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LOW PERFORMING PARTIALLY DISTRIBUTED TEAMS

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Abstract

Through the utilization of information technology, teams are no longer restricted by geographical boundaries. Rather, organizations can use partially distributed teams to maximize their business objectives. Though partially distributed teams offer an abundance of benefits, such as a wider breadth of specialized knowledge, members are confronted with unfamiliar challenges that can drastically alter team dynamics. This thesis explores the research question, “What are the issues associated with low performing partially distributed teams?” In this study, nearly 800 students from fifteen universities participated in a five-week long project that entailed gathering user and design requirements for a bioterrorism management and planning system. Teams were partially distributed, whereby each team was composed of two sub-teams separated geographically. Students completed weekly reflections that were analyzed to identify low performing teams and commonly expressed issues. Frequently articulated issues include problems with communication, work distribution, awareness, language barriers, time zones and a lack of interest.

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Chapter 1: Introduction

With the omnipresence of information technology and ease of transferring information globally, traditional teams have been redefined, both in the workplace and classroom. No longer restricted by geographical boundaries, team members can now be dispersed throughout the country or across several countries to form a virtual team. More commonly, teams are partially distributed with members of a collocated sub-team working virtually with members of one or more sub-teams.

Utilizing partially distributed teams can prove exceptionally beneficial because they allow for a broader pool of resources. However, partially distributed teams are affected by a variety of new challenges that alter team dynamics. Because members are often unfamiliar with working in a partially distributed team, team performance can be negatively affected. If members were more aware of common problems in partially distributed teams before the commencement of a project, it may be possible to ameliorate some of the negative consequences on performance. This paper addresses the following research question: What are the issues associated with low performing partially distributed teams?

This paper begins by reviewing obstacles common to partially distributed teams. Specifically, these obstacles include different types of conflict, levels of familiarity and methods of collaboration. In globally partially distributed teams, cultural and temporal differences are additional obstacles to overcome. This is followed by a review of different aspects that contribute to effective partially distributed team performance. These aspects include training, building trust, establishing methods of coordination and communication patterns.

The research methodology used in this study includes a five-week project completed by nearly 800 students in 80 partially distributed teams. The project entailed designing a

bioterrorism management and planning system by determining stakeholder requirements and necessary user interfaces. In addition to developing this system, teams completed a variety of assignments designed to enhance team dynamics. At the end of each week, students completed an individual survey that included both quantitative and qualitative responses. The responses to these surveys were analyzed to identify low performing teams and common issues between the low performing teams.

After presenting the results, this paper discusses possible recommendations for future projects and concludes with potential future research.

Chapter 2: Review of Literature

2.1 Partially Distributed Teams

A team is defined as “a collection of individuals who are interdependent on their tasks, who share responsibility for outcomes, who see themselves and who are seen by others as an intact social entity embedded in one or more larger social systems, and who manage their relationship across organizational boundaries” (Cohen and Bailey, 1997, p.241). With the prominence of information technology and globalization, the composition of traditional teams has begun to evolve to include more geographically and culturally diverse members. A virtual team can be defined as a group of members that are geographically, organizationally or time dispersed and that collaborate on a common goal through the use of information technology (Alavi and Yoo 1997). An expansion of a virtual team is the global virtual team, which consists of members located in different countries (Jarvenpaa and Leidner 1999). The addition of cultural diversity to the team setting adds a new level of complexity that is an unfamiliar challenge for members.

In this study, teams were partially distributed. A partially distributed, or partially virtual, team consists of two or more geographically separated sub-teams, where each sub-team consists of collocated sub-team members (Ocker et al. 2009). Thus, a PDT has a hybrid team configuration, such that members *within* a given sub-team share the same context and can meet face-to-face; however, interaction *between* sub-teams occurs across distance such that members from sub-team X cannot meet face-to-face with members of sub-team Y.

2.2 Obstacles in Partially Distributed Teams

Partially distributed teams (PDTs) are exposed to a variety of new obstacles not experienced by traditional teams. For example, Nohria and Eccles (2002) described face-to-face

meetings and casual encounters as imperative for building trust within a team. While local sub-teams in a PDT are still able to meet face-to-face, the ability for all sub-teams to do so is minimal or impossible, thus making it harder for PDT sub-teams to establish a certain level of trust. In addition to difficulty building trust, PDTs are more prone to higher levels of social loafing, a lack of individual commitment and role ambiguity (O'Hara-Devereaux and Johansen 1994). Broader categories of obstacles that PDTs encounter include: conflict, familiarity, collaboration and cultural differences.

Conflict

Like traditional teams, PDTs are susceptible to conflict, both task and relational. Task conflict is generally considered beneficial because it causes teams to consider multiple points of views and a variety of solutions to a single problem (Jehn et al. 1997). In doing so, teams are less likely to engage in groupthink (Janis 1982). This allows teams to arrive at more optimal decisions because task conflict incorporates diverse viewpoints and knowledge, which forces teams to explore different alternatives. However, an excessive amount of task conflict can be detrimental to a team's performance (Amason 1996). Because PDTs are more likely to consist of an exceptionally varied collection of members, task conflict is likely to occur more frequently.

In contrast to task conflict, relational conflict is always considered to be an impairment of team performance. Relational conflict results from incompatibilities between team members. This friction between interpersonal relations can hinder individual team member satisfaction and have negative effects upon the overall quality of the team's project (Jehn and Mannix 2001).

Familiarity

Unlike members of traditional teams, PDT members of different sub-teams lack a level of familiarity with one another. When team members are located in the same geographical area

there is a sense of similar values and expectations (Latane et al. 1995). This sharing of common ground can help to alleviate a team's concerns regarding its capabilities (Latane et al. 1995). With sub-teams of PDTs geographically dispersed, this common ground is less likely to be achieved. Rather, PDT members will have trouble developing a mutual understanding (Clark and Brennan 1991).

This lack of familiarity can be attributed, in part, to the inability for team members to learn about one another through casual encounters and observations (Armstrong and Cole 2002). For example, a casual encounter can include a brief conversation during a coffee break. These unplanned encounters can help members learn about one another beyond a business relationship (Kraut et al. 2002). Consequently, when team members know more about each other, they are less likely to engage in relational conflict (Kraut et al. 2002).

Another key factor that contributes to a lack of familiarity in a PDT is the inability to meet face-to-face, which can inhibit member relationship building (Grinter et al. 1999). Instead, PDTs rely on electronic forms of communication or virtual meetings. These meetings can make it difficult to interpret a member's comment without a shared context (Hinds and Bailey 2003). With a lack of signals, including non-verbal signals, team members may struggle to establish an essential level of trust (Ancona and Chong 1996).

