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Developing Team Cohesiveness in a Virtual Environment

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Developing Team Cohesiveness in a Virtual Environment

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ABSTRACT

When specialized technical skills are needed within a project team and issues of distance and time restrictions occur, the project manager must create a dispersed virtual project management team (VPMT). However, management of such a virtual team requires extraordinary effort on the leader's and team members' parts in both teamwork and cooperation in order to have an effective and successful outcome. In addition, the ability for the team to exchange information, transfer files, and strengthen their ability to use technology contributes to the outcome of the project.

This raises a fundamental question: How do effective project managers use team communication, relationship building, and project management elements in dispersed virtual project teams to influence overall project success when team members have little face-to-face interaction? This paper focuses on research conducted on distributed project management teams that had to rely on a virtual, technologically driven environment for coordination and communication of project tasks and objectives throughout the life of the project. The investigation concentrated on seeking the dispersed project team member who could function effectively as an interconnected and cooperative team member in order to achieve project success even though not co-located with other team members. The key element of interest for this study involved uncovering the phenomena behind the ability to bring together commonality of purpose in projects where there are differing individual views of effectiveness and lack of daily communication in a virtual environment.

INTRODUCTION

The emphasis of this paper is on dispersed project management team members who rarely meet face-to-face and how cohesiveness in performance and expectations can be achieved. In addition, a key discussion in this paper is assisting virtual team leaders and organizational project managers in understanding individual perceptions of project success for virtual teams, based on the individual perceptions of team members. The paper provides insights into what behaviors, tools, and techniques are indicators to virtual team members that they are effectively attaining project objectives. The paper may help organizations determine where to focus training initiatives for project managers and virtual team members and identify the communications systems project managers need to achieve a cohesive understanding of project objectives for effective performance in the absence of face-to-face communication.

The original research conducted and the studies reviewed for this paper show that virtual teams are central to the success of today's organizations that must compete in a worldwide marketplace, and to understand how the global virtual team is affected by technology. However, scholars examining the changeable nature and individual perceptions of the dispersed virtual project team itself suggest that there is a need to understand how to effectually encourage a collaborative and collectively minded environment (Jarvenpaa et al., 1998; Ahuja and Galvin, 2003; Ardichvili et al., 2003). This is key to gauging the future success of the team and the health of the project in which the members contribute to.

Nuclear materials management (NMM) engages the entire international community at large. To improve NMM capabilities, the specialized technical skills of those within the community are needed from individuals who must work together on teams regularly but are separated by geography and by time. The subject matter researched in this paper is important to the mission and overall operations to NMM because it will provide suggestions to these virtual teams that will help promote team effectiveness that will, in turn, provide measureable improvement in operations that are essential to improving NMM's mission.

BACKGROUND

More clarity is needed to explain how effective project managers use team communication and relationship-building and management elements in dispersed virtual project teams to influence the overall project success when team members have less face-to-face interaction. Hallam (1997) illustrated one commonly held belief that as individuals work together in teams, they develop one general idea about what is going well and what is not going well on a team. The ability to maintain independent thought was believed to hinder the work teams' capacity to come together in a collective effort to achieve project success. Findings showed that each member has their own experience and perception as to what is working successfully and what is not in team projects (Hallam, 1997). However, what we need to understand thoroughly is if this same finding holds true on a dispersed virtual project team where constant communication is lacking and an interrelationship exists in which one change is likely to influence multiple factors and end results.

This paper provides an in-depth and critical review of the literature that is germane and contributes to the understanding of how different individual perceptions of project effectiveness of VPMTs can lead to collective project success when teams are distributed and have limited face-to-face interaction. In addition, the findings from the author's own qualitative research study will be brought into the discussion. The researcher conducted a qualitative single case study. Specifically, the researcher sought to understand through interviews and surveys with virtual project team members and leaders how individual perspectives of project effectiveness can lead to a cohesive understanding of project objectives and a collective understanding of success when members are not co-located. To achieve this goal, an examination of the relevant literature throughout all phases of this study was conducted.

