Globally Dispersed Engineering Teams at Delphi Packard Electric Systems

by

Christopher D. Burns

B.E. Electrical Engineering
General Motors Institute, 1979

Masters in Business Administration
Youngstown State University, 1994

Submitted to the System Design and Management program
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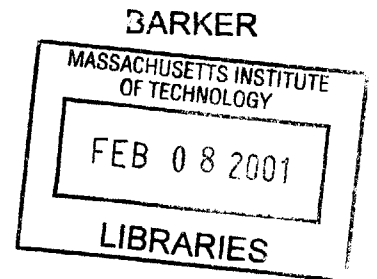Master of Science in Engineering and Management

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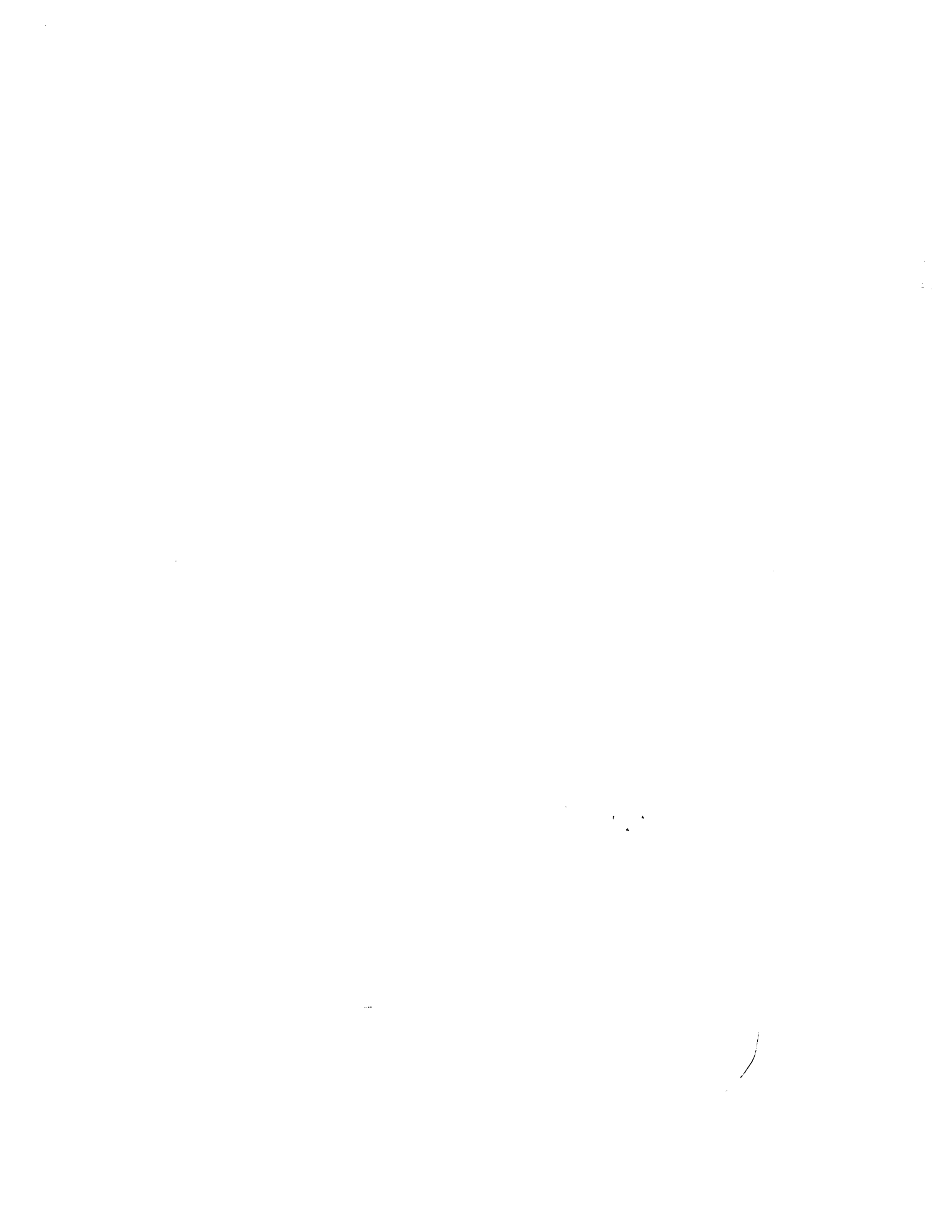December 1, 2000

Certified by: _
Janice Klein
Senior Lecturer, Management Science
Thesis Supervisor

Accepted by: _____
Steven C. Graves
LFM/SDM Co-Director
Abraham Siegel Professor of Management

Accepted by: _____
Paul A. Lagace
LFM/SDM Co-Director
Professor of Aeronautics and Engineering Systems

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ABSTRACT

Globally dispersed engineering teams within Delphi Packard Electric Systems were studied to identify areas for future improvement in global team performance. The research consisted of several management interviews and the administering of a survey to global team members and team leaders at various Delphi Packard Electric Systems engineering and manufacturing facilities located throughout the world. The results of the survey were analyzed using bivariate statistical analysis methods and suggestions for future improvement were developed based on the interviews and survey results. The suggestions were summarized as leadership leverage points for various levels of leadership within the company, including team leaders, regional (local) managers, and global managers.

A system dynamics causal loop model was also developed to describe the relationships for various factors that affect team performance, including availability of capital (material resources), skills of the team members, individual and collective team effort, team interaction and communication, use of task-appropriate strategies, global versus local issues, and team results. The original survey was modified and expanded to allow future researchers to better address the variables and relationships that were presented in the casual loop system dynamics model.

Thesis Supervisor: Janice Klein
Title: Senior Lecturer, Management Science

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ABBREVIATIONS AND TERMINOLOGY

Abbreviation	Terminology
BEC's	Bussed Electrical Centers
DFM/DFA	Design For Manufacturing / Design For Assembly
DPES	Delphi Packard Electric Systems
E/E	Electrical / Electronic
GEMT	Global Engineering Management Team
GQS	Global Quality System
HRM	Human Resource Management
MIT	Massachusetts Institute of Technology
OEM	Original Equipment Manufacturer
PASDS	Power and Signal Distribution Systems
PC&L	Production Control and Logistics
PDP	Product Development Process
RASI	Responsible, Approve, Support, Inform
SD	System Dynamics
SDM	System Design and Management

ACKNOWLEDGMENTS

Chapter 1

INTRODUCTION

Background

To be an effective global company in today's business climate requires coordination of activities in many different parts of the world. For the past several years, Delphi Packard Electric Systems (DPES) has managed its global engineering efforts for a variety of products and processes through a group of globally dispersed engineering teams. Delphi Packard Electric Systems engineering operations are grouped in four major regions of the world. The headquarters are in North America, with a significant engineering presence in Europe, and lesser engineering centers in Asia/Pacific and South America.

Engineering managers from each of these regions participate at varying levels on globally dispersed teams which focus on a specific product line, manufacturing process, or an engineering competency. By the end of 1999, the engineering department recognized 36 groups as being active global teams. The team leaders for each of these global teams were located in either North America or Europe.

Purpose of Project

The primary purpose of this project was to closely examine the performance of the existing global engineering teams at Delphi Packard Electric Systems, determine how well the teams were performing, and make recommendations for changes that could potentially improve performance. A secondary purpose of this project was to add to the growing body of research in the area of virtual team performance by documenting the real life issues at a multi-national company like Delphi Packard Electric Systems. As communication technologies have improved

and the world has become smaller, much has been theorized about global team dynamics within the academic community over the last 10-20 years. However, there is very little data available to study real-life teams and test various theories regarding potential problems and proposals on how to improve global team performance. Since it appears that globalization is here to stay within the industrial world, it is hoped that the results of this specific company project can be used to help future researchers address the larger industry problem of effectively managing global teams.

Project Approach

A "systems" approach was used for this project based on many of the systems design and management skills that the author learned while participating in the Systems Design and Management (SDM) program at Massachusetts Institute of Technology (MIT). The author chose to treat the problem of improving global teams at Delphi Packard Electric Systems as a "management system" problem. The project was approached from a holistic viewpoint by identifying the key elements within the system known as "global team management" and the important relationships between those elements.

The design process was an iterative one, moving back and forth from studying the current theory of team dynamics (via continuing literature searches) to gathering and analyzing real world data (via surveys and interviews within DPES) to developing systems dynamic models that would hopefully explain how the "global team management" system functions at DPES. Once the larger pieces of the system were understood at a broad overview level, a more detailed analysis occurred for those system elements that were considered to be of key importance to the company. This approach of first a broad (but not very deep) system scan of the problem, followed by a more detailed analysis of the key parts of a system, is what is referred to as a "systems" approach to problem solving.

Part of the iteration process also involved a decision on the company's part to begin implementing changes within the global team structure during the middle of this project. These changes were initiated because of some early findings from this study, before the project had been officially completed. As work progresses on this project, further changes are anticipated. Some of the changes that have already been made are included at the end of this paper.

Early literature search focused on what the author considers the "softer" issues of global teams. Many articles were reviewed that discussed areas such as the importance of trust, cultural diversity within teams, effects of distance, general communications across virtual worlds, and the role that various technologies play in global team efforts. The bibliography at the end of this paper includes materials that were initially studied, including publications by Cramton, Digenti, Grove, Handy, Hallowell, Jarvenpaa/Leider, McDermott/Brawley/Waite, and O'Hara-Deveraux/Johansen.

One-on-one interviews were held in late January and early February with a few key engineering managers within the company that were responsible for several teams. The managers agreed that some teams were performing much better than others and various reasons for this imbalance were discussed.

Based on the literature search and the interview results, the author developed a survey (with the help of an MIT group that had already been studying global teams across different industries) to administer to people within the company who were assigned to the global engineering teams. A preliminary copy of this survey was sent to several people in Europe and Asia who were non-Americans in an attempt to make the survey culturally neutral, by removing as much ambiguity in language as possible. Revisions were then made to the wording based on their suggestions to make it clearer to those people taking the survey whose first language

was not English. All survey respondents had a good command of the English language, which the company uses to conduct all global business.

The survey was then presented at a workshop with 25 people from the upper levels of the company's engineering management team in late February of 2000. The managers completed the survey and then the next day the survey was sent electronically to approximately another 150 members of global teams for completion. Survey respondents were asked to return the survey electronically to the author within 2-4 weeks. Details of the survey and the results are discussed in later chapters.

Once the individual surveys were collected, the data was converted to a statistical database software package and some preliminary data analyses were performed in late April and early May. Follow-up engineering management reviews were held in early April and late May. During these meetings the preliminary data analyses were presented and the management team decided to adopt several changes to the way that global teams were being managed. Subsequent management meetings in June, July, and September were held to continue the change process. Details of these changes are described in a later chapter.

During this time, the author began to search for prior research efforts to model the global team problem using a system dynamics approach. Early data analysis of the survey respondents comments had indicated that one aspect of the problem was the concept of team performance changing over time, due to other changes in the larger organization (either a region or the company as a whole). This dynamic element of team performance and the factors that affect performance was an area that initially had not been researched by the author. In addition, the author chose to focus on the global versus local issues, which appeared to confront those team members who had completed the survey.

A literature search of team dynamics for both co-located teams and global teams was conducted. The bibliography at the end of this paper includes the materials that were subsequently studied, including publications by Klein/Barrett, Hackman, Carlisle/Hernandez, and Sterman. Based on the results of that literature search, a new system dynamics (SD) model was developed for global teams at Delphi Packard Electric Systems. It is hoped that the model is also applicable to other multi-national companies dealing with similar globalization issues. This system dynamics model is presented later in this paper.

The original survey questions were then mapped onto the system dynamics model to aid in further data analyses and to assess the completeness and adequacy of the original survey. Based on this mapping, redundant and missing questions were identified and proposed changes were suggested for future surveys. Subsequent chapters in this paper discuss the mapping process, and the reasoning behind the recommended changes.

Some of the more significant details of the data analyses are included in a separate chapter. Due to confidentiality concerns at the individual respondent level, not all of the data analyses are presented here. However, a complete copy of the dataset is available at MIT for other researchers to use as part of a larger "industry-wide" study of the global team problem.

A set of recommendations is suggested for various levels of leadership within the company. These recommendations are presented as leadership leverage points for the various parts of the system dynamics model that was developed. Finally, a brief summary of what changes have occurred in the company since the beginning of this project are presented along with some general conclusions.

Chapter 2

THE COMPANY, THE ORIGINAL TEAMS, AND A NEED FOR CHANGE

Delphi Packard Electric Systems

Today, Delphi Packard Electric Systems is the world's largest supplier of vehicle power and signal distribution systems, with 23.9% of the world's market. With its world headquarters located in Warren, Ohio, the company, which was founded in 1890, presently has 212 engineering and manufacturing facilities and operations in 35 countries on six continents with over 102,000 employees. The company is a business segment of Delphi Automotive Systems, which in May of 1999, was separated from the General Motors Corporation to create an independent automotive parts supplier.