Collaboration

An essential component of teamwork, collaboration can be an exceptional source of conflict, particularly in PDTs. According to Purdy et al. (2000), teams working face-to-face collaborate more than those working electronically. In all teams, there is a threat of social loafing, or that members will exert less effort in the team than they would working on their own (Latane, Williams and Harkins 1979). Though social loafing can be minimized by establishing

methods of identifying participant contributions (Szymanski and Harkins 1987), this can prove especially challenging in a virtual setting.

Collaboration relies heavily upon effective communication. Members of PDTs tend to communicate less effectively than members of traditional teams (McDonough et al. 2001). Consequently, members exchange information less frequently (McDonough et al. 2001). This minimal communication can lead to confusion about project status.

When PDTs do communicate by way of a group meeting, this interaction is often significantly longer than that of traditional teams. According to Boria (1997), these exchanges are typically confusing and leave members with a poor understanding of what is to be done when compared to exchanges in traditional teams. When communicating outside of group meetings, PDTs rely on electronic mediums, such as email. This can lead to different members having different levels of information at different times, which causes confusion and frustration (Crampton 2001).

Cultural Differences

In addition to familiarity, conflict and collaboration obstacles experienced by PDTs, global PDTs must also learn to work with the presence of cultural differences. According to Armstrong and Cole (2002), variances among different sub-team cultures can cause a substantial amount of misunderstanding and, subsequently, conflict. Such cultural differences can include the importance placed upon team member relationships and opinions regarding the fluidity of deadlines (Johansson et al. 1999). Cultural differences can affect a PDT's ability to coordinate deliverables and deadlines (Johansson et al. 1999). This difficulty in coordinating team activities can stem from differing cultural perceptions regarding appropriate member communication (van Ryssen and Godar 2000). However, the harmful impacts of cultural differences can be controlled

if all team members are aware and accepting of the differences throughout the project (Robey et al. 2000).

2.3 Effective Performance in Partially Distributed Teams

Training

The training of team members can help improve the overall performance of a team (Kaiser et al. 2000). This training should involve building a team mental model, which Klimoski and Mohammed (1994) define as “the shared, organized understanding and mental representation of knowledge or beliefs relevant to key elements of the team’s task environment”. By building a shared mental model, all members of a PDT will have the same information and knowledge regarding a particular project. According to Suchan and Hayzak (2001), it is critical to build some kind of a shared mental model when teams cannot meet face-to-face. In doing so, team effectiveness is likely to improve because all members will better comprehend the assignment and environment (Cannon-Bowers et al. 1993). Without a shared mental model, teams are likely to encounter problems with communication and with keeping all team members informed throughout a project (Crampton 2001).

For global PDTs, the language barrier can prove difficult to overcome. This lack of a shared language between sub-teams can hinder team communication (Crampton 2001). Proper training can help teams utilize methods for crossing the language barrier. For example, training may include the introduction of a translation tool that can be used during meetings.

In addition to building a shared mental model and language, training can help to improve other vital aspects of team performance. Warkentin and Beranek (1999) found that training a team before its commencement can help build team cohesiveness, trust, satisfaction and collaboration skills. Training can also aid in overall team efficacy and potency (Tan et al. 2000).

Trust

According to Jarvenpaa and Leidner (1999), trust in PDTs is easily and frequently broken. Without trust, team members are unsure of one another's motivations and dedication to the team. Consequently, members are likely to make negative assumptions that do not account for situational factors (Jarvenpaa and Leidner 1999). Rather, team members are more likely to attribute problems to disparities in interpersonal relations. Though difficult, PDTs are able to build high levels of trust. This is accomplished through the adoption of the swift trust model (Jarvenpaa and Leidner 1999). Under this model teams act as though trust exists, rather than working to build trust between members. In doing so, teams can focus more readily on completing a task and less on relational differences (Meyerson et al. 1996).

When teams do establish a high level of trust, social communication levels are likely to increase (Jarvenpaa and Leidner 1999). As these levels increase, other aspects of team performance, such as leadership and group potency, are positively affected. Similarly, high levels of trust help minimize the tension between sub-teams. This tension can be attributed to the assumption between sub-teams that information is not being properly shared and that some members are being excluded from important exchanges (Crampton 2001).

Coordination

PDTs are confronted with more coordination difficulties than traditional teams, such as time zones and cultural differences (Sarker and Sahay 2002). Coordination troubles can make it difficult for teams to complete assignments and meet deadlines. Combating some of these difficulties, like cultural differences, can help improve the coordination of all team members (Robey et al. 2000). However, establishing techniques for coordination can be just as effective. Coupled with communication training, established processes for coordinating activities can

improve coordination and collaboration (Tan et al. 2000). With effective coordination, PDT performance is positively affected (Johansson et al. 1999).

Communication

Integral to trust and coordination, communication is essential for effective PDT performance. Because PDTs lack physical proximity and members are unable to observe one another, communication helps improve team awareness. For example, van Ryssen and Godar (2000) found that members who left for periods of time and did not alert the entire team of their absence to be a significant hindrance to team performance. Had the team members communicated their plans to the entire team before leaving, less confusion and relational conflict would have resulted. According to Jarvenpaa and Leidner (1999), establishing patterns of communication within a team can improve the effectiveness of the communication. In return, this can lead to higher levels of trust and an improved team performance (Jarvenpaa and Leidner 1999). When communication patterns are not established within a team, a team's performance is likely to suffer considerably (Johansson et al. 1999). Rather, teams that are able to implement a predictable and flexible communication pattern are significantly more effective (Maznevski and Chudoba 2001).

Chapter 3: Methodology

3.1 Project Participants

The project involved fifteen participating universities from a variety of North American, Asian and European countries. Seven of these universities were from different areas of the United States. The remaining eight universities were from Lithuania, Spain, Ireland, Germany, Switzerland, Singapore and Mexico.

Local sub-teams were formed within each university. A sub-team consisted of four to five students. Local sub-teams were then paired with distant sub-teams from different universities to form a team of eight to ten students. With a total of 796 students participating, 160 sub-teams, or eighty teams, were formed at the start of the project, as shown in Table 1.

Country	University	Number of Sub-teams
Germany	University of Kiel	1
Ireland	National University of Ireland, Galway	7
Lithuania	Kaunas University of Technology	20
Mexico	Tecnológico de Monterrey	12
Singapore	National University of Singapore	5
Spain	Universidad Carlos III de Madrid	11
Spain	BES La Salle	3
Switzerland	University of Zurich	6
United States	Georgia College and State University	5
United States	Jacksonville State University	1
United States	Pennsylvania State University	53
United States	Saint Louis University	4
United States	University of Washington	21
United States	University of Wisconsin, River Falls	6
United States	University of Wisconsin, Whitewater	5

Table 1: Number of Sub-teams per University

3.2 Project Structure

The project spanned a total of five consecutive weeks with deliverables due at the end of each week. Students were creating a Bioterrorism Management and Planning System (BTMAPS) for the Argentina Ministry of Defense. The mock information system was to allow different analysts to track infectious diseases to better respond to outbreaks.