Literature Review

The phenomenon investigated in this study is a relatively new one, and thus, the critical review of literature examined studies conducted from the earliest relevant studies conducted in 1988 on information technology available at the time to the most current research on dynamics and leadership of the virtual team as a group. The researcher identified gaps in the knowledge base related to these issues that confront the dispersed project team. For example, both seminal and contemporary virtual project team research has focused primarily on a quantitative methodology for assessing trust and communication (Jarvenpaa and Leidner, 1998); information technology for global virtual work teams (Eveland and Bikson, 1988); and development of a virtual office (Davenport and Pearlson, 1998). Other research in this area has produced quantitative literature that has mainly been centered on how technology affects the operational environment of the global virtual team (Townsend, DeMarie, & Hendrickson, 1998). These issues and gaps are identified and discussed within each segment of the literature review.

Defining and Developing the Virtual Team

To acquire a better appreciation of how the virtual team is defined in the literature, an examination of the various perceptions and characterizations in the scholarly writings on the VPMT was made. The most common and preferred definition of the virtual team is that of a group of separated individuals that are physically, organizationally, and time-dispersed workers brought together to achieve one or more tasks by information and through telecommunication technologies (Powell et al., 2004). According to this definition, the virtual team is brought together in response to a specific need or specialized function in which the scope of work provides a beginning and end date. At the core of the dispersed virtual team is the use of technology for communication. The traditional team and team member can successfully and effectively communicate because they are typically located near one another. This provides repeated opportunity for frequent feedback and coordination of tasks between individual members. However, the researchers found that because the virtual team encompasses members who are disbursed, face-to-face meetings do not occur frequently or more often than not do not take place at all. In addition, the recent travel restrictions imposed by the Department of Energy for cost saving measures, for example, has severely curtailed the opportunity for true face-to-face meetings. This policy strengthens the need to understand how virtual teams can interact with greater cohesiveness while continuing to effectively meet the overall mission of the international nuclear material management community.

Powell et al. (2004) posit that this lack of face-to-face communication makes it complicated and difficult for distributed teams to exchange information in a timely manner. In addition, cultural differences can foster an inability for the virtual team to develop a concrete social structure. This, in conjunction with time-dependent issues, different social schedules, and the lack of formalized training can create difficulties in the virtual team that traditional teams do not come upon (Powell et al., 2004). This can include conflict resolution, cohesive understanding of project objectives, risk response, and overcoming challenges to the project by the influence of the team members' organization or stakeholders. However, as Powell et al. (2004) uncovered, because the virtual team represents a progressive form of the organizational workgroup that is flexible and responsive in a global environment, understanding the concept, theory, and nature of the dispersed virtual team is critical to team viability and effectiveness.

Based on a compilation of the research articles, Table 1 identifies the key differences between the dispersed virtual team and the traditional team.

Table1. Virtual Team vs. Traditional Team

Virtual Team	Traditional Team
Meets face-to-face infrequently	Meets face-to-face regularly and as needed
Distributed organizationally, nationally, globally	Co-located near one another
Relies heavily on electronic means of communication	Uses electronic means of communications but does not rely on it
Individual team members work independently on project tasks that have a formal project beginning, project end and closeout. Leaders and members utilize formal project management tools and techniques	Individuals may or may not work on formal projects and may or may not use formal project management tools and techniques

Dynamics and Leadership of the Virtual Team as a Group

A major component of this research study is to uncover the management skills and tools that can help the virtual project team collectively reach project success. There is an assumption that the lack of sufficient formalized training in the area of project teams and project management lead to stress and frustration for project team members. Further hypothesized is that this may also lead to the project team's inability to work cohesively, especially in cases where the team members are not co-located or are dispersed and lack the day-to-day and face-to-face communication that can help maintain collaboration and cooperation for the team to achieve project success.

Zigurs et al., (1988) conducted a quantitative study analyzing 32 U.S. virtual work groups. In the course of this study, influence behavior was measured by summing both verbal acts and non-verbal procedural acts. Zigurs et al. (1988) hypothesized that due to the anonymity of computer technology, groups spent significant effort on issues and ideas rather than the individual who presented those ideas to the group thus having a positive outcome on project effectiveness and performance. In addition, group dynamics were found to be more collaborative and cohesive due to the use of computer-aided technology. This is because external status characteristics are more neutralized through this form of communication. However, these findings also indicate that computer support did not result in higher quality decisions being made. The research also uncovered that computer-supported groups spent substantial time communicating goal-oriented procedures and tasks in an effective manner.

