

The Challenges of Managing Virtual Teams across Time Zones Dispersed in Various Geographical Areas and their Effect on Project Management

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ABSTRACT

This paper provides a thorough discussion of the challenges that project managers face while managing software development teams in different time zones dispersed in various geographical areas throughout the world. Many organizations are primarily focused on gaining software development talent and managing various projects at a reduced cost, but maintaining an effective team dynamic that promises excellent results has deemed an ongoing challenge.

The organization's objectives of continued success at any cost create skepticism within the project management team regarding the desired outcome, and they cannot manage the dispersed team and continue its maintenance without overcoming the challenges of this endeavour. Such continued challenges that they must strive to overcome are within the communication realm, understanding and accepting of the cultural differences, and requiring constant training of new technologies in order to maintain an adaptable and up-to-date team.

CCS Concepts

• **Project management** → **Challenges of managing dispersed teams across time zones**; Communication; Culture; Training

Keywords

Project management; challenges; time zones; geography

1. INTRODUCTION

Dispersed teams across various time zones are a challenge for any project manager. Project managers need to measure and define success of a project and manage the talent that will contribute to the ongoing endeavor of software development. Evidently, many organizations in recent years have turned to creating virtual teams as a means of lowering costs in software development and increasing global collaboration. [3] Yet, the challenges posed to project managers outweigh the many benefits of global collaboration, and they must adhere to quick and effective solutions to maintain positive outcomes.

As long as project managers are willing to improve these obstacles by being active members searching for a prolonged solution, then the organization's aim for a successful expenditure will remain positive.

Therefore, this paper highlights the important aspects that project managers must consider working with virtual teams dispersed across time zones, or as Mike Savory [9] defined it as 'non-traditional' teams requiring the best management skills.

2. COMMUNICATION

To maintain a successful virtual team, transparent communication channels must be present at all times alongside a standard communication policy followed by all team members [9]. Projects with non-traditional communication channels require a different coordination system [6]. Several digital communication channels such as phone, e-mail, Skype™ or instant messaging should be mandatory throughout the workweek for the team to remain up-to-date with the progress of a project. However, that may not be the case of avoiding a breakdown of communication. There are factors that project managers need to consider in order to maintain a successful team. The following sections identify problematic issues that project managers will likely encounter communicating with dispersed virtual teams across time zones.

2.1 Personalities

It seems difficult to identify a person's trait within a virtual team, but communications via phone and other digital means may prove otherwise. It is the first identified challenge of communications for a project manager and they should treat various personalities differently to excel in developing high quality software products.

2.1.1 Types

Journal article [1] identified the Big Five personality types or traits that project managers must consider. They are: *openness* where new ideas are voiced and shared among the team, *conscientiousness* where responsible behaviour is apparent, *extraversion* where outgoing personalities and enthusiasm demonstrated at all times, *agreeableness* where people show support and concern towards others, and *neuroticism* where people demonstrate a negative mood and not easy to work with.

The lack of identifying the traits from the start of a project seem detrimental to a project manager, and it will cause havoc to the software project's development process. The type of personalities working together as a virtual team effects software project's quality [1]. The project manager should group team members that have shared personality traits to create or maintain a high quality software product and avoid unnecessary conflicts arising from clashing personas.

2.1.2 Effect on Team Dynamics

As was stated in the latter section, virtual teams are successful if project managers identify personal traits of its members. However, once a project manager identifies the traits, they must

concentrate on maintaining an ongoing team dynamic with its members communicating well together.

2.1.2.1 *Composition of Teams*

Many personalities clash or work well together, and project managers have to identify quickly these dynamics. In addition, team members may prefer working alone, in a team [2], or only with another individual. These factors are cumbersome for a project manager to adhere to with a local team. How will a dispersed team across the globe or across the country in different time zones work well together? To compose such teams, or manipulate a current team that may not be working well together, a project manager must assess the personalities and work ethics of each individual, and measure their potential, communication skills and current progress in the software development project.

2.1.2.2 *Behaviour of Individuals from the Team*

An individual's trait may not align with the current behaviour the team is experiencing at a certain phase in the software development cycle. There is an assumption that the team member is going through a difficult life situation, or interpreting another team member's remarks as offensive because the communication channels not identified or used properly in a virtual team.

Another factor of language misinterpretations classifies these causes too, but discussed further in section 3.1 of this paper. Moreover, it is best for the project manager to intervene and understand the cause of this behaviour and its effects on other individuals in the software development team. In addition, the project manager can further investigate such behavior by conducting frequent feedback sessions and increase the communication channels in order to determine the root cause of the behaviour [7].

2.2 Needed Trust

Virtual teams are less effective in making group decisions and need more time to reach a common consensus, and their members seem less satisfied with no face-to-face meetings [7]. A virtual team lacks familiarity needed to bridge the geographical distance in an organized manner, and it is the project manager's challenge to establish proper coordination of the non-existent presence awareness [6]. Moreover, the lack of presence causes major difficulties building trust within the team.

Journal article [7] highlights past research in the area of properly managing virtual teams with developing methods of intervention such as: "training, kick off meetings, or team feedback." Collecting feedback resulted in a time for virtual team members to reflect on their progress and overall success of the software project, and it was more effective in improving their performance. The research continued investigating the virtual team's social exchange of information and concluded that the team's trust was indirectly effecting the group's information elaboration.

Finally, in virtual teams, team trust played an important role in determining the level of constant communication between its members. Members that trusted each other in a virtual environment were more inclined to request and exchange information, and this trust resulted in an increase of the success rate of the software project [7].