During the first week of the project, students were assigned three tasks: a self-introduction post to the team forum, team scenarios, and a team contract. The self-introduction post was a brief personal paragraph to allow teammates, both local and distant, to get to know one another. Each sub-team was to complete two scenarios that detailed potential problems that partially distributed teams encounter and suggest solutions to prevent or alleviate these issues. Both sub-teams were then asked to separately construct a team contract from a provided template. The sub-teams then collaborated to combine these into one final team contract.

In the second week of the project, students conducted one-on-one interviews with a member of the distant sub-team. Every member of the team was then responsible to compose a brief write-up of the interviewee's answers that would be posted on the team's webpage. Meanwhile, each sub-team completed the Stakeholder Analysis Part I assignment, which listed and explained at least ten BTMAPS stakeholders. Sub-teams then collaborated to form a single list of stakeholders.

In the third week of the project, each sub-team evaluated their partner sub-team's performance, in both positive and negative aspects, in the 3 Bin Assessment. After both sub-teams shared their 3 Bin Assessment of one another, the team worked together to create an Action Plan to address the negative areas of team performance. Teams also worked together to complete the Stakeholder Analysis Part II. In this assignment, teams created a detailed list of output screens that would be used by stakeholders. From this list, teams then created graphical user interface mock-ups of the output screens.

During the fourth week of the project, teams were assigned Stakeholder Analysis Part III. Drawing on the previous week, teams created a list and graphical user interface design of input screens that stakeholders would use to enter necessary information into BTMAPS.

In the final week of the project, teams revised and compiled Stakeholder Analyses I through III and completed the final proposal.

	Individual Assignment	Sub-team Assignment	Team Assignment
Week 1	Self-introduction	Team Scenarios, Team Contract	Team Contract
Week 2	Interviews	Stakeholder Analysis Part I	Stakeholder Analysis Part I
Week 3		3 Bin Assessment	Action Plan, Stakeholder Analysis Part II
Week 4			Stakeholder Analysis Part III
Week 5			Final Proposal

Table 2: Summary of Project Assignments

3.3 Data Collection

Feedback was gathered weekly from the students in the form online. The first portion of the survey used a seven-point scale, with one as low and seven as high, that allowed students to individually evaluate the week’s activities and to rate different areas of the project in regards to their local sub-team, distant sub-team, and team as a whole. Questions addressed different aspects of team dynamics, such as awareness, trust, communication and leadership. Personal reflection was the second portion of the survey; it is free-form and allowed students to openly reflect on the project and team status or to address any on-going issues or team problems.

A post-survey was also administered after the completion of the project to gather students’ overall project and team experiences. The post-survey included the same format as the weekly surveys but involved more extensive questioning.

3.4 Identifying Low Performing Teams

A section of the post survey asked students to rate the performance of their partially distributed team compared to other teams that they have worked with in regards to the following: efficiency, quality, creativity, adherence to schedule, coordination between members, ability to resolve conflict, communication between members, leadership, effectiveness of meetings (online

or face to face), and effective use of time. Each different attribute of team performance was evaluated and rated separately on a seven-point scale.

Using a scale adapted from Mortensen and Hinds (2001, the result for “team performance” was then computed. Teams that had a mean team performance score of less than the scale midpoint of four were considered to be low performing. Of the eighty teams that participated in the project, nine fell into the low performing category, as shown in Table 3: Low Performing Team Survey Responses.

Team	Sub-team	Number of Student Survey Responses				
		Week 1	Week 2	Week 3	Week 4	Week 5
14	UWash	5	5	5	5	5
	Kaunas	4	2	3	3	3
18	UWW	4	4	4	4	4
	Kaunas	1	4	1	3	3
19	PSU	2	4	0	4	2
	Kaunas	2	1	1	2	1
27	PSU	5	3	5	3	4
	La Salle	3	0	4	1	2
31	SLU	1	4	3	4	4
	ITESM	5	4	3	4	4
35	UWash	4	3	3	3	4
	ITESM	2	2	5	3	3
39	PSU	4	4	2	1	2
	ITESM	1	0	0	0	0
41	PSU	2	3	5	4	5
	ITESM	2	1	1	1	1
59	UWRF	5	5	5	4	4
	UC3M	4	4	4	4	4

Table 3: Low Performing Team Survey Responses

3.5 Selection of Low Performing Teams

After identifying the low performing teams, a survey of the team member responses in the weekly personal reflections was conducted. In order to get a more complete sense of an entire team’s experience, only teams that contained a sufficient amount of responses from both sub-teams were chosen for further analysis. Of the nine low performing teams, five had multiple or

thorough entries from both sub-team members for every week of the project: teams 14, 18, 31, 35, and 59. The remaining four teams only had multiple entries from one sub-team and were excluded from the analysis.

3.6 Analysis

After the selection of the five low performing teams, an analysis of each team's qualitative survey responses was conducted. First, each team's responses were read from week one through week five. After reading through each team's responses separately, another read through of each team was conducted to gain a sense of frequently expressed issues. A list of common concerns was then created for each team. These lists were cross-referenced to identify problems that were expressed by two or more of the five teams. The six common issues identified were communication, work distribution, language barriers, awareness, time differences and a lack of interest.

Chapter 4: Results

Members of the five low performing teams expressed similar concerns throughout their weekly survey responses. The most predominant issues that affected all teams were communication problems and an uneven work distribution. Other common issues expressed by teams included time differences, lack of interest and language barriers. The frequency of each these barriers is summarized in Table 4: Type and Frequency of Problems, while each barrier is further discussed below.

	Number of Student Survey Responses						
	Week 1	Week 2	Week 3	Week 4	Week 5	Total	Percentage
Communication	25	11	5	9	15	65	45.13
Work Distribution	2	5	10	8	8	33	22.92
Language Barrier	3	6	0	2	4	15	10.42
Awareness	3	3	1	3	2	12	8.33
Time Difference	4	4	0	3	0	11	7.64
Lack of Interest	0	3	2	1	2	8	5.56
						144	100

Table 4: Type and Frequency of Problems Reported per Week

4.1 Communication

Discussed sixty-five times across five weeks, the most dominant issue experienced by all low performing teams was an overall lack of communication. This lack of communication sparked other issues that hindered team performance, such as the awareness of what other team members were working on and an uneven distribution of group work. The initial contact between sub-teams proved to be especially difficult.