Team Learning

Cross and Rieley (1999) recommend that in order to optimize team or group learning and thus increase potential for project success, especially within the dispersed virtual team, team members must understand how they fit into a team. Having an understanding of how the job they are doing is related to the overall team's mission increases the team's and the individual's ability to accomplish

the project's mission (Cross and Rieley, 1999). However, the researchers caution that in order for the individual team member to have an accurate view of how they fit within the team, they must feel empowered with an awareness of control, encouraged by knowledge, and a sense of self-efficacy.

Ellemers, Gilder and Haslam (2004) conducted research on motivating individuals and groups at work as it relates to social identity and group performance. Their research referenced the work of Kirkman and Rosen (1999) and sought an understanding of motivation through individual social identity processes and how those individual and group processes interact to determine work motivation. In examining several individual and group motivational theories, the researchers discovered that within the more contemporary work situations, such as we find with dispersed VPMTs, a situational and dynamic identity exists for individuals. Understanding and anticipating individual behavioral shifts and how individuals perceive themselves as a collective or work team and their social identity can positively or negatively impact the group's performance as a whole. Learning to understand the circumstances in which group and project team members sustain their efforts and motivation on behalf of the group can raise project team leaders' and project managers' ability to gauge project performance and establish a common goal for the workgroup. However, the virtual team must also learn to function within the larger organization.

Communication and Trust in Global Virtual Teams

In 1998, Jarvenpaa and Leidner conducted research on communication and trust in global virtual teams. Concurrently that same year, Jarvenpaa and Leidner, along with Knoll (1998), conducted a similar study on the concept of trust in global virtual teams. In both studies, the objective was to explore the precursors to trust in a global virtual team setting. The researchers found that the more frequent and substantive communication between the team members, the higher the level of trust and engagement. These findings indicate that teams that suffer from lapses in communication were more reluctant to trust other team members and were less likely to feel motivated and committed to their virtual team. In practical terms, this study is important for understanding how to improve virtual team process outcomes through proactive communication and frequent interaction between virtual team leaders and amongst the dispersed team members (Jarvenpaa, Leidner, and Knoll, 1998).

Socialization and Motivation

A generally accepted assumption behind the understanding of distributed virtual teams is that they operate differently from face-to-face or traditional groups. This understanding is based on the findings of several formative research articles in the literature. Ahuja and Galvin (2003) specifically studied how newcomers of virtual teams sought information and how established team members provided that information and compared the findings against the processes used by traditional teams. Because group information-sharing communication processes are key to developing socialization and knowledge, proving the similarities and differences in how this occurs in the virtual team versus traditional ones is highly important to further advancing awareness of the dispersed virtual team. The researchers concluded that similar to traditional groups, socialization begins to occur for new members of the team because they need to make sense of their environment and assigned tasks. This helps them to reduce their level of uncertainty in their new virtual environment and established team members are eager to assist in this matter.

Daim, Ha, Reutiman, Hughes, Pathak, Bynum, and Bhatla (2012) conducted a more recent study of the reasons for communication breakdown within global virtual teams that can jeopardize project success. As the researchers further examined, inability to manage cultural differences alone does not lead to the breakdown in communications in virtual teams. Interpersonal relations affect the virtual team's ability to work effectively through electronic communication (i.e. e-mail, fax, Sharepoint, Dropbox) because elements such as body language and tone of voice are absent when there is limited or no face-to-face communication. This finding is important to the research of distributed VPMTs because it reinforces the knowledge that a constant reliance on electronic means of communication for the virtual team can lead to misunderstandings that can negatively impact team communication and productivity. Therefore, virtual teams rely heavily upon strong leadership to monitor and manage their team's interactions and electronic communications regularly.

SOLUTIONS AND RECOMMENDATIONS

This study examined virtual teams and the individual perceptions of effective project management that contribute to a collective effort in project success. The expectation was to provide the stimulus for the development of a more novel model for assessing distributed virtual project team effectiveness and recommendations for employing good project management professional practices on these types of virtual teams. Specific research question findings are detailed below.

How do virtual team members perceive effective project management approaches that contribute to the collective success of the project, such as through project planning and project risk and change management practices?

1. Continuous communication perceived necessary for collective approach to success of virtual teams.

Frequent and well-attended meetings in various modes were reported to be the main reason for how the dispersed VPMTs could achieve collective success through a collective understanding of project objectives and risks to project success. When there is frequency in communication, regardless of mode, the dispersed virtual team members feel that the team is able to work together in a cohesive manner to achieve collective success and maintain a consistent and unified understanding of project objectives and risks to the project's success.