Delphi Packard Electric Systems is a full service power and signal distribution systems (PASDS) supplier, with design and manufacturing capability for several product lines, including wiring assemblies, electrical centers, switches, fiber optics, sensors, ignition products, connection systems, and integrated electronics. Delphi Packard Electric Systems has a customer base that includes 40 major companies in the transportation industry and over $5 billion in sales in 1999.

The traditional product line has been power and signal distribution systems (wiring assemblies and related products), which accounted for 86% of all sales in 1999. North America and Europe are the major markets with regional sales in 1999 of 61% and 33% of sales, respectively. South America and Asia/Pacific are smaller markets with 3% of sales in each region.

The overall automotive PASDS market is considered mature, with companies supplying varying degrees of products and services. At the highest level

of competition are suppliers that offer a wide range of full services to the OEM's, including extensive component and electrical systems design capability, worldwide manufacturing, and a leadership position in appropriate automotive technologies. Delphi Packard Electric Systems is one of only a few suppliers with this complete capability.

Over the past decade, Delphi Packard Electric Systems has been moving to expand its product line beyond wiring assemblies to include products that have a greater potential for growth. These new offerings include electrical centers, switches, fiber optics, sensors, advanced connection systems, and integrated electronics. At the same time, the company has tried to strengthen its position as a wiring assembly supplier by reducing costs and increasing its presence in emerging markets such as South America, Eastern Europe, and the Asia/Pacific region where strong growth in wiring assembly demand is expected to continue.

Delphi Packard Electric Systems uses a matrix approach to global management. The company has a strong regional management structure with directors of each region reporting to the president of the company. (See Figure 1) The regional directors have direct responsibility for all manufacturing operations and the related support activities within their regions. Functional directors located at the world headquarters in North America also report to the General Manager. They have responsibility for global support activity that transcends any one region, such as finance, marketing, and divisional engineering.

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│                          Vice President - Delphi Automotive Systems                    │
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Figure 1 - Delphi Packard Electric Systems Global Organization

Figure 2 shows a summary of the structure for the company's engineering organization. The global engineering organization consists of both the global support people and the regional people that are reporting directly to the regional directors. Engineering managers are located in each region outside North America and have responsibility for all engineering activities in that region. These engineering managers report to both the regional director and the director of engineering.
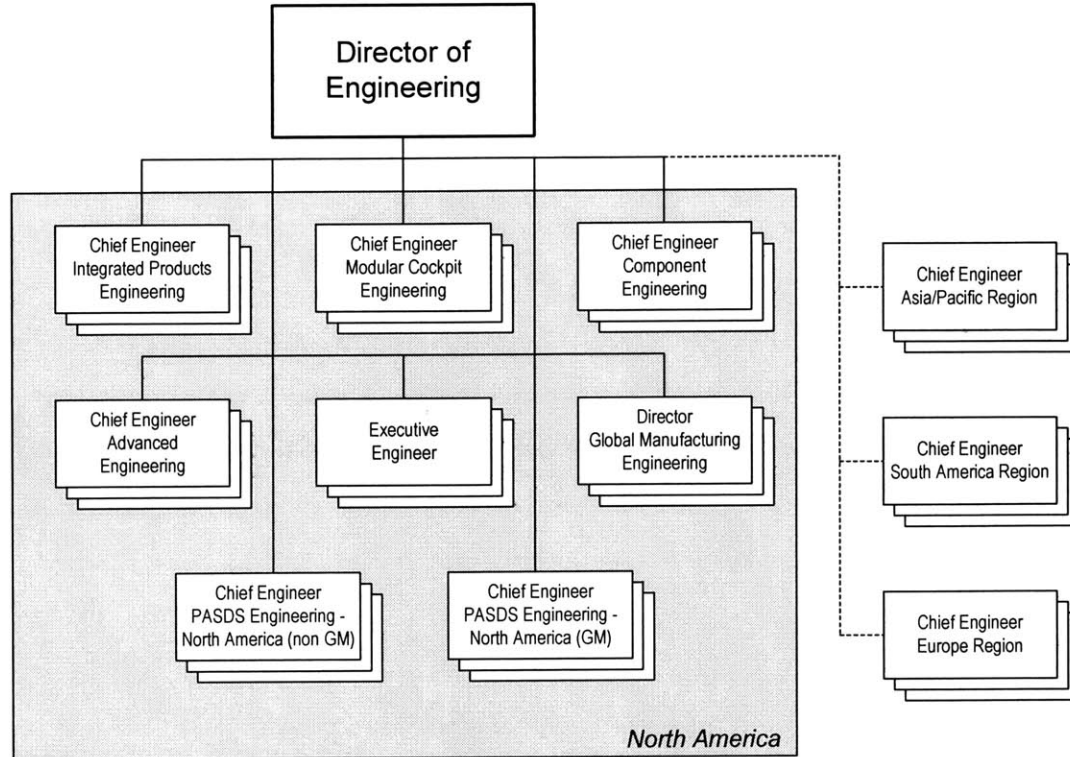
Figure 2 - Delphi Packard Electric Systems Engineering Organization

In North America, there are other global engineering managers, who have responsibility for product development for various product lines. There is also a global manufacturing engineering manager, an advanced engineering manager, and a manager in charge of general engineering support activities (executive engineer). All of these managers report to the director of engineering. The director of engineering also has direct report engineering managers with responsibility for all of the PASDS engineering in the North America region.

Global Engineering Horizontal Teams

In the mid 1990's, the engineering director at Delphi Packard Electric Systems wanted to improve the overall global engineering effort through the creation of a series of global teams. The purpose of the teams was to improve engineering globally through the discussion and adoption of best common practices in the area of engineering systems, processes, and procedures. Figure 3 shows a

slide taken from the original rollout plan when the concept of global engineering horizontal teams was introduced to the organization.

		GLOBAL ENGINEERING MANAGEMENT TEAM					
		Europe	North America	South America	P.I. N.A.	P.I. Asia Pacific	Packard Hughes Interconnect
GLOBAL ENGRG 'HORIZONTAL' TEAMS	Product Teams						
	Process Teams						
	Competency Teams						

Chartered by the Global Engineering Management Team to globalize the engineering associated with Core Products, Processes and Competencies
- focus on lean activities and commonization of engr'g systems, processes and procedures

Figure 3 - Original Global Engineering Horizontal Team Charter

Engineering representatives at the middle management levels from various regions of the world were assigned to teams that focused on improving certain products, processes, or engineering competencies. Specific objectives were developed for each global horizontal team by the global engineering management team.

In addition, general responsibilities were assigned to the global team itself, the team leaders, and the team members. These responsibilities were generic in that they applied equally to all 36 teams. Figure 4, Figure 5 and Figure 6 show the original responsibilities that were assigned to the team, the team leader, and the team members.

Team Responsibilities

- Establish team structure
- Develop communication strategy
- Conduct benchmarking/best practices assessment
- Technology management
- Resource leveraging
- Support globalization
- Lean initiatives
- Common processes and procedures

Figure 4 - Original Global Team Responsibilities

Team Leader Responsibilities

- Identify team scope
- Assess regional participation & capability
- Identify team members & negotiate membership with regional management
- Document team activities
- Assure consistency with vision
- Maintain global perspective
- Provide leadership in execution of projects

Figure 5 - Original Global Team Leader Responsibilities

Team Member Responsibilities

- Represent their region to the team
- Represent the team to their region
- Accept regional assignments from the team
- Support globalization initiatives
- Share information / knowledge

Figure 6 - Original Global Team Member Responsibilities

To monitor the early progress of these global teams, a tracking system was developed by the Global Engineering Management Team (GEMT) to ensure that each team was completing some common first steps. Figure 7 shows the progress tracking system that was used by the GEMT. A "clock" metaphor was used to determine how far a team had progressed. Once each team had completed all 12 steps, it was no longer held accountable to the GEMT in terms of reporting its progress "around the clock".

'New' Team Progress Tracking

- 1 Team membership identified
- 2 Team scope & charter established
- 3 First team meeting(face-to-face or phone)
- 4 First face-to-face team meeting
- 5 Communication strategy developed
- 6 Strategies and objectives identified
- 7 Team assignments made
- 8 Initial bench-marking done
- 9 First impact on area of responsibility
- 10 First GAP closed
- 11 Resource plan identified
- 12 Sub-teams established and functioning

Figure 7 - Original Global Team Progress Tracking System

Figure 8 shows a list of the original 36 global engineering horizontal teams as of the beginning of 2000. The company classified the teams under four general categories: competency teams, process teams, product teams, and joint product/process teams. Competency based teams provided general support to the engineering organization as a whole and/or to specific product and process teams on an as-needed basis. Process teams dealt with specific manufacturing processes and related issues for the main product line, Power and Signal Distribution Systems (PASDS) and related products. Product teams were involved in product design and development for the PASDS product. Joint product/process teams were

responsible for all aspects of the development of the non-PASDS product lines. The majority of these teams dealt with product and processes that were considered potentially high growth opportunities for the company.

Competency Teams	Process Teams
• Application Engineering	• BEC's
• DFM/DFA	• Cable
• E/E Systems Design Arch Capability	• Components: Assembly
• Electronics Integration	• Components: Molding
• Engineering Information Management	• Components: Stamping
• Environmental Technology	• Modular Products
• Global Footprint	• Wiring: Asm Meth. & Tools
• Global Standards	• Wiring: Asm Process
• GQS	• Wiring: Lead Prep
• HRM	**Product Teams**
• Intellectual Property	• BEC's
• Materials	• Cable
• Math Based Engineering	• Components
• Product Development Process (PDP)	• Hi Density Electronic Conn.
• Technology Leveraging Management	• Modular Products
• Testing & Validation	• Wiring

Product/Process Teams	
• Fiber Optics	• Sensors
• Flex Circuits	• Switches
• Ignition	

Figure 8 - Original Global Engineering Horizontal Teams

The teams were originally staffed in the mid 1990's with one or two middle level managers from each of the four regions of the world, where Delphi Packard Electric Systems had an engineering presence. The leader of each team was usually a member of engineering upper management. Most middle and upper level managers served on at least one team, while some managers were assigned to several teams. Multiple assignments were very typical especially for managers located in the Asia/Pacific and South American regions, where the number of people in engineering was significantly less than in North America or Europe.

Over the next few years as the teams matured, membership on the teams was allowed to broaden to include lower levels of management in some cases. While this trend was considered acceptable by the chief engineer of the company, he stressed that his expectations were that middle and upper managers would remain active on the teams and that they would be responsible for the overall output of the teams. He also required that these middle and upper level managers' names remain on the official team rosters. The intent was that the global engineering horizontal team management would be a top-down process.

In addition, a few new teams were added during the years, but the process of adding "official" teams was considered difficult and cumbersome by the engineering organization. Upper management wanted to be able to focus on the performance of the original teams, and it was felt that adding more teams would dilute the focus.

The teams spent the first few years (mid 1990's) establishing their team structures, developing communications strategies, benchmarking the competition, and leveraging resources throughout the organization, while striving to develop common processes and procedures across the globe as part of a globalization initiative. At first, the teams reported their progress quarterly during a larger GEMT meeting. Later this reporting requirement was reduced to semi-annually and then annually as the teams became more stable.

Need For Change

During late 1998 and throughout 1999 top engineering management at Delphi Packard Electric Systems began to suspect that the momentum for managing the business via global teams was starting to wane within the organization. After some early successes, it was becoming apparent that the creation of common processes and procedures throughout the world was slowing

and engineering efforts were becoming more focused at the local (regional) levels versus at a global (company wide) level.

Since the author was a member of one of these global teams, and had witnessed first hand the transition that was occurring with nearly all teams, a decision was made in 1999 to study the situation and make some recommendations for how to improve global team efforts within the engineering department at Delphi Packard Electric Systems. During the initial research of the general problem of managing globally dispersed teams, the author learned that many other multi-national companies were addressing this same globalization issue and that they had varying degrees of success. Subsequent interviews with middle level engineering managers and other global team members confirmed upper management's suspicion that the overall globalization effort was beginning to wane. It was hoped that this project could identify areas for improvement and rekindle the interest in globalization efforts within the company's engineering organization.

A PROPOSED SYSTEM DYNAMICS MODEL OF GLOBAL TEAMS

Review of Systems Dynamic Modeling and Previous Efforts

Much has been written about globally dispersed teams and the many factors that could potentially affect the performance of these teams. Examples of these factors are trust, communications, alignment, synergy, culture, commitment, effort, and leadership. During the literature search, various combinations of these factors were often found to be the major subjects of discussion. Most experts agree that the degree of influence for these various factors varies from team to team and usually changes with time for specific teams. This makes the confluence of all of these factors a very complex situation for performing any type of analysis of team behaviors and prescribing actions for improving team effectiveness. Attempts have been made to portray (via some type of model) a holistic view of the various factors that influence globally dispersed teams. Often these models were comprised of lists, tables, or graphics that showed a relatively simple relationship between the factors, often using a sequential time frame. While these models may be useful for explaining certain aspects of the problem, the author questioned whether they inadvertently masked the true complexities of the global team performance problem.