“It was very hard to get initial contact with our distant subteam. Our subteam had met and worked on our contract and were still waiting to hear from our distant subteam.” (Team 14, UW, Week 1)

As the project progressed, teams that had not established a channel of communication experienced on-going difficulty coordinating deadlines and group work. Consequently, sub-teams that did not establish or utilize an effective means of communication also experienced problems in team awareness and work distribution.

“The subteam in Mexico is very unresponsive to our e-mails, often not honoring what they said in their team contract as appropriate response times. We feel as though we are doing the burden of the work, both in initiating communication and finishing assignments.” (Team 35, UW, Week 2)

“The local team dynamics are good but we are having some problem with our distant team. They do not really do their work and answer e-mail. We are having a hard time working with them” (Team 31, SLU, Week 4)

In one instance communication problems between sub-teams were so troublesome that they ultimately led to the disbanding of Team 18. One member of the Kaunas University of Technology reflected in the post survey,

“Our distant subteam refused to work with us. We had some problems and we take part of responsibility. But contacting abroad team was not easy task for us too. I don’t know how they couldn’t reach us if we didn’t get any emails, facebook messages, skype, etc. And we got replies not always after 8-12 hours (as agreed in contract), sometimes we had to wait for days. Anyway, maybe it was easier to pretend that it is impossible to work with us...” (Week 5)

This reflection was sharply contrasted by reflections from the paired University of Wisconsin, Whitewater sub-team.

“It has been extremely difficult communicating with our other sub-team. They never respond to e-mails, and reply to our e-mails 4 or 5 days later. They also don’t really help us with any of the assignments. They just wait for us to get them completed.” (Week 2)

“There was trouble with our distant subteam. They stopped communicating with us even when we sent them messages. We had let their professor know what was going on and in the end they were kicked off our team.” (Week 5)

Though the reflections differed in determining which sub-team was responsible for the communication breakdown, it is evident that both sub-teams attributed a lack of communication as the primary factor responsible for low team performance and team conflict.

4.2 Work Distribution

Discussed a total of thirty-three times across five weeks by all five low performing teams and the second most prevalent team concern, accounting for 22.92% of problems, distribution of work was an on-going issue between sub-teams or sub-team members. As the project progressed, the uneven distribution of work caused a separation between sub-teams or sub-team members and caused team members to harbor feelings of resentment towards one another and the project as a whole. Problems with not properly distributing work amongst sub-teams or sub-team members stemmed from various team issues, such as a lack of communication, interest or awareness. Work distribution problems between sub-teams as described by one member,

“Our interactions with the other subteam have been, and still continue to be, limited. As I stated last week, this PDT project is worth only a small part of their grade in their class, so they are less inclined to be as proactive as we have been. The subteam I am involved in is doing a good deal of work to stay on top of things.” (Team 35, UW, Week 3)

Another member stated,

“The other members we have not heard from this week and we are not sure what is happening on their side. At this point I think we have resigned to the fact that the UW team will be doing most the work for this project. We are not sure how the evaluations are going to go now. At least we know that deliverables are getting done...” (Team 14, UW, Week 4)

Members of Team 59 experienced an extremely uneven distribution of work within a sub-team when it was expressed by members of the University of Wisconsin, River Falls sub-team and Universidad Carlos III de Madrid sub-team that three members of the UWRF sub-team refused to contribute.

“Another week with no input from my own subteam. They are lazy, lazy, lazy. The distributed sub-team in Madrid and I worked steadily this week waiting for input from them and got nothing but the joy of doing everything ourselves... How are they not ashamed to rely others in their own group as well as people 7 time zones away to do EVERYTHING for them? I can say this much though, I sure as Hell better not see them get the same grade as the rest of us” (Week 3, UWRF)

“As always, three members haven’t done a thing and the two members, who usually work well, also didn’t do too much. Really, this experience has been frustrating for the Spanish Subteam in general, because our efforts has been enormous, including we have to work in a different language than our mother tongue. This project has disappointed me in multiple ways.” (Week 5, UC3M)

The remaining four low performing teams experienced similar problems with sub-teams not contributing to deliverables. The causes for minimal or nonexistent project contribution

varied between teams, with some feeling frustration caused by language barriers and others discouraged by a lack of effort from their distant sub-team.

Often, sub-teams disagreed about the distribution of work, with both sub-teams feeling as though they were contributing the majority of the work. For example, members of the University of Wisconsin, Whitewater from Team 18 reflected,

“It’s hard to communicate and work with the Lithuanian team because they haven’t really been participating and doing all their things.” (Week 2)

“This week our distant team did not communicate as well as we would have liked. We had asked them to respond by a certain time and that never happened. Our subteam has been doing a lot of the work.” (Week 3)

These statements are contrasted by a reflection made by a member of the paired Kaunas sub-team,

“The communication with our other subteam has come to complete halt. They have not been doing any of the work which leaves us doing everything.” (Week 4)

Despite the cause, an uneven distribution in work only further injured team performance and morale.

4.3 Language Barrier

Language barriers, mentioned fifteen times across five weeks and accounting for 10.42% of team problems, proved to be extremely frustrating for teams and discouraged some sub-teams from participating. All five of the low performing teams contained one sub-team that did not speak English as their first language. As members of Team 14 and Team 31 reflected,

“We can already find some problem firstly with the language barrier!! Frustration is that we already have difficulty to communicate with the subteam” (Team 14, Kaunas, Week 1)

“It’s very difficult to break the language barrier and complicated to work with people around the world” (Team 31, ITESM, Week 4)

“I think that the communication in my local is a little difficult because we have English is not our native language.” (Team 14, Kaunas, Week 1)

This presented challenges in both interpreting deliverable guidelines and completing assignments that were up to team standards. A member of the Saint Louis University sub-team from Team 31 reflected in the post survey,

“We have to literally translate everything for our other team, including the instructions for the week. I do not understand why they can’t just put it into a translator like the one provided on the website. It is really frustrating. They do not do what they say they will and we end up doing all the work.” (Week 5)

The inability of the ITESM sub-team to complete its portion of group work because of its dependence upon the SLU sub-team for language guidance and direction placed a strain on the overall team dynamic and hindered team performance. A similar concern was expressed by a member of the University of Washington sub-team of Team 14.

“This week we did interviews which was a challenge with the language barriers between the teams. Our distant team does not speak English very well, which leaves a lot of the editing up to us when doing collaboration work. In addition to having issues deciphering meaning in my interview, I had a lot of editing to do. While we are getting all the work done, I feel like our team work is very lopsided” (Week 2)

As seen with Teams 14 and 31, language barriers not only made it difficult for team members to communicate with one another but to also effectively complete weekly deliverables, both of which are essential elements of adequate team performance.