The responses of 47.62% (10 out of the 21) of the participants indicated that the most effective mode of communication for those teams was through the use of regular remote meetings. Regular meetings were identified as those that *met* either virtually or face-to-face by communicating daily or at least once per week. The replies of the other 11 respondents indicated that no one mode, but a combination of communication modes was effective.

2. Resilient and proactive project team leader necessary for collective efforts to success.

Regular and positive communication and hands-on leadership by project team management throughout the life of the project was a key theme of respondents when they were asked during the online questionnaire about dispersed virtual team member understanding of objectives and project risk. On the subject of the achievability of project objectives on a distributed VPMT, participants inordinately proclaimed that frequent status reports with project leadership was necessary to reach project success collectively. Preemptive communication by team leadership is key to how virtual

team members perceive effective project management approaches that contribute to the collective success of the project, such as through project risk management practices.

Further supporting this were the responses of the team leaders of dispersed virtual teams in regard to emphasizing the need for cohesion in distributed teams. Five out of five respondents commented that they are constantly and continuously managing through documentation and electronically, if unable to have regular face-to-face meetings, their virtual projects due to the fact that members are not co-located.

How does project team management ensure commonality in perspectives and maximize project management effectiveness in virtual project teams where various perceptions of effectiveness and success exist?

1. A well-defined deliverable schedule and scope of work is key to reaching commonality in perspectives.
Twenty out of twenty-one respondents stated, or alluded to the fact, that their success as a dispersed virtual team was due mainly to the documentation of customer requirements at all phases of the project. This documentation took the form of project planning documents, formal reports, and schedules posted in a special server or shared electronic software. These responses revealed that commonality in the perceptions of dispersed virtual team members are achieved through the formation and continuous attention of proper scope and schedule documentation.

Six Project Work Planning (PWP) documents of distributed VPMTs were reviewed. These six projects have been deemed successful by managers of programs that actively implement project management tools and techniques. Therefore, they were selected and reviewed by the researcher for evidence of communicating clear goals and a distinct, agreed upon scope of work. All of the reviewed PWPs did indeed contain clearly defined objectives and scope of work. Additional findings in the literature also support this theme.

2. Open and frequent communication is necessary for achieving commonality in perspectives.
While 52.38% of the participants in this study stated that a well-defined scope of work and deliverable schedule were essential for achieving commonality in perspectives, the other half of the participants, 42.62%, affirmed that open and frequent communication is key for achieving a shared vision of objectives.

Five out of five team leaders stated that they initially created project-planning documents that defined schedule and scope of work. They all also declared that they referenced these documents often and communicated frequently with their dispersed teams through e-mails and through regular meetings to check status. In addition, the project plan often required re-planning as customer needs changed for example.

3. Outside influences that result in risk to achieving success.
An interesting theme that developed from this study was the harmful component to achieving success of the distributed virtual project team. When asked what were some of the project issues or risks to project management success that concerned the individuals on the virtual team, 52.35% (11) of the respondents agreed that outside influences is the greatest threat to achieving project goals.

These outside influences included home organization conflict and priorities, stakeholders/customers, cultural differences, and access to technology that would facilitate communication.

The responses of virtual project team leaders were also analyzed. Participants responded that if the home organization of the virtual team member is not projectized, the individual must always balance what is good for the project against their organization's policies and procedures unless the priorities of their organization may differ from that of the project. In addition, the changing direction of the customer from the original objective creates delay to the project schedule and introduces risk into the project. Four out of the five virtual project team leaders felt strongly that outside influences create a negative affect on the virtual team and its members. The fifth respondent felt that it created only somewhat of a negative influence. These responses indicate that outside influences to the dispersed virtual team can cause considerable damage to the virtual teams' collective effort in reaching success on the project.

How do individual project team members feel about freely sharing their perspectives about the project's condition when there is limited face-to-face interaction?

1. There must be good team composition on non co-located teams in order for individual members to feel comfortable revealing their point of view.

Good team composition was considered to be a necessity in order for distributed virtual project team members to communicate, particularly in written form, about the project's performance. Those who felt team members were well suited for their role on the team and understood and respected one another had fewer issues and concerns with openly exchanging ideas in the virtual environment. Those individual virtual project team members who did not initially feel free to openly voice their opinions did so after gauging the team's membership for qualifications and after transitioning out those team members who were not complementary to the needs of the project.