The field of system dynamics attempts to understand the world of complex systems by creating mental models that describe various aspects of the system. These mental models include beliefs about the networks of causes and effects that describe how a system operates, the boundary of the model (what variables or factors are included and excluded), and the relevant time horizon of the problem. A key fundamental in the system dynamics approach to modeling is the idea that feedback is always present in systems and that feedback loops are often the source of

the complexity in these systems. Two types of feedback loops are used in system dynamics (SD) modeling: positive and negative feedback loops. Positive feedback is defined as self-reinforcing behavior and negative feedback is defined as self-correcting behavior. Combinations of these loops, the non-linearity of many real world situations, delays, and changes over time are what gives most systems their dynamic complexity. [1]

Causal loop diagrams are a systems dynamic modeling technique that is often used to first characterize a complex system. Causal loop diagrams map key variables and their relationships in a dynamic system. Causal loop diagrams are used by modelers to portray a hypothesis (opinion) of what the significant dynamics are within a system (i.e., how changes in one variable affect other variables in the system).

Variables are identified by a name or description and the relationships between these variables are shown with arrows. Labels on the arrows indicate the direction of the relationship. A positive arrow signifies that increases in one variable will result in an increase in another variable (positive correlation). A negative sign indicates a negative correlation (increases in one variable will result in decreases in the other variable). Feedback loops occur when there are enough relationships between the variables to eventually result in a circle or closed loop. The nature of these closed loops is either reinforcing (+) or balancing (-). The basic assumption is that there is feedback in all systems (i.e., our actions are based on our current knowledge and experiences of past events and that future events will be determined by what we do today).

Because systems are very complex, system dynamics modelers readily admit that all models are "false" but some may be useful. They may be useful in

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[1] John Sterman, Business Dynamics – Systems Thinking and Modeling for a Complex World, (Boston: McGraw-Hill Higher Education, 2000) 12-22.

explaining, exploring, predicting, or convincing people about certain aspects of the system. [2] Models are themselves dynamic, and modelers are constantly changing models to reflect either new learning, expand the scope, or present alternative theories about the nature of systems.

During the literature search, the author found one previous effort at using causal loop modeling to characterize globally dispersed team activity. Carlisle and Hernandez developed a causal lop diagram that focused on the relationships of five key variables: Interaction/Communications, Trust, Alignment, Capability, and Results/Effectiveness. Relationships between these variables resulted in four main feedback loops (all reinforcing): "To Know You is to Trust You", "Aligning Our Arrows", "Pulling in the Same Direction", and "We Have to Believe in Each Other". [3] The authors indicated that they found no variables or effects that were exclusive to globally dispersed teams, but rather their model could be used for general teamwork also.

A New System Dynamics Model

After reviewing the causal loop models developed by Carlisle and Hernandez, the author decided to focus on several potential areas of improvement in terms of revisions to the models. The first area concerned the integration into the model of the "Global vs. Local" dynamic that exists for globally dispersed teams. [4] This dynamic introduces variables and relationships that are specific to globally dispersed teams.

The second area of changes to the model that was captured included the general team dynamics introduced by Hackman in terms of how organizational

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[2] Jim Hines, "System Dynamics: Managing Complexity -Truth and Beauty", Massachusetts Institute of Technology, July 1999 class lecture.

[3] Steven Carlisle and Ernesto Hernandez, "Globally Dispersed Teams at General Motors", Massachusetts Institute of Technology, 1999.

[4] Jan Klein and Betty Barrett, "One Foot in a Global team, One Foot in a Local Site: Making Sense Out of Living in Two Worlds Simultaneously", Massachusetts Institute of Technology, 2000.

context, group design, and group synergy affect team performance. [5] Finally, the generic variable "Leadership Effectiveness" (that Carlisle and Hernandez used) was expanded to be more specific for various parts of the model. The intent was to identify in the model specific areas that various leaders in the organization should focus on to improve team performance.
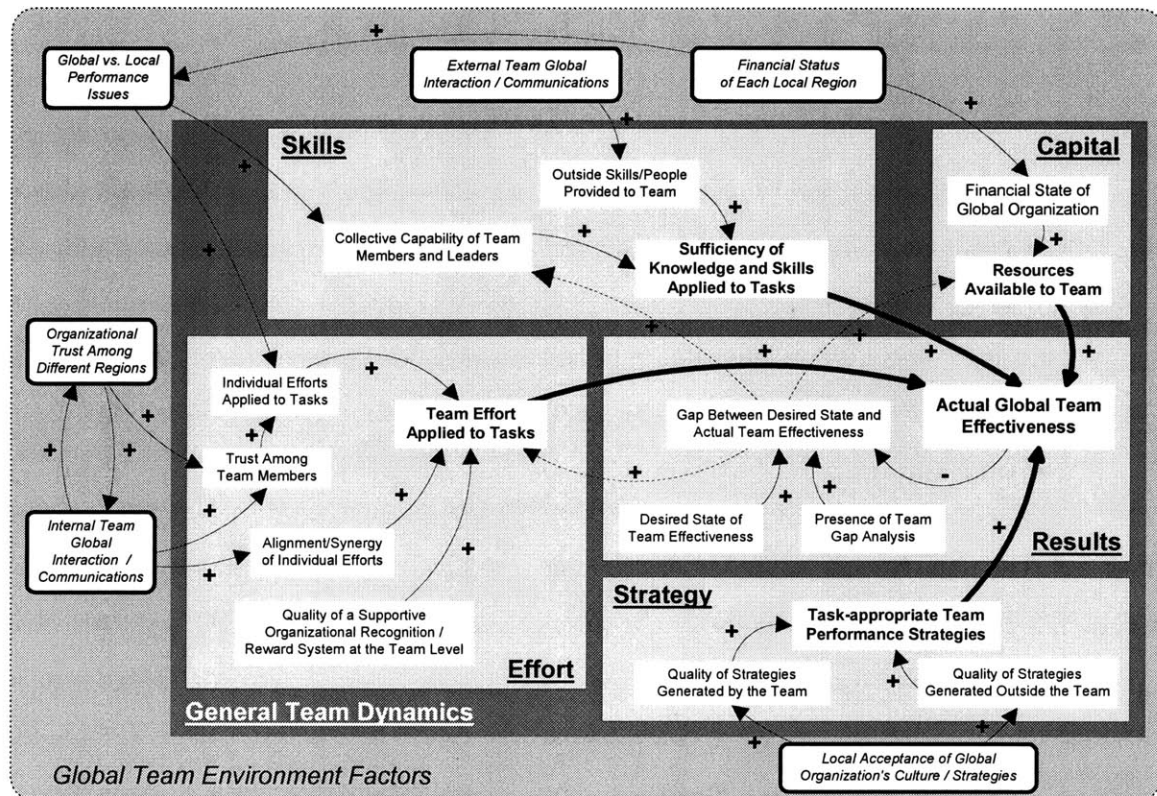
Figure 9 - Overall Model for Globally Dispersed Teams

Figure 9 shows the overall model that was developed for describing the dynamics of globally dispersed teams. In the center of the model (shaded area labeled "General Team Dynamics") are those variables that are considered common for all team activity, including co-located and dispersed teams. These variables are grouped into five main categories: Skills, Effort, Capital, Strategy, and

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[5] J. Richard Hackman, "The Design of Work Teams", Handbook of Organizational Behavior, 1987.

Results. The significant relationships between these categories are identified with darker, thicker arrows and the major variables are shown in bold text.

The general hypothesis is that a successful team requires appropriately skilled people, working with sufficient effort, using good strategies, and having sufficient resources available to them to accomplish the required tasks. In addition, the team or another group needs to monitor the team's output and make corresponding adjustments in team membership, effort, strategy, and/or resources as gaps in performance are identified. These feedback relationships based on such a performance gap analysis for the team are shown as dashed arrows in the model.

Those factors that are specific to globally dispersed teams are shown in the outer portion of the model and are labeled in italic text with a rounded border. Relationships are shown between the global factors, such as "Global vs. Local Performance Issues" and the general team dynamic factors, such as "Individual Effort" and "Team Member Skills". The purpose of this overall model is to provide a relatively simple, yet holistic view of the overall dynamics of global teams. More detailed and expanded models are needed to understand the specifics of each area of the overall model for each general team dynamic category and the global team factors. These expanded models are presented below for each of the main areas.

Capital

Figure 10 shows a more detailed view of the dynamics for the Capital portion of the overall model. Capital here refers to all "non-people" resources, including any material resources needed by the team. Examples of these capital resources would include travel and team communications budget, information technology improvements, training funds, and investment funds in various regions for implementing the various proposed courses of action that the team recommends.
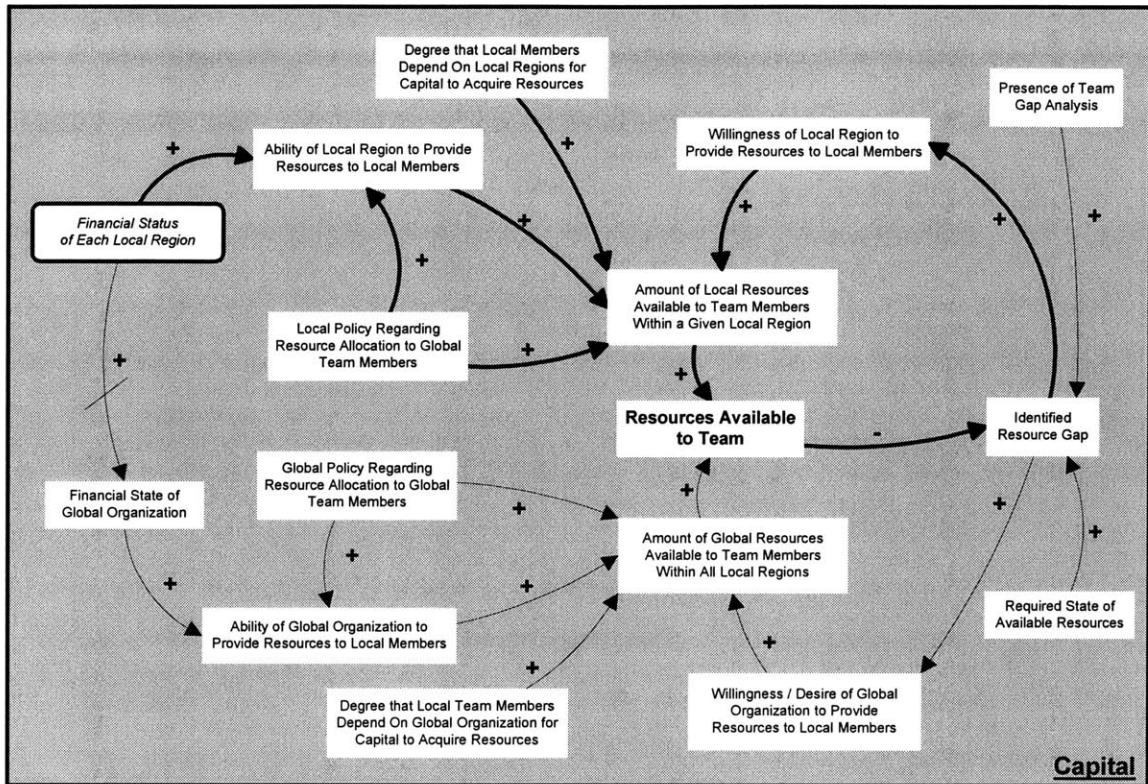
Figure 10 - Capital Model

The premise of this portion of the model is that without sufficient material resources to sustain the team activities and to eventually implement the recommendations from the team, the "best staffed" teams, with the highest energy levels, and most innovative strategic plans will have little hope of being effective in improving the organization. For the Capital model, the primary variable of interest to the overall dynamic model is the "Resources Available to Team". This variable is the sum of all capital resources (travel budget, materials, etc.) that is available to the team to conduct its business.

At Delphi Packard Electric Systems, the primary source of funding for most local members of a global team comes from the local region. The dynamics for this source of funding are shown in the model as bold arrows. A secondary source of funding for local team members may come from the larger organization (typically

world headquarters) or even from another local region, although this last possibility is usually rare. The global funding source dynamics are shown in the lower half of the model with lighter weight arrows. The fundamental dynamics for each of the two potential sources of funding are very similar, so only the upper half of the model (local funding sources) will be discussed in detail.

"Financial Status of Each Local Region" is considered the starting point for determining the ability of local members of global teams to secure the needed material resources. The inputs to this variable are considered to be beyond the scope of this modeling effort. Usually this variable is dependent on larger macro factors such as the general economic and business conditions of the local region. Boom times or recessions in a regional economy will be important factors in determining a local region's ability to provide capital to its members. These factors are undoubtedly beyond the scope of most global teams. It may also be a function of the status of the larger organization in the region. If a company is just entering a region (or even in the midst of exiting a region), the financial conditions for that region may be less suitable for supporting global organizational team efforts.