2.3 Clear Processes

In the beginning of this section, it listed some tools that virtual teams can use for better communication, and it is best for project managers to use these tools and require the usage of the proper methods that the company actively uses in clear processing working with geographically dispersed groups across time zones.

Rona Blair's journal article [2] lists several methods for clear processing in teams. The first method is implementing a shared calendar in Microsoft™ Outlook or a shared calendar service to enquire about vacations, meetings, other members' schedules, availability, and upcoming holidays. The second method is the exchange of project work document that is showing progress of the software development work. In addition, the work document shows individuals' assignments so there are fewer disruptions to members of the team at critical delivery points. The final method is the usage of voicemail and out of office or unreachable for a certain period of time automatic replies, and keeping them up to date.

2.4 Meetings

Meetings are the most critical exchange of ideas and progress in a software development project, and communication is successful during a meeting if it is well planned and executed. Virtual teams have to meet often to best manage the progress of the project and team dynamics [2]. Yet, it is an ongoing challenge to conduct meetings across time zones because of the time differences. Moreover, virtual meetings require more preparations, a well-defined agenda, and a more structured way of working together towards a common goal [4].

An example of differences in virtual meetings than regular face-to-face meetings is having two team members situated in Europe, while three others are in Toronto and Vancouver.

The positive aspect to consider that virtual meetings decrease environmental impact of business activities, and some of the tools used are audio, video and web-conferencing. These tools' usages are widespread because of their rapid development in the past decade. They reduce travel costs and improve flexibility and productivity of employees in a virtual team environment [4].

The latter points should help alleviate the challenges project managers face with virtual meetings, and find better ways to organize and facilitate each meeting. There are many ways to keep up-to-date with the progress of software projects; it could be daily progress reported in work documents or via email, but it is best to have at least weekly meetings since it is surveyed in journal article [3] as effective, and all involved members of the software project should discuss progress, concerns, and work assignments.

Planning a meeting is primarily a project manager's top priority, but all members involved have to contribute, be pro-active, bring forth progress reports, and report any concerns that came up since last meeting. There has to be an agenda documenting the beginning and end times of the meeting, and the agenda followed precisely in order to keep the meeting on track and minutes of the meeting reported accurately.

3. CULTURE

The aim of having virtual teams for an organization is continue its quest of global collaboration, and reduce costs of operations when possible [9]. However, cultural differences may seem as a big challenge for a project manager situated for example in North America and required to manage members of the team across the globe in different time zones. Unfortunately, global virtual teams have no overlapping time zones, have very different cultures, feel isolated, and feel unfairly treated [2].

3.1 Language

The journal article by Lockwood [5] discusses the little attention paid by organizations regarding language diversity, but there is extensive research of the role of language in organizations that

recklessly ignored. Virtual teams across time zones that are located in different geographical areas may be part of a software project of an initiating organization whose language may not be the same as some of the member's native language. There are challenges facing project managers based in the organization's home country and managing team members from various parts of the world.

In addition, language interpretations is a unique challenge for a project manager because he or she has to make sure that there is a correct understanding of the context used between all the virtual team members regarding the software development process [6].

3.1.1 Barriers

With language diversity, communication will quickly deteriorate if the proper context is not used. Project managers must deal with communication difficulties from team members' secondary or tertiary languages used in the software development process [3]. If there is a lack of a common communication regime by all the team members, then a barrier will continue separating the members, and the software development process will slowly deteriorate and effect its quality and delivery milestones.

3.2 Customs

With language differences in a virtual team comes various customs or traditions that team members practice if the team is located in various geographical locations. A project manager must identify and make note of various cultural customs that certain virtual members of the project follow in their daily lives.

Other team members may lack the understanding of another team member's customs and its effects on the workflow of the software project. With such customs comes a mandatory religious holiday or celebration in the midst of software development process, and the project manager must consider these days while planning a work document for team members to follow and report their progress.

4. TRAINING

A major challenge for project managers in a virtual team is intellectual power, and the ability to blend different experiences and ideas to create shared knowledge. Shared knowledge in a team environment occurs by joint training and collecting the experience gained by other members of the team. If the shared knowledge is incomplete, then it is less likely for team members to interrelate and knowledge integration to occur [8].

In addition, there are tools that virtual teams rely on such as email and instant messaging to stay involved in the software project's progress. Project managers should focus on these collaboration mechanisms of technology, and use ones that "promotes parallelism, transparency, and sociality" [8]. Once technologies are determined and selected, project managers need to provide training to promote their usage. Since a software development project is a continually evolving, it is best for team members to learn something new [2], apply it to the process and train other team members of this new technique when possible.

Finally, training should not be exclusive to software development in a virtual team. Training for virtual team members should include the following: understanding the company policies, working together through occasional team building exercises, frequent reporting from each member, and open communication channels used by everyone at all times.

5. CONCLUSION

The task of managing a virtual team is a challenging endeavour for a project manager. There are many ways to determine the best communication methods composed of digital tools used by virtual team members, but there are personal traits to determine and assess to compose a promising team dynamic. Once a project manager determines each team member's personality trait, composing proper teams and creating a positive team dynamic is essential for the success of the software product. After composing the proper teams, constructive and focused weekly or more than weekly meetings will help clear any misconceptions, misalignment of the pre-determined milestones with the team's current progress, and a team bonding opportunity where everyone feels they are in the process of creating a great product.

Likewise, communications are successful if cultural differences and language barriers are broken to portray a positive element in the composition of virtual teams. Finally, project managers should continue training in the following company policies, working well with others, and learning and using new technologies to produce high quality software products.

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