FUTURE RESEARCH DIRECTIONS

International and Organizational Opportunities

Disparate opportunities across international and organizational boundaries in the use of technology to enhance information sharing on dispersed teams have been studied in the literature as an antecedent to determining project success. However, the influence of the larger organization on the success of virtual teams has not been specifically addressed to learn how this may affect the cohesion of the virtual team. Views of virtual project team members versus those of their home organization and country may cause an adverse impact on the team's overall performance to collectively achieve original project objectives due to divergences surrounding project issues and priorities. Current research can be enhanced by focusing on organizational inferences that create an atmosphere for the virtual team members where decisions cannot be made due to the lack of empowerment stemming from differing policies by the home country and/or organization. Managers can learn how to work with the virtual project team members in understanding how to empower its members to achieve project success while still protecting organizational and governmental doctrines and policies.

Socialization

There are still several unanswered questions regarding how the virtual team members socialize in a dispersed environment and whether this socialization is an important factor in achieving project success. Do individuals socialize differently when they are on dispersed VPMTs as compared to when they are on face-to-face teams? Do these individuals perceive the need for socialization differently in a virtual environment vs. the traditional environment? If so, how is this difference overcome by team members and team leaders or project managers of the VPMT in order to achieve cohesion and collective project effectiveness? How does that ultimately impact the achievement of project success on global virtual teams? These are some of the questions surrounding the socialization and communication aspects of the dispersed VPMT that need to be examined. By further examining socialization of VPMTs and international perspectives of achieving collective project success from the individual's point of view the organizational and management communities gain a better understanding of the main issues.

CONCLUSION

This research study uncovered several key elements that led to a construct of individual perceptions of effective project management that contribute to a collective effort and project success of virtual teams. This understanding was gained through the perceptions and expressed feelings of actual dispersed virtual project team members and leaders. In particular, the following findings bore corroboration: the need for continuous communication amongst the team members when applying project management techniques in order to minimize project risk; a resilient, proactive project team leader for maintaining a cohesive, effective dispersed VPMT for sustaining original project objectives; a well-defined deliverable schedule and scope of work as well as open and repeated communication are responsible for achieving commonality amongst individual virtual project team members; outside influences and lack of team member qualification can hinder reaching commonality; and there must be good team composition first in order for individual team members to feel open about communicating in the virtual environment.

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INMM 56th Annual Meeting

July 15, 2015

DEVELOPING TEAM COHESIVENESS IN A VIRTUAL ENVIRONMENT

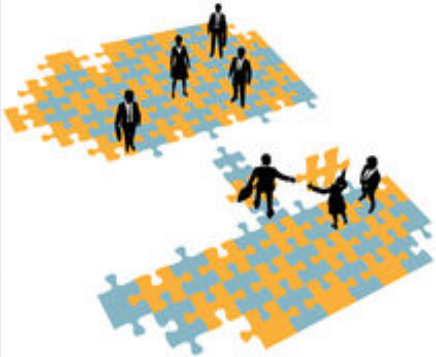
BROOKHAVEN NATIONAL LABORATORY

WHY IS PROJECT MANAGEMENT IMPORTANT?

- Formalized tools and techniques - meet project objectives
- Success of meeting original goals decreases.
- Understand reasons behind failure of projects

What is a Virtual Team?

- Individuals with specialized skills,
- Meet face-to-face rarely,
- Accomplish interdependent tasks,
- Communicate through technology, and
- Brought together as needed to collaborate on projects.



PROJECT MANAGEMENT IN THE INTERNET CONNECTED WORLD

- Project Managers of Virtual Teams
  - High visibility and complexity of today's projects
  - Selection of members of virtual teams crucial
  - Social development important to achieving collective objectives and effectiveness

UNIQUE ISSUES THAT CONFRONT DISPERSED TEAMS

- Divergent performance standard expectations run the risk of not meeting project objectives.
- Project Team Leaders challenged with aligning individual perceptions with project goals in the virtual environment.
- *Cannot effectively reach project objectives without having insights into indicators that team is working effectively to attain project objectives.*

WHY IS THIS STUDY IMPORTANT FOR NUCLEAR MATERIALS MANAGEMENT?

