening the geographic area from which they can recruit talented workers. However, this model introduces new considerations for managers who are responsible for the work of the distributed employees.

Challenges:

- Supervision of work;
- Maintaining quality standards;
- Ensuring work is distributed equitably;
- Motivating distributed employees;
- Maintaining a sense of teamwork;
- Avoiding feelings of isolation on the part of the employee;
- Maintaining effective communication;
- Sustaining focus on the organization's goals.

Organizations experiencing success with the distributed employees model have found that a focus on human resource policies specific to telecommuting employees can ensure that work requirements are clear. Some organizations are beginning to develop telecommuting contracts with employees and specific training for managers in how to manage employees that are not in a central location. While this model will not be explored in depth in this paper, it is important to acknowledge that distribution of individual employees introduces similar management complexities.

2.1 Case Study – Global Product Development

Interviews with the members of a single product development team were conducted to support this case. The team was made up of central and remote components (Model #1 in this paper). The central portion of the team was located at the company's headquarters in the U.S. The remote portion of the team was located in Taiwan. The team was responsible for developing new products for markets around the world, with design and marketing headquartered in the U.S. and technical development

and manufacturing managed in Taiwan. The organization was attempting to shorten the time it takes to bring a new product to market, and had decided to use Lean process improvement methods to optimize the team's work. The team in this case was selected to pilot new methods for process improvement.

2.1.1 Face-to-Face Meetings:

The leaders of the global product team emphasized the power of interpersonal interaction in face-to-face settings. The organization launched the process improvement effort by bringing the full team together for a kick off meeting and the development of the project plan. By engaging all team members in a short workshop, this organization was able to not only build teamwork but also facilitate solid understanding of each role in the process. The workshop activities focused on where information handoffs would occur, what each person's responsibility in the project would be, and on developing agreements related to communication and quality standards. Integral to the design of this team workshop was time embedded for informal activities as well. This allowed the team members to get to know each other and build rapport before they were faced with the challenge of distributed teamwork. After the workshop, the team met periodically via video and audio conferencing, while continuing most of their work in a distributed fashion.

2.1.2 Managing Cultural Differences:

The global product team was made up primarily of American and Taiwanese members. Additionally, there were members from the Europe marketing team involved in the face-to-face workshop at the beginning of the project. This created an environment that combined individuals from some of the most direct and most indirect cultural extremes in Hofstede's cultural mindsets model (Hofstede 1980). Direct cultures are those where people tend to say exactly what they think and welcome conflict as a way to ensure that issues are addressed openly. Indirect cultures are the opposite – direct comments are seen as rude and avoided in order to ensure that no one involved loses face over any issues. Instead of open debate, most individuals from indirect cultures (typical of most of Asia) would choose to settle differences quietly so that no one would be embarrassed. Another significant difference in cultural mindset was in the dimensions of individualism and collectivism. The Dutch and Americans tend to be very individualistic – viewing achievement and responsibility from an individual perspective. The Taiwanese, like many Asian cultures, are much more collective in their orientation. They think first of the accomplishments and responsibilities of the group that they are part of, and tend to defer their own personal needs for the needs of the group or organization.

Differences in cultural mindset became apparent in the first workshop that this global product team conducted. The Dutch marketing executive was very adamant about what kind of product was needed for the Dutch consumer market, and was critical of the prototypes he had received from Taiwan. The American design team had been sending designs and design changes to Taiwan, and had not received any questions or feedback on the designs. Instead, the Taiwan team was doing their best to create the prototypes with the information they were provided. In the workshop, the team was instructed to diagram their process, with all of the handoffs between the different individuals on the team. Each team member was given a stack of post-its and a pen and they worked in small groups to document all of their activities. When the activities were all documented and visible on the process map, it became apparent that there were many activities happening in the Taiwan office that the Americans were not aware of. Curious about this extra work, the workshop facilitator asked one Taiwanese team member how often she received all of the information she needed to create a quality prototype: "How often is the information you receive 100% complete and accurate the first time you receive it?" The Taiwanese woman was silent. Eventually, with encouragement from her local Taiwanese team members, she was handed a pen and on the process map she wrote "0". This was the first time that the Americans on the team had been told that the designs and details they were sending to Taiwan were insufficient. It became a pivotal moment in the workshop and in the months of work to follow. The American team members learned to ask the Taiwanese what information they needed, and to purposefully confirm that all information sent to the remote Taiwan team was

complete and accurate. The Taiwanese team members, in their dedication to the collective needs of the full team, were willing to respond to direct questions and eventually an open dialogue ensued.