The ability of a local region to provide material resources to local members is dependent on the financial status of that region and the local policy regarding resource allocation to global team members. If the policy of a local region is to strongly support global teamwork efforts by its local members, then the needed resources are probably available under most local economic conditions. But even given a local policy of strong support, if a particular region is experiencing severe financial hardships, the global team may find that the local members of the affected region are unable to participate fully due to cut backs in material resources as part of a region's cost cutting efforts.

In the model, the willingness of the leadership in the local region is shown to be dependent on the identified resource gaps (based on a periodic assessment of

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how the team is performing). If teams (or the organization) do not periodically conduct some type of team performance review and gap analysis, then the opportunities to identify shortfalls in material resources (or skills or effort) will be missed and teams may flounder for some time trying to overcome problems outside their scope. An understanding of the required state of capital resources and the gap between the current levels and this required state can be used by the team to signal the local region (or the global organization) that adjustments are needed.

If the team has a shortfall between the required level of resources and the currently available resources, then the desire or willingness to provide those resources should increase. However, the actual resources that are provided are dependent on several factors, including the ability of the local region to provide resources and the level of dependence of the local members on the local region as the source of resources. Thus a balancing loop will occur, if the team needs resources and the local region is able to provide them. However, because the ability to provide them is outside this loop, there is a strong likelihood that in difficult times, the team will be short on resources.[6] This can lead to frustration for the team, especially if members outside the affected region are unaware of the conditions and constraints being imposed on the local members of the team.

Also, if the larger organization is stressing "equal" effort/participation by all regions on global teamwork, then some members from more prosperous regions may feel that they are being asked to carry too much of the resource burden. (This same situation exists for the people skills and effort portions of the model.) Team leadership that recognizes this potential inequity due to regional business conditions outside their control can try to manage the effects on the team in one of two ways.

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[6] For some high level teams, the actual output of the team may possibly affect the financial performance of the local region. This would imply that there is an additional loop from the team's output back to the financial status of each region. However, the assumption here is that the delays in improving performance would be very long and the financial performance of a region is essentially considered independent of any one team's performance.

First, the team can try to leverage global resources in place of local resources to complete their team's work. (Lower half of the Capital model.) If the global organization (or headquarters) has a policy of funding critical team activity, then the team can pursue alternative sources of funding. This method should work, as long as the financial health of the overall organization is considered good.

Second, if the first approach is not available to alternative funding, the team can accept the lack of resources in a given region, and adjust their expectations of "equal" participation by all regions. Often a region that is in a severe business downturn might not be able to fully participate, and if the team accepts this, they can choose to continue their work without active participation by the affected region, but with passive participation. The team can send updates of team progress to the local leadership in the affected region and solicit feedback prior to implementing global initiatives. When the local region has recovered financially, they would be expected to implement the team's past work and return to the expected level of participation for future teamwork. This approach requires several things to be successful. Local leadership must be willing to assume a more passive role (trusting the other regions to account for their needs). A team must be willing to look out for everyone's interests, including those people that are no longer actively working on the team. And, there must be an organizational (global) awareness of when local regions should switch roles from active to passive participation for certain teams.

Organizations that have regions with historically uneven levels of resources compared to other regions, often must employ some type of adjustments in terms of regional roles as described in the second scenario above, even if the region is not considered to be undergoing financial hardships. This inequity among regions is really a difference in local regions' ability to provide resources. Often if an organization has one or two dominant regions and several smaller regions that are just getting started, the organization may choose to assign roles to each region for

specific teams. One method of assignment for each region is known as "RASI" analysis. "R" in "RASI" stands for Responsible and any regions with this designation are expected to be responsible for the majority of the effort, resources, etc. "A" stands for Approval and regions with this role are given the authority to approve all efforts and proposals from the team. "S" represents a Support role. Regions with this designation may lend support to the overall effort, but it is usually at a reduced level compared to the "R" assignments. "I" stands for Inform. Regions with this level are very passive and simply accept whatever the team decides. Regions can have more than one designation (i.e., "R" and "A" are often grouped together for a particular region), and many teams may grant each region an "A" approval role, despite that region having little or no involvement in the actual team activities. If teams identify and accept RASI designations early-on for each region, and if the team leadership monitors these levels for appropriateness as time goes by, then the team has a much better chance of avoiding frustrations due to varying levels of involvement from each region.

Skills

Figure 11 shows the dynamics for the skills portion of the overall model. The term "skills" refers to both the team members' skills and any outside skills that the team uses for accomplishing its work. Examples of skills include team members' technical skills that are considered to be relevant to the team's tasks, members' interpersonal skills (ability to function in a group), and skills or knowledge that is not readily available within the team's membership, but are available in other areas of the organization (including resources outside the organization that can be contracted for use).

Global vs. Local Performance Issues

Financial Status of Each Local Region

External Team Global Interaction / Communications

Team Awareness of Outside Resources

Population of Qualified and Available Candidates Within Region to Potentially be on the Team

Degree That Team Members Have Interpersonal Skills

Quality of Delivery System of Outside Resource Skills

Availability of Relevant Skills in Outside Resources

Leadership Effectiveness in Creating Appropriate Global Teams

Degree That Team Members Have High Task-relevant Skills

Outside Skills/People Provided to Team

Degree that Global Teams are Viewed as Meaningful and Necessary to Both Global and Local Organizations

Optimum Size of Team

Sufficiency of Knowledge and Skills Applied to Tasks

Collective Capability of Team Members and Leaders

Required State of Available Skills

Degree That Team is Moderately Diverse

Leadership Effectiveness at Selecting Team Members and Team Leaders

Degree That Team Members Have Political Power Within the Organization and Local Regions

Minimal Process Losses While Determining Skills Available to Team

Identfied Skill Gap

Degree That Team Leaders are Effective

Internal Team Global Interaction / Communications

Leadership Effectiveness in Minimizing Inappropriate Weighting of Individual Contributions

Cross Training Within Team and Learning Synergy Among Team Members

Leadership Effectiveness in Fostering Collective Learning

Presence of Team Gap Analysis

Skills

Figure 11 - Skills Model

For most teams the collective capability of the team members and the team leaders represent the majority of skills and knowledge that will be applied to the team's tasks. This collective capability is modeled as a function of both individual member skills and the additional skills that are created by the team due to learning synergies and cross training that can occur within dedicated teams. The organizational leaders that select the members of a global team are dependent on the availability within each region of prospective team candidates. If a region is dealing with local issues, the list of qualified people to serve on global teams may be limited, or in severe circumstances even non-existent. In addition, the extent to which the organizational leaders create the need for the more appropriate global teams will affect how regions view global teams in terms of necessity and meaningfulness. If a local region views a global team as critical to its local interests, then the local leaders will be motivated to make the best people available to serve

on that team. Likewise, if a new global team is seen by a local region to be of minimal or no importance, then global leaders that are tasked with staffing teams may find it difficult to solicit members from that region.

Leaders should try to select members that are compatible and yet moderately diverse, looking for a balance between members having homogeneous skills and common backgrounds, and yet having a variety of experiences and talents. Common backgrounds and skills will allow people to more easily determine the competencies of their fellow team members. People who come to trust the competency of others (technical trust) will lead them to develop a higher level of overall trust.[7] If team members are too diverse, they may struggle to get started in a common and coordinated fashion. Team members with too little diversity, risk locking in on an early solution to a problem without fully exploring alternative strategies and options.

Multi-national companies should also strive to avoid solely staffing global teams with ex-patriots from the headquarters region, as they may be representing other local regions via an international assignment. Instead, the local regions should have local, native people with the necessary skills representing the local interests. Not only will there be more diversity on the team, but there should also be a greater chance that the local region would be more willing to adopt the global team's recommendations. Sources of political power within a region will vary from company to company and region to region. If a team member has some political power within his/her local region, (either directly or indirectly through relationships with influential managers) then he/she will be better able to influence the degree to which a local region supports a team's efforts and eventual adoption of the team's recommendations. This political power component is shown under the "Skills" model, since it is often the key ingredient for implementing change within a local

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[7] Jessica Lipnack and Jeffrey Stamps, Virtual Teams - Reaching Across Space, Time and Organizations with Technology, (New York: Wiley) 226.

region. Thus, it should be of primary importance to leaders, when they decide who should be on a team.

Another consideration to selecting team members is creating a group size that is just big enough to get the job done. [8] Leaders should resist the temptation to add members from a region simply to avoid potential personality conflicts or political concerns. Teams with too many members will most likely experience process losses while determining who should do what, and there will be less chance of synergy developing within the team. Leaders should also avoid selecting people that will dominate the team by providing an inappropriate level of contribution, relative to others on the team. Other team members may quickly stop contributing, if they feel that their efforts are being eclipsed by a dominant member of the team. If a team leader finds such a dominant personality on the team, the leader needs to quickly address the problem. Often, discussing this type of potential process loss as a group, before it gets out of hand, is an effective way to avoid future problems.

The relevant outside skills and people that are provided to the team are a function of the availability of these skills/people, the team's awareness of their existence, and the organization's ability to deliver this knowledge to the team. Delivery systems may consist of training, consultation, temporary assignment, or other means of connecting the team to the human resources it needs, but cannot provide within the original team roster. The quality and effectiveness of the larger organization's global communications system affects the capability of the delivery system and the awareness of the existence of available resources. Large companies lacking an excellent communications infrastructure will risk having teams that are trying to solve problems on their own, without access to outside people that may significantly improve the efficiency and quality of the team's efforts.

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[8] J. Richard Hackman, "The Design of Work Teams", Handbook of Organizational Behavior, 1987

Similar to the Capital model, a balancing loop is shown based on a team gap analysis (if present). Leaders should solicit feedback on what skills are missing from the team and then use that information to make changes either to the team roster or by soliciting additional outside help. It is suspected that in real world situations this balancing feedback loop may be subject to many delays, as is shown by a line through the feedback arrow on the model. These delays may be due to such factors as the time needed to identify the critical skills that are missing from a team; the time needed to identify and replace or correct problem team members; and the time needed to leverage the rest of the organization to fill in the gaps. If the delays are too long, the team may suffer in other areas, such as reduced individual effort due to frustration or apathy, while they wait for their leaders to address the skill gaps that are beyond the team's control.

Effort

The dynamics of the efforts of a global team are probably the most complex of all the detailed models. Effort can be categorized as both the individual team members efforts and the collective effort of the team as a whole (i.e., those actions the team takes as a whole group). A "True" model would include every team member and the effort put forth for each member, but for a generic team model, only one individual member's efforts will be considered. The assumption is that the factors that influence any individual team member in terms of the effort he/she puts forth are the same for all team members. Differences will naturally exist for each individual member in terms of the "state" of these factors (i.e., the degree of influence will depend on the specific circumstances and strengths/weaknesses of the individual team member.)   Figure 12 shows the model for effort.

The model states that team effort is dependent directly on the individual efforts of the team members, the alignment or synergy of the individual efforts, and the quality of the organizational recognition/reward system at the team level.

Teams will put forth better effort if all of the team members are working toward a common purpose (i.e., no misalignment between individual efforts.) Individuals will want to be aligned (motivated) if they realize that the larger organization values their team efforts, and recognizes and rewards good performance.
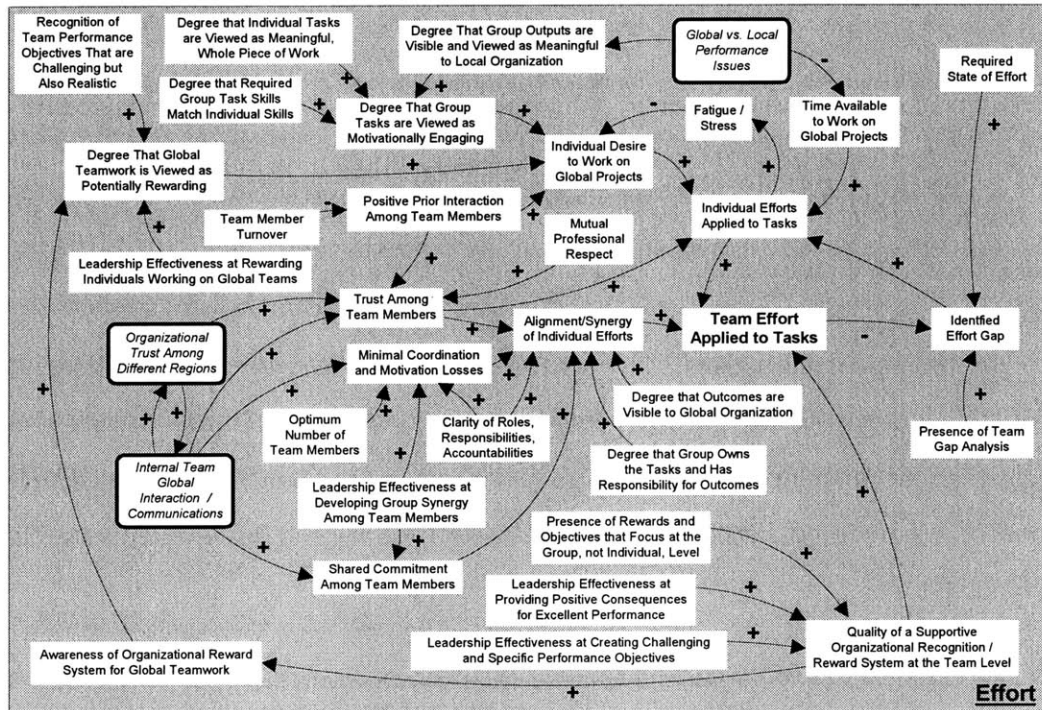
Figure 12 - Effort Model

The quality of a supportive organizational recognition/reward system is a function of the presence of rewards and objectives at the team versus individual level. If the organization does not have tangible rewards for teams, the requests for more team work will ring false among many team members, especially if those members are already being judged on their individual performance (as is the case for most organizations). In addition, if the organization does not have objectives that are at the team level, then people will struggle with understanding what is expected of their team.