- NMM engages the international community improving NMM capabilities through specialized technical skills of those subject matter experts (SME) in the community.

- SMEs are geographically dispersed but must work effectively in teams to provide measurable improvement in operations that are key to improving NMM's mission.

- SMEs must proactively work toward identification of project requirements while balancing the needs of their virtual project teams by planning and maintaining communications & collaborations.

RESEARCH OBJECTIVES

- Broaden the general project management knowledge and best practices base specifically about virtual dispersed project teams
- Contribute to the project management empirical body of knowledge through social-psychological lens
- Improve understanding of individual perspectives of effective team performance
- Identify common elements that may influence project success

RESEARCH QUESTIONS

- ResQ 1: How do virtual team members perceive effective project management approaches that contribute to the collective success of the project, such as through project planning and project risk and change management practices?

- ResQ 2: How does project team management ensure commonality in perspectives and maximize project management effectiveness in virtual project teams where various perceptions of effectiveness and success exist?

- ResQ 3: How do individual project team members feel about freely sharing their perspectives about the project's condition through virtual or face-to-face interaction?

METHOLOGICAL APPROACH SUMMARY

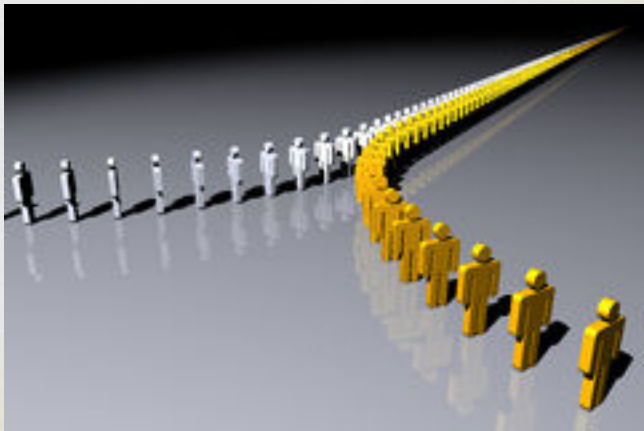
Data Collection Method	Type of Data	Research Question
Questionnaire	Visual data in electronic form	Examination of virtual team members' feelings about key elements of project success.
Interview	Verbal data transcribed	Provide more personal form of response to queries on team performance with virtual team leaders.
Document Review	Visual data in typed form	Analysis of completed and closed-out projects to provide key data on elements of actual effective virtual project team performance.

Stages & Sources of Study Summary

On-Line Questionnaire	Semi-Structured Interview	Document Review
21 Participants Over Three Months	Five Participants Over Two Months	Six Formal Project Documents
		Four Scholarly Articles
Over 18 years old	Over 18 years old	
Experienced Dispersed Virtual Project Management Team *Member*	Experienced Dispersed Virtual Project Management Team *Leader or Manager*	

Summary of Findings: RQ1

- Role of Communication in Virtual Teams:
  - Continuous communication centered on project management needs will lead to a more collective effort thus minimizing project risk. For example, communicating an understanding of project objectives around scope, time, and budget requirements.
    - E-mail / Electronic Meetings
    - SharePoint for document sharing
    - Face-to-Face Meetings



Summary of Findings: RQ2 & RQ3

- Commonality in perspectives and maximization of project management effectiveness
  - Project success on dispersed virtual project management teams can be achieved if:
    - there is proactive leadership
    - through well-defined objectives and clear-cut scope of work.
- Sharing perspectives in the virtual team:
  - Freely sharing thoughts is possible if there is perceived good team selection and qualifications as defined by project managers.

APPLICATION TO WORK FORCE DEVELOPMENT

- Work Relationships – Foundation of organizational processes; Mentoring, Learning, Career Transitions

- Changing Nature of Work – How work is accomplished (Wide-spread Technology)

- Changing Composition of the Workforce –

  Increasingly Diverse

Conclusion

The findings for this research are expected to grow in importance given the growing number of dispersed project teams along with the ever-increasing competition between companies, organizations, and groups.

Highlights & Side Notes

- Organizational and International Influences Impact Cohesion of the Virtual Team:
  - Risk to Achieving Success – NMM International and Organizational Priorities/Doctrines
  - Risk to Achieving Success - Disparate Technological International and Organizational opportunities exist
  - One overarching theme connected central themes: *Perceived Effectiveness of Communication*

Questions?

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