2.1.3 Sustaining Organizational Culture:

The organizational culture in this case provided support for the multi-cultural, distributed team effort. The organization has a history of grounding its employees in a central mission and value system. Creating strong and emotional messages that are clearly linked with the organization's cultural heritage supports this strategy. The organization has been in business for just over 35 years, and has grown from a small start-up in its industry to a globally recognized industry leader. A key differentiator for the organization from an organizational culture perspective is that its external brand message and internal value system are in close alignment. Examination of artifacts from the company's history reinforces the power of the internal and external messaging and provides evidence that employees have engaged deeply with the company's mission since the beginning of its existence. Further, conversations with highly tenured employees (some of them still working at the company since the beginning) reinforce that strong emotional ties to the heritage and purpose of the company have motivated them through many difficult times and periods of uncertainty.

In addition to the strong sense that the organization prizes individual achievement, there is evidence that team and collective achievement is valued. In interviews with participants, a tension could be detected between the values of individualism and collectivism. The idea of a high performing team, with individuals striving to achieve their personal best with the support of their team, emerged as the resolution to this tension. Even team members from the U.S. culture (which tends to be individually oriented) were able to accept that individual performance depended on the support of a team. In a sense, the participants viewed the team metaphor as a way to achieve their individual goals. Individuals on these teams reported the expectation that team members would challenge them personally through internal team competition, as well as support them toward the achievement of personal goals. Conversely, the Taiwanese members (with a stronger collectivist orientation) could accept the individualist orientation of the U.S. members when they understood how individual performance supported collective team goals.

When organizations with strong grounding in their cultural heritage, mission, vision, and values distribute their employees across distance, they create an environment where the organizational culture provides a foundation of support. This is especially important in remote offices where the national culture may be very different than that in the home office.

2.1.4 Summary/Lessons Learned:

- Face-to-face meetings are critical to building relationships, especially in multi-cultural teams;
- Clear understanding of roles, responsibilities, and integration of tasks can enhance the performance of a distributed team;
- Cultural differences are important to recognize, and can be leveraged if they are understood and accepted;
- Organizational culture can provide a common context for distributed teams if the mission and goals of the organization are well understood and interpreted in culturally relevant ways.

2.2 Case Studies – Technology Teams

The following mini-cases were collected from a variety of experiences working with software engineering students in the OMSE program. Technology teams have been experimenting with distributed team models for several years, since the Internet has made it possible for communication and collaboration to occur across distance. For this reason, technology teams tend to focus more on the tools available to support their tasks, and less on the practices that support effective teamwork. However, recent discussions with technology professionals indicate that issues of teamwork, communication, conflict management, and cultural sensitivity are coming into focus as technology teams develop their competency for distributed operation. The amount of experience the technology industry has with

distributed teams has also allowed for best practices in fully distributed teams to begin to emerge first in these teams. Although the companies in these cases have central / remote team models in place, they are also beginning to launch teams that are fully distributed with point-to-point interaction, as in Model #2 – Distributed Teams.

2.2.1 Stakeholder Management:

A distributed project team leader working in the technology manufacturing industry echoed the importance of focused and deliberate communication, emphasizing that communication inside the project team is not enough. Intentional, focused, and proactive communication with stakeholders becomes essential when working in a distributed environment. The project leader agreed that face-to-face meetings to build the team are essential. However, the team found it could not always rely on face-to-face meetings to communicate status and share documents with stakeholders. One specific incident occurred when the team set up an online meeting to share status and gain approval to move ahead on their project. The team had painstakingly updated their Google Docs site with the status report, links to technical specifications, process flowcharts, and slides for the meeting. They sent out the meeting invitation via Outlook, and instructed participants to be available on Skype at meeting time. When the meeting time arrived, all of the distributed team members were online and ready. The major stakeholder, however, was having trouble getting his computer connected to the network. When he resolved that issue, he couldn't locate the link to Google Docs. By the time the stakeholder was prepared to listen to the team's status, half of the meeting time had elapsed. The team was not able to meet their meeting objectives. The team learned that they needed to pay more attention to preparation for their meetings to ensure their stakeholders had access to necessary documents.