4.4 Awareness

Mentioned twelve times by project participants, a lack of awareness accounted for 8.33% of team problems. With minimal communication, teams were often unaware of what each sub-team was working on or outside factors that were affecting a sub-team's performance.

"Communication poor. Awareness of what other team is working on was minimal."

(Team 31, SLU, Week 5)

"This week, we were very busy studying for our midterms and so we didn't communicate much with our other subteam, who in return didn't contact us." (Team 35, UW, Week 3)

For example, the University of Washington sub-team of Team 14 was unaware of its paired sub-team's university culture as Erasmus students and their inclination towards traveling.

"One of the Kaunas team members went missing in action. It wasn't until Friday that we (Seattle) found out that the Kaunas team has only 4 team members instead of 5...The Kaunas team didn't inform us until Friday afternoon that they were down one person" (UW, Week 2)

"...There isn't a big problem it's just hard to find a time to be together. We are Erasmus and we travel a lot!! This time the leader of us subteam is in Stockholm for example." (Kaunas, Week 2)

In addition to university cultural differences, another outside factor that often affected a sub-team's performance was prior commitments, usually to other classes. For example, a member of the ITESM sub-team of Team 35 reflected,

"We didn't talk too much because we were in exams week." (Week 4)

This reflection coincides with a member of the paired sub-team's reflection,

"Interaction between my subteam was non-existent this week, as of the time of this writing which is at 16:42 PST. This is still typical of our co-subteam." (Week 4)

While both students agreed that there was little communication, the student from the UW sub-team was not aware that the distant sub-team was busy with exams.

In addition to a lack of awareness of what the distant sub-team was doing or experiencing, some sub-teams were often unaware of what exactly the project required. As a member of Team 18 and member of Team 31, respectively, stated,

“...but sometime, I don't have a very clear idea of what to do in the activities and which activities are for my local or distant team, because the distant ones never get in touch or communicate with us to review the activities” (Team 31, ITESM, Week 2)

“I think it's interesting project but it is very difficult to communicate with other team, from other country. And it's not really clear what we have to do, and why it's important...” (Team 18, Kaunas, Week 2)

This lack of unawareness regarding project requirements resulted in the dependency of one sub-team on the other to constantly explain assignments and to shoulder the burden of work (See 4.2 Work Distribution).

4.5 Time Difference

The time difference, mentioned seven times or 7.64%, between sub-teams made it difficult to coordinate meeting times and deadlines. As a member of Team 18 noted,

“Communication between subteam members are piece of cake, but different story. Biggest challenge is time zones and getting each member in contact.” (Kaunas, Week 2)

An obstacle that most students are not familiar working with, time differences proved to be exceptionally challenging for almost all of the low performing teams. A member of Team 14 expressed concern in the first week's reflection,

“...because of the time difference, it is hard to find times to meet with each team. And since the meeting times are limited, it was hard to get all team members to be able to make it to the whole team’s meeting. That has affected the whole team feel because not everyone was able to meet. I’m worried that the time difference will make our job very hard and that we might miss a deadline because we can’t just call them up and talk, we have to email and then wait for a response.” (UW, Week 1)

With a limited window of communication, teams, like Team 14, struggled to find a common weekly meeting time in which every member of each sub-team could be present. When teams were unable to establish a recurring meeting time, they were more dependent upon other forms of communication, such as e-mail or the Moodle discussion board. Relying on these forms of communication with no strict adherence to appropriate response times further exacerbated the time difference. As a member of Team 31 reflected,

“I feel it is difficult to communicate with the outside team, they didn’t answer the mails on time.” (ITESM, Week 2)

With slow response times to e-mails or discussion board postings, it took teams longer to complete weekly assignments and usually with less input from one sub-team.

“Since now, this experience is stressing me. Our distant subteam is almost disappeared. The communication is really poor. My local subteam work was done as soon as we could. But the distant subteam’s part is getting delay. We are near the deadlock and we still have to check it and agree about it! I’m not having a good time. My local subteam prefers to do the job as soon as possible, but today is Saturday and is not finished yet! I feel nothing is going well” (Team 59, UC3M, Week 1)

Affecting key components of team performance, time zone differences negatively impacted adherence to schedule, team coordination and team efficiency.

4.6 Lack of Interest

A lack of interest in the project, though only explicitly mentioned eight times or 5.56% of team problems, was a significant impediment to team performance. The project meant considerably more or less to certain individuals or sub-teams, for either personal interest or academic reasons. As a member of Team 14 stated,

“Frustration about some people not getting involved and completely not interested”

(Team 14, Kaunas, Week 2)

Consequently, some team members or sub-teams were more motivated to produce better quality project deliverables than others. A member from Team 35 reflected,

“... I still think that our foreign subteam is taking it too seriously, I’m not saying is a bad thing but for us is not that important, that’s why we are performing just enough to get through this commitment.” (ITESM, Week 2)

With differing levels of interest and motivation, a clear divide was created between sub-teams. A member from the paired sub-team supported the above reflection while describing the consequences of the different levels of motivation on team unity and performance.

“There’s not much of a sense of us being a single team but our subteam is better as we are all interested in receiving a good grade. The subteam in Mexico is very unresponsive to our e-mails, often not honoring what they said in their team contract as appropriate response times. We feel as though we are doing the burden of the work, both in initiating communication and finishing assignments. Also, we feel that the other team is sometimes not taking the assignment seriously, as they said it is worth a small portion of their grade.” (UW, Week 2)

With an entire sub-team unmotivated to contribute quality deliverables or to exert effort towards group work, a team's project deliverables were directly affected. A lack of interest or motivation as detailed above was detrimental to the entire team's performance because it negatively affected all aspects of the team dynamic.

	Issue Component	Description
Communication	Method	Did not establish the main channel of communication (i.e. Skype, Moodle, email)
	Schedule Adherence	A maximum amount of response time to a message was either not established or not followed
Work Distribution	No Contribution	Some members would not contribute to team deliverables
	Guidance	A sub-team responsible for its distant sub-team, in both understanding the project and producing quality deliverables
Language Barrier	Translation	One sub-team explaining the project requirements to its distant sub-team
	Editing	One sub-team responsible for correcting content and grammatical errors
Awareness	Academic	Sub-teams unaware of each other's university schedules, such as exam weeks
	Personal	Sub-teams unaware of their activities outside of school, such as traveling
Time Difference	Coordination	Difficulty in finding a common meeting time or appropriate deadline
	Correspondence	Difficulty receiving feedback regarding deliverables or team issues
Lack of Interest	Weight Distribution	An uneven project weighting from university to university
	Personal	An individual's lack of motivation to participate in the project

Table 5: Summary of Issue Components

Chapter 5: Discussion

The two most frequently expressed concerns in the student weekly reflections, communication troubles and an uneven work distribution, were often the result of other minor team problems. While these two primary problems were identified by every low performing team in a different situation, they were caused by the same initial problems with time differences, awareness, language barriers and a general lack of interest or motivation. Consequently, the continued presence of these four minor problems only further exacerbated problems with communication and work distribution.