The other two factors that determine the quality of an organizational reward system at the team level involve leadership effectiveness in two areas:

providing positive consequences for excellent performance and creating performance objectives that are specific and challenging. If a team believes that their efforts no matter how excellent are rarely rewarded, their motivation to work as a team will degrade over time. Leaders need to be as diligent in rewarding excellent team performance as they are in rewarding excellent individual performance. At the same time, leaders need to ensure that the team recognition system is based on teams working on the right things. Leaders should make team objectives very specific and preferably not easy to attain if individuals worked alone. Instead, the objectives should be such that people naturally conclude that the best way to meet them is by working closely together.

Individual efforts applied to tasks are dependent on several factors: desire, available time, trust among team members, and an awareness of how the team is doing as a group in terms of total effort. The factor concerning trust among team members is discussed first, since it has most often been the subject of other research on global teams.

The "trust" factor is modeled as a function of the quality and quantity of communication/interaction among team members, the degree that various regions trust one another, mutual technical respect, and positive prior interaction among team members. The concept of "trust" and its role on global teams has been the subject of many research articles and studies. Handy discusses trust and global teams from a variety of viewpoints, especially in terms of the way that managers deal with people and how organizations need to adapt to deal with virtual group processes. [9] Jarvenpaa, Meyerson, and others have concluded that global teams can experience "swift trust" early in their formation, but this state of trust can be fragile and temporal. [10] [11] Analyses such as these simply reinforce the dynamic

[9] Charles Handy, "Trust and the Virtual Organization", Harvard Business Review, May-June, 1995.
[10] Sirkka Jarvenpaa and Dorothy Leidner, "Communication and Trust in Global Virtual teams", Journal of Computer-Mediated Communication 3(4), June 1998.

nature of systems that systems dynamic modelers accept as a fact for all complex systems: activity changes over time due to a variety of factors.

Trust among team members that will change over time is also discussed by McGrath in his TIP theory. Work groups are time-based, multi-functional, and multi-modal social systems. McGrath explains that effective groups are involved in three simultaneous functions: "production" functions (problem solving and task-performance efforts), individual team "member support" activities (loyalty, commitment, etc.) and "group well-being" activities (politics of power, member roles on the team, and interaction of members). Teams need to address these functions for each of the phases of a project (initiation, problem solving, conflict resolution, and execution). [12] The role of trust and the "production" function of teams is the primary subject of the effort model shown in Figure 12. The relationship of trust and the other two functions of the team ("member support" and "group well-being") are addressed in the Internal Team Interaction / Communications model discussed later in this chapter.

Positive prior interaction of team members is shown as a main factor for both building trust in a team and for motivating individual desire to work on a certain team. The prior interaction does not necessarily need to be specific to the current team, although that would be especially reinforcing. Positive interaction on other teams, or even outside work, can lead to high levels of trust and desire. For co-located teams, the possibility of this prior interaction is probably much higher than for global (remote) teams. One factor that would erode the prior interaction phenomenon is if teams experience high member turnover. Leaders need to recognize the detrimental effects for a team that is working with someone closely for some time and then later learning that the team member is leaving the team. Good

[11] Debra Meyerson, Karl Weick, and Roderick Kramer, "Swift Trust and Temporary Groups", Trust in Organizations: Frontiers of Theory and Research, Sage Publications, 1996.

[12] Joseph McGrath, "Time Interaction, and Performance (TIP): Theory of Groups", Small Group Research, May, 1991.

teams need to then spend time (and effort) learning to trust each new member and this can slow down the overall task efforts. Less effective teams can even begin to flounder and regress in their efforts, if team turnover and new members issues are not adequately addressed.

Individual desire is a function of many factors, besides positive prior interaction with team members. If an individual views global teamwork as potentially rewarding (either as a group award or even as an individual reward), then he/she will have a higher desire to work on global teams. People want to work on those teams that have tasks that are viewed as motivationally engaging. If a global group is working on a project that is seen by the rest of the organization as a meaningful and whole piece of work, then people are drawn to that team.[13] If the team's tasks require skills that an individual possesses and can put to practice, then the individual will want to actively participate on the team.

Fatigue and stress will reduce the desire of individual team members to work on a team project. This fatigue is modeled as a balancing loop between the actual efforts applied to a task and the desire to do more. The actual efforts are a function of the individual's desire, the trust among members, and the time available to work on global teamwork (after taking into account the global vs. local time pressures), and an analysis of what the gaps are for past efforts. A balancing loop is shown between actual team effort, actual individual effort, and any gap that is identified in terms of needed effort. The assumption is that if there is a shortfall in terms of effort, the individual members are the ones that are expected to make up for the shortfall. (This is of course limited by the amount of time available and the fatigue factors of each member.)

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[13] The potential for whether or not individuals from different regions may view a global project as meaningful is often a function of the global vs. local performance issues that are present in each region. This is discussed later in the chapter under the Global vs. Local Performance Issue model.

Team effort is also dependent on the alignment of each individual members efforts. Teams with people working very hard but in opposite directions will never be as effective as those teams with people working together. Alignment will have a better chance of occurring when team members realize that they alone own the task and have collective responsibility for the outcomes. This alignment has an even greater chance of occurring if the team is highly visible within the larger organization. Through regular discussions about these factors, people can develop a shared commitment. (Trust is shown to be a major underlying factor.)

Besides developing synergy by stressing the above factors to the team, leaders can affect alignment in two other ways: design the size of the team to be an optimum number and clarify the roles and responsibilities of each member of the team. These two factors can help to minimize team process issues associated with potential motivation and coordination losses.

One relationship that is not shown in the model is the feedback loop that could occur between any effort gap analysis and the alignment of team member efforts. It would be very efficient if a team (or a team leader) was able to discover through an effort gap analysis, a misalignment between team member efforts. However, based on personal experiences and observations, the author believes that this potential is very rare. Instead, the assumption is most team members will conclude that the way to close any perceived effort gap is through increased efforts on the part of individual members. Discovering potentially serious misalignment issues within globally dispersed teams may be very difficult for both team leaders and the team itself, especially if much of the efforts of individuals is hidden from other team members. For this reason, the model only shows a feedback loop to individual effort for any gap analysis performed by the team or organization.

Strategy

Another key factor in the system dynamics model is the task performance strategies the team uses to do its work. The scope of task performance strategies includes the group norms the team uses to manage day-to-day activities and discussions, the specific courses of action that will be pursued (and not pursued) by the team and the relationships with other resources outside the team that will be developed and utilized. For example, a group norm might be to rotate face-to-face meetings among various regions of the world, as an effort to equalize the travel burden among all team members. An example of a specific course of action might be to break the team into smaller sub-groups to address various aspects of the problem and reconvene as a larger group later to review overall team progress. An example of developing strategic relationships with outside groups would be engaging the services of an outside supplier to provide a specific competency, insight, or resource that is missing or unavailable to the team or larger organization.

Figure 13 includes the factors and relationships that affect the task-appropriate team performance strategies. The majority of the model reviews the dynamics for strategies internally developed by the team itself. However, the lower part of the model briefly shows the dynamics for strategies that might be given to a team such as by members of upper management.

Not all teams are expected to develop their own strategies. If the larger organization dictates the strategies for a specific global team, the quality of those strategies is dependent on how well the local regions accept the global organization's strategies. Often firms with a strong organizational culture across all of the regions, in which it operates, will find regions that are more accepting of the company strategies. This is especially true if the company culture includes an element of "respect for the individual" (for both regions and persons within the

company). The factors that influence the strategies developed outside of the team are often the same as those discussed below for internally generated team strategies.
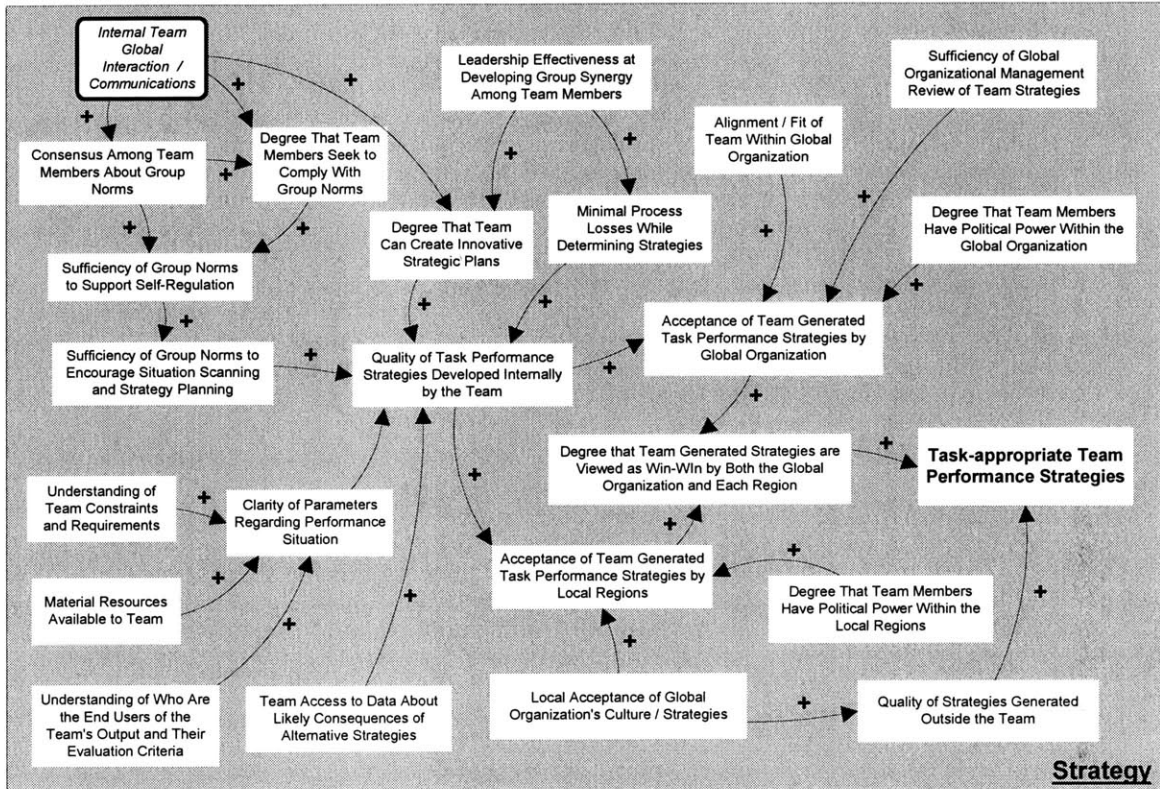
Figure 13 - Strategy Model

Teams that are responsible for developing their own strategies are more typical within Delphi Packard Electric Systems and therefore the majority of the model addresses these dynamics. The appropriateness of team performance strategies is a function of how well these strategies are viewed as being of benefit to both the global organization and each region (i.e., "win-win" situation). In order to be viewed as a "win-win" scenario, both the global organization and each region need to accept / embrace the strategy.

Acceptance by either group is naturally a function of the actual quality of the strategy. For local regions, the acceptance of a team's specific strategies is also a

function of how well the local region, in general, understands and accepts the larger organization's culture and overall strategies. If a team has a member with local political power, he/she may be able to influence even more a local region's willingness to accept a team's specific strategies. For the global organization, the acceptance of a team's specific strategies is also a function of how well the team's strategies fit within the larger organizational strategies. In addition, a global organization that reviews the team's strategies in a sufficient manner will be more willing to accept the team's final strategies than one that does not perform good strategic reviews. Team members with political power at the global organization level, will also influence the global organizations acceptance of a team's strategies.