Individuals working in distributed teams indicate that planning and executing a successful online meeting takes much more time and focus on detail than a typical meeting where everyone is in the same room. Ensuring that everyone has access to the documents, that the online meeting tools are used effectively, and that there is adequate understanding of the issues and information being discussed becomes a key focus area for distributed team leaders. A "push" model with the documents being shared through a screen sharing tool became necessary for the team in this case. After the failed meeting, they learned to take steps to ensure that access to information was easy and seamless for all participants.

2.2.2 Practices Before Tools:

When many of us think of the challenges of distributed teams, we turn quickly to the available tools to see how to meet these challenges. Tools are sometimes selected before we fully understand the different practices involved in working in the distributed environment. Two graduate students in an online software engineering course were assigned to develop a proposal for online collaboration. Their goal was to convince their instructor to adopt new technologies for the program. The instructor was hoping to discover new tools to support software engineering practices. These students examined tools for software configuration management (SCM) and found quickly that it was necessary for them to step back from the tools and think first about what practices needed to change in order to interact with this process in a distributed fashion. Only then could they compare the potential tools for their assignment to emerging best practices in the SCM process. The students ended up spending more time introducing their instructors to newly emerging software configuration management processes than new tools.

2.2.3 New Tools and Practices Emerging:

The two graduate students discovered not only that there are new practices emerging to support distributed teamwork, but that tools are also quickly evolving to support the practices. In some cases, they learned about a potential change in practice when they discovered it by examining a tool. For example, because of the distributed nature of their SCM process, the potential for individuals to work offline as well as remote from the central code repository is creating practices for use when developers are "tethered" vs. "untethered." In other words, because distributed software engineers

are often working offline at a remote location, the tools are being evolved to exploit the fact that not all users are online at the same time. One practice the two graduate students discovered was that one tool would allow for “shelving” of code while working on other code. This practice emerged because it was possible in the tool, and was possible in the tool because the users are typically distributed as well as working in an offline, untethered fashion.

2.2.4 Online Simulating In-person:

Another example is the Wave tool recently introduced by Google for integrating email, instant messaging and wiki functionality in an interactive experience. Not only has Google figured out how to make these functions interact with each other, but they have also allowed users to pick and choose whom they share their commentary with. The group email then becomes analogous to a room of people, with whispered conversations on the side that not everyone can hear - all of this while remaining “in the room” and present to the larger conversation. Another advantage is that the dialogue in Wave is recorded so that it can be played back later, bridging the gap between synchronous and asynchronous experiences. Like the SCM example, in this case a tool is allowing practices to emerge in online interaction that are possible *only* because the participants are distributed.

Innovations like these are happening because they are technically possible, but more importantly because distributed employees and teams are in need of new ways to interact in more socially rich ways. The need for interpersonal connections drives the demand for tools that allow us to feel like we are together, even when we are working in distributed locations.

2.2.5 Summary/Lessons Learned:

- Occasional face-to-face meetings help to build and sustain relationships;
- Online meetings require more planning and preparation in order to be successful;
- Processes and workflows need to be clear before adopting new tools;
- New practices and tools are emerging quickly to support distributed work;
- Use of new tools introduces complexity as well as new practices to team processes.

Conclusion

The notion that individuals and groups of people do not necessarily have to be in the same place at the same time in order to perform work is no longer a new idea. Organizations in virtually all industries are recognizing this potential and beginning to experiment with how to distribute work to leverage opportunities and solve logistical problems. What is just now emerging is not the distribution of the workforce – that has been happening gradually over the past decade and much more rapidly in the last few years. What is new is the dawning realization that new ways of interacting, communicating, understanding each other’s needs and perspectives have the potential to optimize organizational performance. Distributed teams can be either much less effective or much more effective than traditional teams. The key lies in looking first at the interpersonal needs and behaviors that emerge as people begin working in new team configurations, then looking at potential new practices and tools to support and empower new ways of working.