5.1 Communication

One of the core causes for a lack of communication from a sub-team or sub-team member was a lack of interest in the project. Because the project was unevenly weighted, some sub-teams had considerably less motivation to participate or to participate to the best of their abilities. Similarly, some team members were simply uninterested in the project and its outcome overall. As a result of these two different causes for a lack of interest or motivation, sub-teams or members of sub-teams did not want to exert the effort to communicate with the entire team. Consequently, a lack of interest from team members resulted in problems with communication, which escalated to be an overwhelming concern.

Problems with communication were also the result of a time difference between sub-teams. The time difference between sub-teams limited the window of communication, making it difficult to coordinate meetings and to gain instant feedback on a deliverable. In response to significant time differences, teams relied heavily on email communication. Whether sub-teams were not vigilante in checking their email or teams did not agree upon an appropriate response

time, the time difference between sub-teams only amplified communication flaws and caused communication to be a pressing issue experienced by all of the low performing teams.

With minimal communication, local and distant sub-teams were unaware of what one another were doing, both academically and personally. While initially a consequence of limited communication, a lack of awareness only worsened a team's problems with communication. For example, a sub-team was unaware that members of their distant sub-team were traveling, thus the reason for slow response times. This lack of awareness and limitation of communication caused sub-teams to misjudge one another as unreliable and further enhanced the separation between local and distant sub-teams.

5.2 Work Distribution

Lack of interest was also the main trigger for an uneven distribution of work between team members. As with the limited communication with other team members, a lack of interest in the project dissuaded some students from contributing to team deliverables. Because some students were uninterested in the project's outcome, they had no motivation to produce quality deliverables or to attempt deliverables in general. This forced the other team members to be responsible for more of the work distribution, which caused feelings of resentment and frustration. If students were more interested in the project and motivated to achieve an outcome, it is likely that they would put forth more effort to complete deliverables more fairly and with higher standards, hence lessening the uneven work distribution.

With all teams consisting of a sub-team that did not speak English as their first language, the language barrier made it difficult for some sub-teams to understand the assignment requirements or to produce their share of deliverables. To combat this challenge, some sub-teams relied on their distant sub-team to translate assignment requirements and to edit final

submissions. While this responsibility may seem small, the English speaking sub-teams reflected that it was an extra and unnecessary burden of work. Had all of the participating universities been fluent in the same language, this extra bit of work and dependence would not have been present.

As with communication problems, the time difference between teams made it difficult to coordinate group meetings and to receive feedback regarding team deliverables. As a result, one sub-team assumed responsibility for coordinating meetings and team deadlines. Similar to the work distribution consequences experienced as a result of language barriers, time differences between sub-teams created an extra role of leadership that proved to be frustrating for most sub-teams.

5.3 Differing Perceptions

An overall impression of the qualitative survey responses was the presence of differing perceptions of team performance. This differing in perceptions occurred between self-declared contributing or active sub-teams and non-contributing or inactive sub-teams. Members of the active sub-team consistently expressed feelings of frustration or displeasure with their distant sub-team. These reflections were then contrasted with reports from members of the inactive sub-team that the project was progressing well. Generally, these reports would consist of a brief “things are fine” statement. In week five’s reflections, members of active sub-teams would typically express disappointment in that week’s performance or the entire project while members of the inactive sub-teams expressed that “things are fine” or satisfaction with the project as a learning experience.

A difference in perceptions of team performance may be explained by a variety of possibilities. An inactive sub-team may be hesitant or unwilling to reflect upon its lack of

contribution to the team. However, this can only occur if the inactive sub-team is truly inactive. It may be that the “inactive” sub-team thought it was contributing an adequate amount and that the project was progressing positively. The sub-teams may have also had different expectations for the project. For example, a sub-team primarily interested in the actual experience of working in a PDT and meeting students from a different country, as opposed to its distant sub-team’s focus on just completing the project deliverables.

Chapter 6: Recommendations

Lack of interest in the project was a primary cause for both communication problems and an uneven work distribution. To combat against this in future projects, two critical things should be done: first and foremost, an even project weighting across participating universities and, secondly, enacting consequences for non-contributing group members. To address project weighting and other aspects of project administration, a contract between all participating professors should be signed before the project starts. An example of necessary clauses to include, explained in detail below, can be seen in Appendix A. While coordinating all professors to weight the project similarly in relation to their own curriculum may seem unrealistic, it's evident that without attributing the same amount of grade emphasis to the project causes some sub-teams to participate significantly less. By evenly weighting the project, all sub-teams from the different universities would be equally as affected by poor team performance. Consequently, all students would be more academically motivated to fully participate. To accomplish this, all instructors will be obligated to assign at least a certain amount of weight to a student's performance in the project, such as twenty percent of a student's overall grade in the course, and to dedicate a minimum amount of class time to the project. This class time should first serve as a way for the instructor to clarify the week's instructions. After explaining directions, the instructor should allow a certain amount of time for students to coordinate within their sub-teams. While sub-teams are collaborating, instructors should circulate to talk with individual sub-teams and address any on-going issues they may have.

Unlike evenly weighting the project, students should be responsible for coordinating consequences for non-contributing group members. Explicit measures should be included in the required team contract, as shown in Appendix B. For example, measures may include the amount

of group meetings a member is allowed to miss before being suspended from the group. These internal group policies would make students more personally invested in their project contribution while making them less likely to remain uncommunicative. While teams already create a contract at the start of the project, there should be a required section in which team members must agree upon determining when a team member is not contributing an adequate amount and what processes they will follow to address the situation. For severe cases of non-contributing team members, they should be eliminated from the group. Because teams may be reluctant to abandon a fellow member, there should be an alternative assignment to lessen the guilt some teams may feel and to make them more likely to enforce their participation rules. Examples of possible alternative assignments include an in-depth research paper of substantial length or completing the rest of the project alone. In order to ensure that a student would have enough time to complete the alternative assignment, a midterm peer evaluation should be conducted to allow instructors the ability to identify noncontributing members. Students should be continuously monitoring participation and can disband a member at any time if he violates their contract agreement.