The actual quality of a team's strategy depends on several factors. Teams must be predisposed to develop strategies – situation scanning and strategic planning may often be seen by team members as being outside their scope. If the team develops group norms that support self-regulation among team members and these norms are accepted by all, then the team has a potential for spending the right amount of time and methodology for developing strategic plans. These norms can only be developed through routine and effective communications among team members. This discussion will also help the team have the potential for developing innovative plans that might not be possible as individuals working alone or outside the team. In addition, leaders that promote synergy among team members can help minimize process losses during the strategic planning process.

The quality of strategic plans is also dependent on the team's understanding of the system constraints, requirements, likely consequences of alternative strategies, and an understanding of the customer (end user) expectations and measurement / evaluation criteria. Teams with access to this type of data (through adequate material resources discussed earlier) have a better chance of developing high quality task performance strategies.

Results

Figure 14 shows a more detailed model for the results/effectiveness portion of the overall model. Team effectiveness can be measured by three factors: task outputs that are acceptable to the customers who receive or review the output, team members who are satisfied/enriched by the group experience, and the ability of the team to work together in the future. [14]
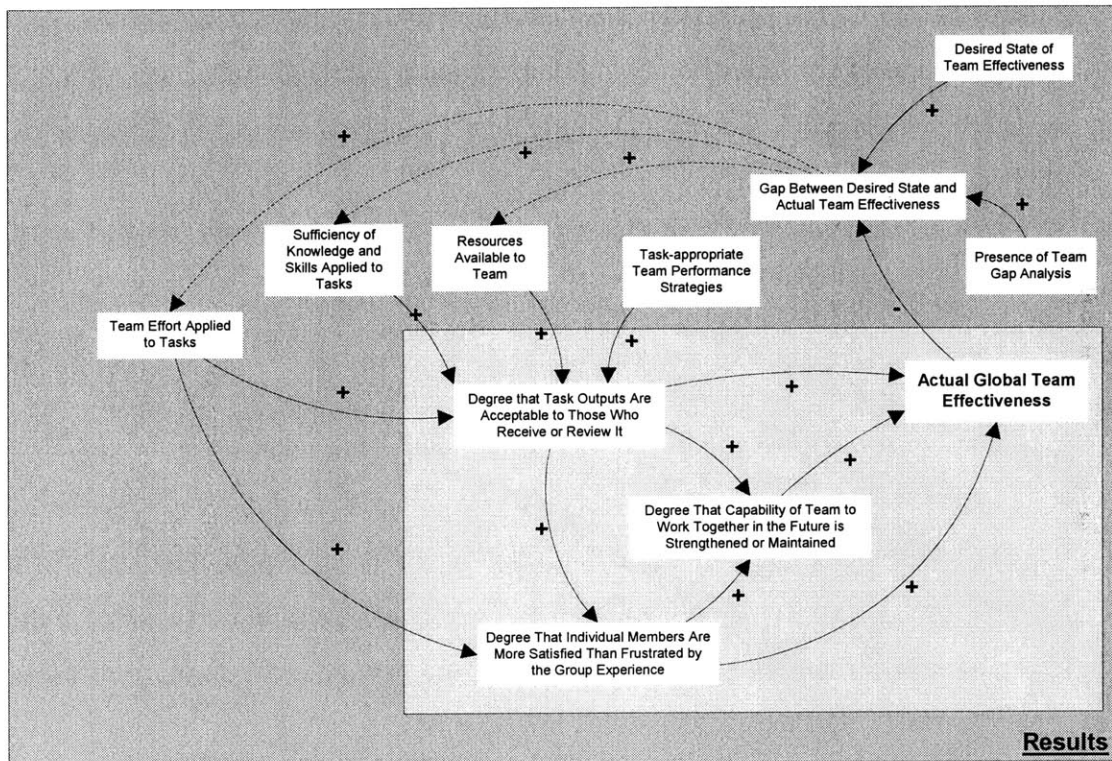
Figure 14 - Results Model

The quality and quantity of a team's task outputs are dependent on four main factors, which were already discussed in this paper: effort, knowledge and skills, resources, and strategy. If teams have sufficient material resources for skilled people who are willing to put in the needed effort, working on the right things, they

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[14] J. Richard Hackman, "The Design of Work Teams", Handbook of Organizational Behavior, 1987

will have a chance of being successful. A gap in any one of these areas can lead to an unacceptable level of output.

Most teams accept that the tasks they perform and the outputs from these tasks are the primary reason for the teams existence. If "customers" are defined as the users of a product or service provided by the team, then the customers' perception of the team's output becomes the ultimate measure of effectiveness. For some global teams, this "customer" may be an internal group, such as the global organization itself or local regions within the company. If the outputs meet or exceed these customer's expectations, more than likely the team will be viewed as successful.

However, two other aspects of team performance need to be recognized by the teams themselves, as well as their larger organizations. Teams may be successful at generating output, but if the team members walk away from the experience feeling frustrated or dissatisfied, those members will feel that the global team experience was not successful. At the same time, if the team becomes so burned out or fragmented from executing a particular assignment that it can no longer function in the future as a team, then the organization should recognize that the team's long term results were not very successful.

The model considers that members can become frustrated in two ways. If the group's output is unacceptable, then the team members probably will feel less than satisfied with the experience, especially if the group is customer focused and aware of the customer response to their efforts. In addition, if the total team effort is under whelming or over whelming, then team members may feel either wasted or overworked. Both conditions would lead to member frustration. On the other hand, if the team's output is viewed as successful and the effort is considered reasonable and acceptable to the team members, there is a good chance that members will be satisfied by the experience.

A team's ability to work together in the future is modeled as a function of both the customer perceptions of the team's output and the degree that team members feel satisfied by the experience. If team's are successful in past endeavors and the members are satisfied by the experience, there is a good chance they will function well in the future. However, if a team has had a record of poor performance, the larger global organization may choose to replace or dissolve the team.[15] If a team has members who are frustrated by the experience (even if the team's output is viewed as successful), the future of the team will be in jeopardy.

These three factors are combined to get a true measure of the effectiveness of a global team. If an organization (or team) performs a gap analysis while reviewing the team's actual effectiveness compared to the desired level of effectiveness, there is a good chance that they will identify shortfalls in three major areas: effort, skills, or material resources. These three factors may be easier to quantify and recognize by management. Managers and team members should identify if they lacked the proper human resources (skills and knowledge) to perform a task. ("The wrong people on the team", may be a common excuse for poor performance.) They should recognize if they lacked the material resources needed to do a task. ("No money to fix problems", No travel money to get together as a group", or "We lack the needed tools" are all phrases that may be offered as reasons for not meeting expectations.) Lack of effort may not be offered by team members as an excuse, but organizational management can usually recognize how much effort is really being put forth by various team members, based on work schedules, oral and written reports, etc. Teams that rarely meet or that spend only a small fraction of their time on the tasks will likely not meet the organization's expectations for team output.

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[15] Local regions may also want to stop participating on global teams, if they feel that the team is not meeting the local organization's needs or if they feel that their representative is not satisfied with the overall experience.

The fourth factor (a gap in task performance strategies) is usually harder to quantify for both the team and management. This input variable for actual task performance is less likely to be identified as an area to improve during a team gap analysis. Thus, the model does not show a feedback loop between the analysis and the task performance strategy variable. Real world situations may exist where organizations are putting more money, more people, and/or more effort into specific tasks, which ultimately may not be the right approach for solving the problem (i.e., wrong strategy). If teams can perform a strategic review during their gap analysis, then all areas of potential shortfalls can be reviewed. However, it is questionable if this type of comprehensive review frequently happens in real life.

Interaction / Communications

All of the above models can be applied to both co-located and globally dispersed teams. The next two models address dynamics that are considered to be more specific to globally dispersed teams: interaction/communications and global vs. local performance issues.

Communications and team member interaction are naturally a component of co-located teams. However, the dynamics and factors for distance communication complicate the dynamics so much that the resulting model is considered unique to global teams.

Figure 15 shows the model for global team interaction and communications. The actual communications are broken into two parts in the model: internal communications among the team members and external communications between the team itself and the rest of the organization. These two types of communications are discussed separately since both are important for teams to be successful.
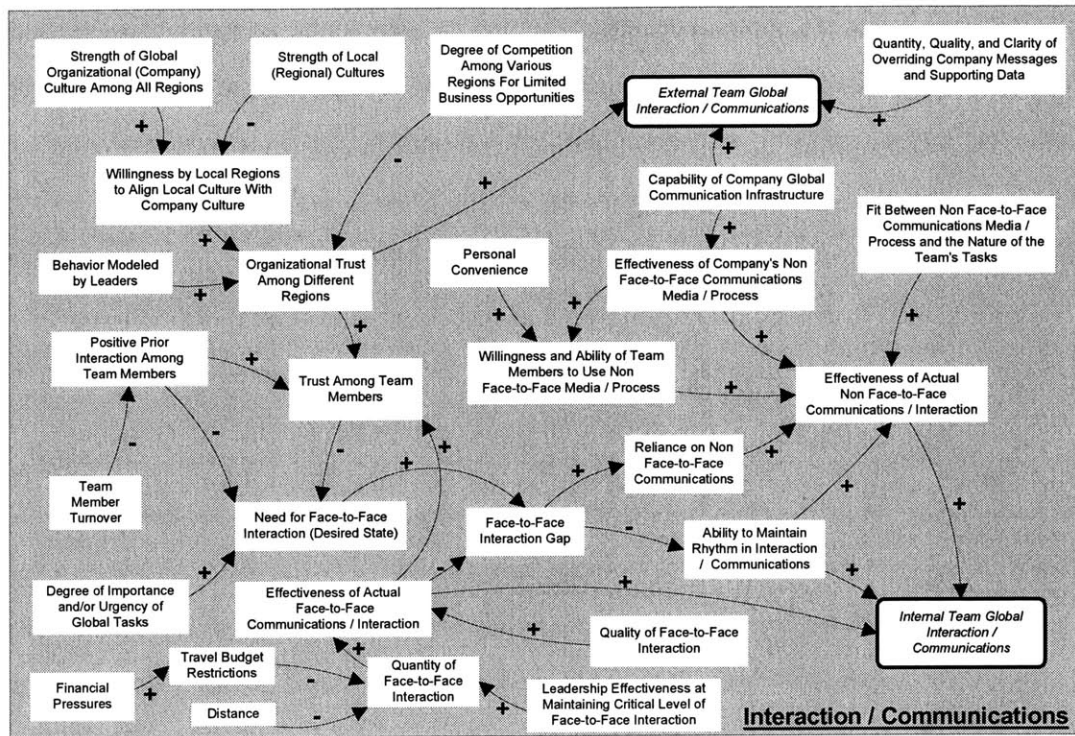
Figure 15- Interaction / Communications Model

External team communications are a function of several factors: organizational trust among regions, the larger organization's global communication infrastructure, and the information itself that is communicated.

The concept of organizational trust among different regions was introduced earlier in the effort model portion of this paper. The dynamics of this area of trust are expanded here. Organizational trust among regions is affected by three main factors. Behavior as modeled by organizational leaders will affect the level of trust among different regions. If the upper management of a company has a reputation for being honest and supportive and shows respect for groups and individuals from all regions of the world, then organizational trust has a chance to grow. If however, the upper management of a company has a reputation of saying one thing and doing something different, then people within various regions will become suspicious and less trustful of the "company line".

Another component of organizational trust is the willingness of local regions to supplement and align their local cultures with the company's culture. If the company has a unique and strong global culture that is recognized and accepted by every region, then the opportunities for future alignment increase, and so does organizational trust. If a region has a strong local culture (that in the past has been considered to be the primary reason for local successes), the willingness to change and become aligned with a global company culture may be lessened. "Not invented here" may be a label placed on a region if they constantly reject ideas that come from other areas. Leaders need to recognize the potential pitfalls that await companies that want to operate globally, but lack a strong company culture that is accepted by all regions as a benefit to their local operations. Creating a foundation of a strong corporate culture is a necessary first step to becoming a successful global enterprise.

Finally, the degree of competition within the firm by various local regions for capital funding, being awarded future business opportunities, etc. is a strong deterrent to organizational trust. Firms such as Kodak, which utilize competition among manufacturing locations across the globe, will find it very difficult to build organizational trust.[16] But if an organization is experiencing strong growth for its products globally and local regional operations within the company are not viewed as being in competition with one another, then the desire will be there for regions to trust one another, to cooperate, and to improve together. This type of organizational trust will lead to better global communications by the larger organization and will provide a good foundation for individual members of a team to trust one another.

A global firm needs a robust communications infrastructure that can present information globally to all necessary employees in a timely manner. Teams that

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[16] Joseph Distefano, "An Analysis of Melt/Process Clubs at Eastman Kodak Company", Massachusetts Institute of Technology, 2000.

rely on outside resources for skills or information will suffer if the communications infrastructure is lacking. Finally, the quantity, quality, and clarity of the messages and supporting data between the rest of the organization and the team are critical for effective global communications.

Internal team interaction/communication is affected by three main factors. Face-to-face and non face-to-face communications are separately modeled due to the various variables that influence these factors. In addition, the concept of communications rhythm is included in the model.