In order for these policies to be completely effective, teams need to establish their channel of communication and appropriate response times within the first few days of the project. With a proper mode of communication established, such as email, teams can limit the initial confusion. Likewise, defining an appropriate amount of time to respond will help teams identify non-contributing members and to reduce anxiety when approaching a deliverable deadline. An appropriate response time should factor in the possible time difference between teams. When determining a channel of communication, teams should be choose a channel that allows for mass communication so that it better keeps all team members informed and

information is less scattered amongst group members. Once a channel has been chosen and an appropriate response time agreed upon, teams will include this information as a provision in their team contract. This section of the contract will serve to supplement the participation section, in that communication and responding in a given amount of time are a sub-section of a student's overall participation in the project. Therefore, not adhering to the communication requirements should result in the consequences detailed in the participation section.

Another method to ensure that all group members are aware of relevant team information is to hold consistent group meetings. While this may be exceptionally difficult for teams with significant time differences, consistent group meetings would keep everyone involved and aware of the project's status. For example, a team meeting between sub-teams could occur every Sunday to discuss the upcoming week's deliverables and division of labor. These meetings could also serve as an opportunity for students to inform one another that they will be traveling later in the week or that it's an exam week at their university. Essentially, these consistent meetings will keep sub-teams aware of what the other is doing and limit frustration when it appears that a sub-team is non-responsive or not contributing. Indirectly, these meetings will limit the "extra" amount of work that was expressed by some sub-teams that had to continually translate or explain the week's requirements. To ensure that teams implement some kind of meeting system, a log for each team should be created. Each team should be required to submit at least three logs throughout the span of the project. These logs will record when the team met, who was present, who was missing and for what reason, what was discussed and what action items were created. This will not only help keep team members accountable for their share of work and to keep members aware of what's happening in the project, but will also serve as a record of participation.

While these group meetings can help curb some of the frustration associated with the language barrier, it still remains that the English-speaking sub-team will ultimately be responsible for proofreading and, consequently, assembling and submitting assignments. To alleviate this, teams can assign one person each week to be responsible for the editing and submission. This person would not receive as great a share, if any, of that week's work. Teams can keep track of who is responsible for this assembly as an additional section in their team's log.

Chapter 7: Conclusion

Low performing partially distributed teams encountered several issues, including problems with communication, an even work distribution, language barriers, limited awareness, time zone differences and a lack of interest in the project. Though these issues were generally found between local and distant sub-teams, they were also present within some sub-teams. While partially distributed teams are more susceptible to a variety of obstacles that can hinder team performance, precautions can be made before project initiation to alleviate some of these effects. Establishing communication and work distribution methods and procedures, for both professors and students, can potentially help prevent a significant amount of team disconnect. Incorporating measures to improve coordination between professors, local and distant sub-teams and sub-team members will help to enhance team dynamics and overall team performance.

Works Cited

- Alavi, M., Y. Yoo. 1997. Is learning in virtual teams real? *Working Paper Harvard Business School*, Boston, MA.
- Amason, A. 1996. Distinguishing the effects of functional and dysfunctional conflict on strategic decision making: Resolving a paradox for top management teams. *Academy of Management Journal* **39** 123-148.
- Ancona, D.G., C.L. Chong. 1996. Entrainment: Pace, cycle, and rhythm in organizational behavior. *Res. Organization Behavior* **18** 251-284.
- Armstrong, D.J., P.Cole. 2002. Managing distances and differences in geographically distributed work groups. P.J. Hinds, S. Kiesler, eds. *Distributed Work*. MIT Press, Cambridge, MA, 167-186.
- Bordia, P. 1997. Face-to-face versus computer-mediated communication: A synthesis of the experimental literature. *The Journal of Business Communication* **34** 99-120.
- Cannon-Bowers, J.A., Salas, E., S.A. Converse. 1993. Shared mental models in expert team decision making. J. Castellan, Jr., ed. *Current issues in individual and group decision making*. Hillsdale, NJ, 221-246.
- Clark, H.H., S.E. Brennan. 1991. Grounding in communication. L. Resnick, J. Levine, S. Teasley, eds. *Perspectives on Socially Shared Cognition*, American Psychological Association, Washington D.C., 127-149.
- Cohen, S.G., D.E. Bailey. 1997. What makes teams work: Group effectiveness research from the shop floor to the executive suite. *Journal of Management* **23** 240-241.
- Crampton, C. 2001. The mutual knowledge problem and its consequences for dispersed collaboration. *Organization Science* **12** 346-371.
- Grinter, R.E., J.D. Herbsleb, D.E. Perry. 1999. The geography of coordination: Dealing with distance in R&D work. Paper presented at the 1999 SIGGROUP Conference, Phoenix, AZ.
- Hinds, P.J., D.E. Bailey. 2003. Out of sight, out of sync: Understanding conflict in distributed teams. *Organization Science* **14** 615-632.
- Janis, I.L. 1982. *Victims of Groupthink*. Houghton Mifflin, Boston, MA.
- Jarvenpaa, S., D. Leidner. 1999. Communication and trust in global virtual teams. *Organization Science* **10** 791-815.

- Jehn, K.A., C. Chadwick, S.M.B. Thatcher. 1997. To agree or not to agree: The effects of value congruence, individual demographic dissimilarity, and conflict on workgroup outcomes. *Internat. J. Conflict Management* **8** 287-305.
- Jehn, K.A., E.A. Mannix. 2001. The dynamic nature of conflict: A longitudinal study of intragroup conflict and group performance. *The Academy of Management Journal* **44** 238-251.
- Johansson, C., Y. Dittrich, A. Juustila. 1999. Software engineering across boundaries: Student project in distributed collaboration. *IEEE Transactions on Professional Communication* **42** 286-296.
- Kaiser, P., W. Tullar, D. McKowen. 2000. Student team projects by internet. *Business Communication Quarterly* **63** 75-82.
- Klimoski, R., S. Mohammed. 1994. Team mental model: Construct or metaphor? *Journal of Management* **20** 403-437.
- Kraut, R.E., S.R. Fussel, S.E. Brennan, J. Seigel. 2002. Understanding effects of proximity on collaboration: Implications for technologies to support remote collaborative work. P.J. Hinds, S. Kiesler, eds. *Distributed Work*. MIT Press, Cambridge, MA, 137-162.
- Kristof, A.L., K.G. Brown, H.P. Sims, Jr., K.A. Smith, 1995. The virtual team: A case study and inductive model. M.M. Beyerlein, D.A. Johnson, S.T. Beyerlein, eds. *Advances in Interdisciplinary Studies of Work Teams: Knowledge Work in Teams*, vol. 2. JAI Press, Greenwich, CT.
- Latane, B., J.H. Liu, A. Nowak, M. Bonevento, L. Zheng. 1995. Distance matters: physical space and social impact. *Personality and Social Psychology* **21** (8) 795-805.
- Maznevski, M., K. Chudoba. 2001. Bridging space over time: Global virtual team dynamics and effectiveness. *Organization Science* **11** 473-492.
- McDonough, E., K. Kahn, G. Barczak. 2001. An investigation of the use of global, virtual, and collocated new product development teams. *The Journal of Product Innovation Management* **18** 110-120.
- Meyerson, D., K.E. Weick, R.M. Kramer. 1996. Swift trust and temporary groups. R.M. Kramer, T.R. Tyler, eds. *Trust in Organizations: Frontiers of Theory and Research*. Sage Publications, Thousand Oaks, CA. 166-195.
- Mortensen, M., P.J. Hinds. 2001. Conflict and Shared Identity in Geographically Distributed Teams. *The International Journal of Conflict Management* **12** 212-236.
- Nohria, N., R.G. Eccles. 1992. Face-to-face: Making network organizations work. N. Nohria, R.G. Eccles, eds. *Network and Organizations*. Harvard Business School Press, Boston, MA. 288-308.