Much has been written about the need for effective face-to-face communications for teams. Face-to-face communications are considered key to developing a common purpose for a team. This common purpose is what binds team members together, so that they can perform at higher levels than as if they were working alone.[17] The relationship between trust and face-to-face interaction is also well documented by several researchers, including many already mentioned. One researcher states that face-to-face relationships have no equal to making trust possible. Face-to-face interaction not only builds trust, but also it helps teams resolve conflicts, misunderstandings, and creates opportunities for mentoring, modeling, and monitoring.[18]

The effectiveness of face-to-face interactions is a function of both the quantity and quality of face-to-face meetings. Quality is dependent on the team leaders and the team itself. Quantity of face-to-face meetings are a function of the distance between members, the travel budget that is available to members, and the larger organizational leadership's willingness to maintain a critical level of face-to-face meetings. If travel budgets are tight and middle and upper management

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[17] Richard Benson-Armer and Tsun-yan Hsieh, "Teamwork across Time and Space", The McKinsey Quarterly, 1997.
[18] Cornelius Grove and Willa Hallowell, "Spinning Your Wheel? Successful Teams Know How to Gain Traction", HR Magazine Focus, Society for Human Resource Management, 1998.

decide to restrict travel, then the quantity of face-to-face meetings will suffer. More importantly, the rhythm of face-to-face meetings will also suffer and this will eventually lead to communication problems.

A face-to-face interaction gap is shown to be a function of the actual face-to-face interactions and the need (desired state) for this type of communications. Several factors will determine what the need is for face-to-face interaction. If team members have a long history of prior interaction, the team can get by with fewer face-to-face meetings. If the importance of the team's tasks or expected output is urgent, the need for face-to-face meetings will increase accordingly. If trust among members is low, the need for face-to-face interaction to build trust will increase. As the face-to-face interaction gap increases, the rhythm of communications will degrade and the reliance on non face-to-face communications will grow.

A common management view is that non face-to-face communications can replace face-to-face communications, especially for teams that are well established. Thus as face-to-face interaction decreases due to financial constraints or other reasons, the usage of lower cost (and potentially more convenient) alternatives such as video-conferencing, telephones, and E-mail increases. If a company has invested in a capable communications infrastructure, team members (and organizations) will be increasingly tempted to rely more and more on this type of communications. For some teams the nature of the tasks will lend themselves more toward the use of electronic communications. If members are willing to use and are trained in the technology required to communicate remotely, the effectiveness of non face-to-face communications will improve. Finally, the rhythm mentioned earlier is needed to have effective non face-to-face communications.

Organizations (and teams) that rely largely on non face-to-face communications will struggle however to maintain a satisfactory rhythm in their communications. Regular face-to-face meetings, supplemented with effective

electronic communications between meetings, are key to having an excellent global team interaction experience. Leaders need to accept this premise as a crucial fact for having effective global teams and take the necessary steps to ensure that global teams are able to meet in a consistent and regular pattern, both face-to-face and via distance communications.

Global vs. Local Performance Issues

The second factor that is unique to globally dispersed teams (compared to co-located teams) is the concept of global versus local performance issues. Figure 16 shows the model for this aspect of the global team dynamic.
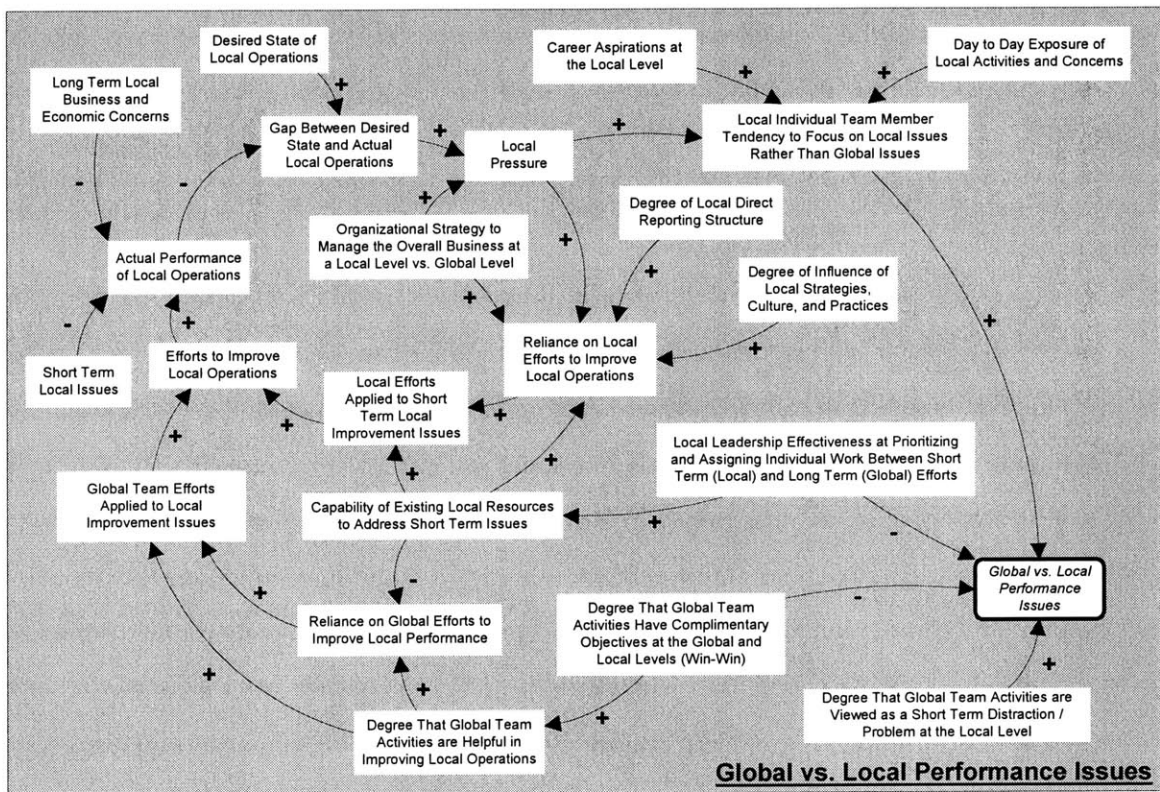

Figure 16 - Global vs. Local Performance Issues Model

Global versus local performance issues are defined as the tensions that develop for a local team member as he/she tries to execute both the desires of the

local group to improve (usually a short term focus) and that of the global team (usually a longer term focus). These tensions are often caused by an apparent conflict of priorities between the two groups (i.e., at least in the mind of the team member).

Four factors are shown in the model, which directly contribute to these performance issues. While there are undoubtedly many other factors, the model focuses on these four factors. The degree that global team activities are viewed as a short-term distraction for required local work by the team member is the first factor. If team members view global work as a distraction from the "real" job, then the global vs. local issue is reinforced. The potential for this view is a function of how closely aligned the global team efforts are to solving the current problems within the local region. If there is good alignment, then this factor is probably not as critical. However, if the team is working on problems very different from what is currently troubling the local region, then this view has a good chance of being prevalent.

The strength of the first factor is directly dependent on the strength of the second factor, which is the tendency of team members to focus on local issues versus global issues. The total effect could be thought of as a product of the two factors. If a team member is frequently exposed to local issues, and/or if the team member views career opportunities to be directly related to how well he/she performs on a local level, then this tendency will be increased. In addition, if there is a lot of local pressure, this tendency will be increased. Local pressure occurs when there is a gap between the desired state of local operations and the actual local performance. Local performance is modeled as a function of both short-term problems/issues and long-term problems, for example due to changes in the business cycle for that region. The long-term problems are considered to be outside the scope of the team's ability to change the situation. The team member and the team are at the mercy of the business conditions of the company and must adapt to the new

situation, versus correct the long-term problem. The short-term issues/problems may or may not be within the scope of the team to fix.

The model shows that local regions reduce pressure through some combination of two means: reliance on local efforts to improve local operations, and reliance on global efforts (such as the global team). Reliance on one or the other depends on the degree of influence of the local practices, culture, strategy, and reporting structure. Often, this influence is dependent on how the larger organization is structured. If a company is very regionally managed (such as Delphi Packard Electric Systems) then the leadership in each region may feel compelled to first try to solve their own problems and only later ask for help from other regions. The degree to which local efforts are effective is dependent on the local region's resources to solve the problems. If local resources are capable, then the local solution approach has more of a chance of being dominant. However, if the local region lacks certain resources, then the need for global teams to assist will increase and the potential for solving problems through global collaboration rises. If global teams have a "win-win" mentality and proven track record, then there is a greater potential for global efforts to be truly helpful in relieving local pressure.

Global versus local performance issues are reduced when this "win-win" factor exists with global teams. The global versus local performance issues are also reduced when leaders are effective at prioritizing and assigning short-term work and long term work between the needs of the global team and the local region. Sometimes the best approach is to assign people full time to one aspect or the other (global team versus local problem solving.) The advantage is that people on teams know their responsibility; there is less room for misunderstanding. However, this solution may cause the organization to miss opportunities for using the global team to solve local problems. The full time global team person may be unaware of local issues and others in the local region that are not on the team may not be as aware of the global team's potential for helping solve local problems. Leaders need to assess

the best approach to prioritizing work among team members, especially those that are part time members of global teams.

Systems Dynamic Model Summary

The above model is only one view of a very complex and dynamic situation, globally dispersed teams. Plenty of examples exist of global teams not performing nearly to the expected level of the management group that created the team in the first place. The model suggests that failure to perform can be caused by a failure in any one of several aspects of the total equation:

- Lack of effort.
- Lack of or wrong skills applied to the task.
- Lack of material resources or capital.
- Insufficient strategies for executing the team's main objectives.
- Lack of trust at either the team or regional levels.
- Poor communications among team members.
- Global versus local tensions that can divert team efforts.

Team success, however, depends largely, on each of these aspects being at an acceptable level for the team. Each team will require different levels of each factor based on the experiences (and current problems) for that team, so the ability of the organization to easily identify any one factor as a root cause of poor performance will be very difficult. This can lead to frustration at both the various leadership levels, and at the team member level. Understanding the scope of the problem is a necessary first step for leaders to systematically evaluate alternative courses of action to address each factor that potentially could contribute to positive or negative performance.

DATA COLLECTION: INTERVIEWS, SURVEY, AND A WORKSHOP

Interviews

One of the first steps in the data collection process was to conduct several interviews with upper level engineering managers from the North American region. During a preliminary meeting, a list of managers that were to be interviewed was created by the author and the director of engineering, based on the managers meeting the following criteria:

- Substantial managerial experience within the Delphi Packard Electric Systems global engineering organization and able to speak for the needs and conditions of all regions of the world (well-traveled).

- Responsible for more than one global team, preferably with teams that had varying degrees of performance (good and bad in the opinion of the director of engineering).

Two managers were selected for formal interviews based on the above criteria. Informal interviews were also held with a few other managers after the formal interviews were completed. The one-hour formal interviews were conducted individually by the author in each of the managers' offices within a one-week timeframe. The following "ground rules" were explained and agreed upon prior to the start of the interviews:

- All participation was voluntary. Any interview questions could have been left unanswered at the discretion of the participants.

- All comments were to be kept confidential. Specific permission would be required to attribute any comments to individuals. Company confidentiality would be protected as appropriate.

- Information learned from the interviews was to be supplemented with further research and a follow-up survey with other team members.

During the interview process, the following question areas were discussed:

1. What global teams fall under the manager's responsibilities?

2. What is the performance criterion that is used to evaluate teams?

3. In the manager's opinion, do the teams have varying levels of performance? If so, what are some examples of high performing teams and some examples of teams that are struggling?

4. Why do you think low performing teams are having problems?

5. Why do you think high performing teams are doing well?

6. Are any current global team activities not being adequately recognized by the larger organization as functioning global teams?

7. What are the standard communications technologies that are being used by teams?

8. Other comments?

All questions were answered by the managers during each of the interviews and the general feedback from the participants was very positive. Results from the interviews were documented by the author and sent back to each manager within two days of the actual interview for review and confirmation that all of the questions and answers were accurately recorded. These results were then used to finalize the questions to include in a general survey that was being prepared for distribution to all members of the global engineering teams at Delphi Packard Electric Systems. The results and conclusions from these interviews are discussed in a later chapter of this paper, along with the results from the survey itself.

Survey

Appendix A contains the content of the survey that was prepared by the author for distribution within the company. A preliminary (generic) survey had been received from other MIT researchers who were developing a multiple industry survey, as part of a larger project. The author was asked by MIT to use a similar if not exact document, so that the results from the Delphi Packard Electric Systems survey could be included in the larger effort.

This original survey document was changed slightly by the author for distribution within Delphi Packard Electric Systems. The following changes were made to the original MIT survey.

- A few questions were deleted from the original survey either, because they did not apply to Delphi Packard Electric Systems, or they were eliminated in an attempt to keep the total time to complete the survey at less than one hour.