Ocker, R.J., J. Fjermestad. 2000. High versus low performing virtual design teams: A preliminary analysis of communication. *33rd Hawaii International Conference on System Sciences* **1** 10-19.

Ocker, R.J., M. Rosson, D. Kracaw, S. R. Hiltz. 2009. Enhancing learning experiences in partially distributed teams: Training students to work effectively across distances. *42nd Hawaii International Conference on System Sciences* **1** 1-10.

O'Hara-Devereaux, M., R. Johansen. 1994. *Global work: Bridging distance, culture, and time.* Jossey-Bass San Fransisco, CA.

Purdy, J.M., P. Nye, P.V. Balakrishnan. 2000. The impact of communication media on negotiation outcomes. *Journal of Conflict Management* **11** 56-73.

Robey, D., H. Khoo, C. Powers. 2000. Situated learning in cross-functional virtual teams. *IEEE Transactions on Professional Communications* **43** 51-66.

Sarker, S., S. Sahay. 2002. Information systems development by US-Norwegian virtual teams: Implications of time and space. *Proceedings of the Thirty-Fifth Annual Hawaii International Conference on System Sciences*, Hawaii 1-10.

Suchan, J., G. Hayzak. 2001 The communication characteristics of virtual teams: A case study. *IEEE Transactions on Professional Communication* **44** 174-186.

Szymanski, K., S.G. Harkins. 1987. Social loafing and group evaluation. *Journal of Personality and Social Psychology* **56** 934-941.

Tan, B., K. Wei, W. Huang, G. Ng. 2000. A dialogue technique to enhance electronic communication in virtual teams. *IEEE Transactions of Professional Communication* **43** 153-165.

Van Ryssen, S., S. Hayes Godar. 2000. Going international without going international: Multinational virtual teams. *Journal of International Management* **6** 49-60.

Warkentin, M., P.M. Beranek. 2001. Training to improve virtual team communication. *Information System Journal* **9** 271-289.

Appendix A

PDT Instructor Contract

Project Participation

All instructors must participate in an online faculty training session prior to project kickoff.

Project Weighting

Participation in the PDT project will account for at least twenty percent of a student's final course grade. The breakdown of a student's PDT grade will be as follows:

Project Component	Weight
Deliverables	55
Midterm peer evaluation score	15
Completion of midterm peer evaluation	5
Final peer evaluation score	15
Completion of final peer evaluation	5
Class attendance on workdays	5
	100

Project Administration

The first class of the beginning of every week will be devoted to the PDT project. For example, classes that meet Monday, Wednesday, and Friday will dedicate Monday's class to working on the PDT project. Instructors will use this class time to do the following:

1. Explain and clarify the week's instructions.
2. Allow the remaining class time for sub-teams to collaborate.
 - o Attendance for in-class PDT work days is mandatory. It should be monitored and will be factored into a student's final PDT project grade.
3. Circulate to each sub-team to document its progress and address any on-going or unresolved issues.

A student identified by team members or instructors as noncontributing will be removed from the project and given an alternative assignment.

Date

Appendix B

Contract for Team _____ (team number)

1. Contact Information

Subteam _____ (your university)

For each member, include:

- a. Name
- b. Email
- c. Messaging name and platform
- d. Phone numbers of members (optional)
- g. Anything else (e.g. Facebook)

2. Project Management and Team Leadership

- a. Identify leaders. Add the names of leaders here.
- b. How will milestones and due dates be established and acknowledged?
- c. How will team progress be monitored?
- d. What methods will be used to inform others about the status of work in-progress and open issues?

3. Communication between subteams

Regular and timely communication between subteams is important to your team's success.

Answer the following questions.

- a. How frequently will subteams communicate with one another? (e.g., daily, every two days)
- b. What time of day works best for subteam members to communicate with one another? (e. g. morning, afternoon, evening, Note: this may be very useful with teams having differences in time)
- c. What is an appropriate response time to reply to messages? (e.g. 12 hours, 24 hours)
- d. What technology platforms will be used for communication? (e.g. PDT System, email, chat)

Note: Asia and Europe typically use MSN while US uses AOL; make sure both subteams agree on the chat platform.)

4. Meetings between subteams

With each team member on a different schedule finding the right time to meet may be a challenge. It is highly recommended that your team use doodle, found at <http://www.doodle.com> to help set up your team meetings. Doodle is a free scheduling tool that your team can use to help find the best time for all (or most) team members to attend important meetings.

Note: Make sure to select your time zone on doodle when you are entering your available times to meet. Doodle will automatically convert others' available times to your time zone.

- a. When will meetings occur? How frequently?
- b. Will there be meeting minutes? Will they be posted for all team members to be kept up to date? It's recommended to keep a meeting log to track member participation and progress.

c. What technology platforms will be used for meetings? (e.g., MSN, AOL, Skype?) Does it allow for mass communication?

5. Conflict between subteams

Some amount of conflict is normal when working in teams. However, conflict between subteams, when not recognized and not resolved, can be detrimental to team performance.

- a. How will conflict between subteams be dealt with?
- b. What procedures will be followed to address and resolve conflict?
- c. Who will address it?

6. Decision Making

- a. How will both subteams be aware of the decisions made?
- b. Who is responsible for communicating these decisions?
- c. How will your team incorporate ideas from both subteams?

7. Work Submissions

- a. Who is in charge of team submissions?
- b. Who is in charge of combining subteam work into a final team deliverable?
- c. How will teams stay informed about the status of team submissions? That is, how will members know when a deliverable has been submitted?
- d. Who is in charge of proofreading and editing the final submission? Designate a rotation schedule.

8. Project Participation

- a. How many meetings can a team member miss before being disbanded from the group?
- b. How will you address team members who are unresponsive? What will be done to address this?
- c. How will problems with an uneven work distribution be addressed? When will they be addressed? Define explicit responses and what constitutes each consequence.

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