- Several questions were added after discussion with MIT to capture some of the points raised during the interview process.

- Some of the questions were reworded for better clarity based on detailed reviews by the author with a few people outside the United States (where English was not their first language).

- The survey document was converted to a Microsoft Excel file format, which included some Excel functionality, such as automatic macros and fill-in forms. This was done to allow the document to be sent via E-mail around the world to all of the global team members. It also allowed the survey participants to quickly and easily fill in the document electronically and return it to the author via an E-mail reply. This method of survey completion was possible, since

everyone within the company already had access to MS Excel and E-mail on their desktop computers.[19]

- While a single workbook file was used to contain the survey, the actual survey questions were grouped in different categories using Microsoft Excel worksheet tabs (one category per worksheet). The purpose was to allow people to complete the long survey in smaller chunks, and hopefully to minimize frustration from filling in a long continuous list of questions. This also allowed people to more easily complete the survey over different periods of time, if they did not have enough time to complete the survey in one sitting.[20]

Once the survey design was completed, a pilot distribution was given to 25 upper and middle managers during a workshop meeting that was held in late February, 2000. (See the Workshop notes later in this chapter for more details.) The purpose of the pilot distribution was to confirm that the survey could be completed in less than one hour, and to make sure that all parts of the survey were understandable.

The survey was then sent electronically the next day to 206 people from various parts of the world, who were believed to be members of at least one of the global engineering horizontal teams. The list of possible survey participants was generated by the author based on conversations with team leaders, team roster documentation on the corporate web site, and prior meeting minutes of some of the teams. A cover letter E-mail was sent along with the Excel file containing the survey to each participant. Survey participants were asked to complete the survey within two weeks and return it to the author. The cover letter explained the voluntary and confidential aspects of the survey.

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[19] People were given the option of completing the survey by printing and completing a paper copy of the survey, and then returning it via fax or regular mail, but no one chose that option.

[20] The figures in Appendix A are arranged based on the actual groupings (worksheets) used in the overall Excel workbook file.

Of the original 206 people to receive the survey, 49 names were later removed from the list of potential respondents, due to internal job transfers, attrition, illness, E-mail address errors, etc. [21] Of the 157 remaining names, 130 people returned surveys, for an 83% response rate. (See Figure 17.) Three people returned multiple surveys (one each for the different teams they were a member of). A total of 135 surveys were included in the data analyses. The response was very good across all regions, with no region having less than a 75% response rate.
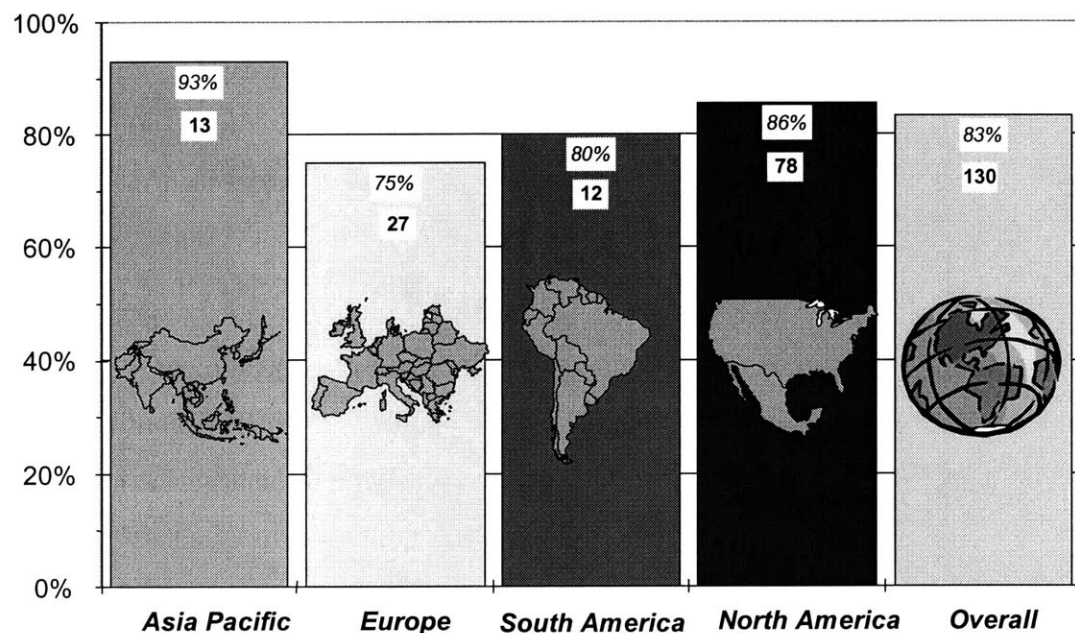
Figure 17 - Survey Response Rate by Region of the World

The high, overall response rate may have been due to several factors:

- Ease of use for the respondent to complete and return the survey. Several people commented in their E-mail replies that they enjoyed completing the survey and found it easy to use.

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[21] Only 35 of the 36 global teams were included in the final survey. A decision was made to exclude the Global Footprint team from the scope of the survey, because it was a brand new team, which had only met once. In addition, the leader for that specific team was on disability leave at the time of the survey.

- General interest in the subject matter. Many comments expressed agreement regarding the need for global teams within the company, and support for this type of approach to improving the current system.

- General attitude within the company with regards to people doing as they are requested. Delphi Packard Electric Systems' corporate culture is based on the concept of Excellence – Exceeding your customer's expectations.[22] This culture has been in place for over 15 years, is well known, and accepted globally by nearly everyone in the company. Most people would view a request for information, such as this survey, as another opportunity to practice excellence. Thus, completing the survey would be seen as meeting a customer's (i.e., the author's and/or management's) expectations.

- Trust regarding confidentiality of responses. The author emphasized that all individual responses would be kept confidential. Many people apparently accepted this commitment, since they provided responses to some questions that were quite polarized (i.e., very strongly agree or very strongly disagree). In addition, many people included detailed comments at the end of their surveys.

The majority of global team members were from the North American region, followed by Europe, Asia/Pacific, and South America. Based on the consistent response rate by all regions, the actual surveys received by each region were indicative of the actual team rosters. (See Figure 18 for a summary of the surveys received from each region.)

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[22] Customers are defined as anyone using your product or service, including both external (formal) customers and internal people within the company.
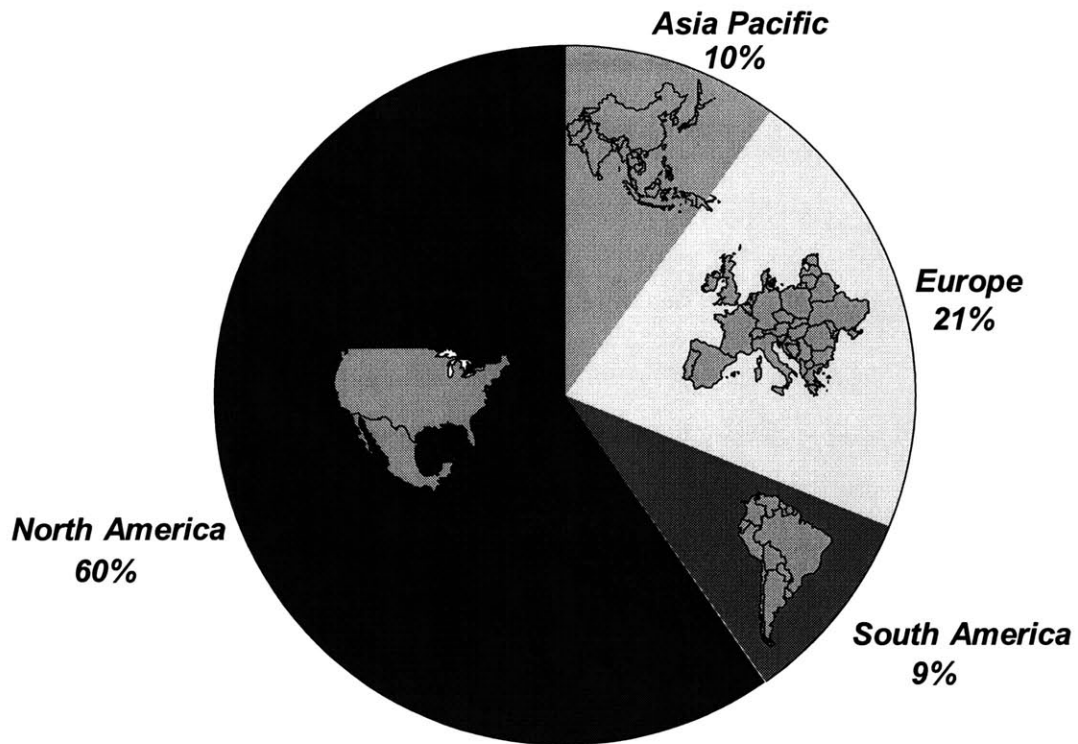
Figure 18 - Total Surveys Returned by Region of the World

More details about the results of the survey are provided in a later chapter. These results include more demographic information about the survey respondents, as well as data analyses in the areas of problems and priorities for the company to focus on, and some cause and effect relationships concerning global teamwork.

Workshop

A global team workshop was held in late February 2000 and was attended by 25 members of the Global Engineering Management Team (GEMT). The GEMT represents the key engineering management people within the company who meet quarterly to discuss global projects. People from Asia, South America, and Europe met in North America for a general two-day meeting, of which the global team workshop was a ½ day. During the workshop, this specific thesis project was introduced and the pilot survey was distributed for completion.

After the survey was completed (about 1 hour), the larger group was divided into 5 smaller groups for some breakout session work. During these breakout sessions, each manager was asked to represent themselves, their teams, and their regions.

The following instructions were given to each smaller group:

- Use your survey responses as a basis for generating discussions.
  - o Look for statements that seemed very relevant to you or your region (Answers at either end of response spectrum?)
  - o Get multiple regional input and multiple team inputs
  - o Everyone participate
- Generate a list of agreed upon gaps / problem areas.
  - o Scope can vary from all of engineering, to only "Product" or "Process" or "Competency" team categories or just specific team(s)
  - o Chart gap areas and scope of problems
- Generate at least five recommended action plans.
  - o Emphasize (for now) short term plans (next 6 months)
  - o Longer term plans can also be suggested
  - o Chart action plans and reasoning

After the smaller sub groups met in separate rooms and completed the above tasks, the larger group reconvened and reviewed the results from each subgroup. A general discussion followed and several decisions were made by the larger group, based on common input from the various subgroups.

- General support was given for distributing the survey to the rest of the global team members in the engineering organization.
- Managers agreed to reassess the actual list of global teams that existed at that time. Upper management agreed to revise the list of teams to include smaller sub teams and to eliminate some teams, which might no longer be considered as important or strategic.

- Regional managers would be allowed to propose a varying level of involvement for each team. Prior to this, all regions were expected to participate more or less equally on every team. Upper management was now willing to accept that economic and other business factors might restrict the level of involvement by certain regions for specific teams. Local managers were asked to determine what the appropriate level of involvement should be.

Several other global team review meetings were held by the GEMT group in April, May, and September to assess the progress of this project. The results of the survey were reviewed and some team structural changes were implemented. A later chapter discusses these changes.

MAPPING OF ORIGINAL SURVEY TO THE SYSTEM DYNAMICS MODEL

Purpose

In order to perform causal data analysis, the original survey questions were mapped onto the variables from the proposed system dynamics models. Based on this mapping, the survey could be evaluated for completeness. Some model variables would have no related survey statement, suggesting that additional survey questions should be considered to address the impact of the model variable. (In some cases, an original survey question may need to be reworded to better address the dynamics associated with the variable.) Other questions that did not map to any of the model variables would suggest that either the question was outside the intended scope of the model, or the model may need to be changed to better address the areas raised by the survey question.

Using the mapping results, the data could be analyzed in a more systematic process (i.e., compare the strength of correlations between various survey questions with the predicted cause and effect relationship from the model variables). If two questions showed strong correlation, then the cause and effect relationship for the variables in the model would appear to be better supported.

In addition, survey questions were studied to identify and rank the specific needed improvement areas for the company as a whole. The map of these questions to the SD models was then studied to identify specific actions leaders should take to be more effective in managing globally dispersed teams.

Process

The survey questions were divided into two main categories: demographic information and SD model variable candidates. Questions about region, age, years of service, and team membership were considered demographic in nature. No mapping was done for demographic variables, since the model does not include demographics.

All of the questions that required the participant to provide a response ranking (very strongly disagree to very strongly agree) were considered candidates for mapping onto the SD model variables. After comparing the proposed SD model to the survey, some of these questions could not be mapped because they did not seem to fit in any one particular area (variable) of the model. As mentioned earlier, this could be due to potential gaps or errors in the model, or because the survey questions were outside the limited scope of the model.

The mapping process involved two steps. First, each survey question was evaluated in order of survey question number. All of the variables in the SD model were evaluated to identify if a fit (or mapping) existed. This first step identified survey questions that would appear to have no place within the model.

Next, the model variables were evaluated one at a time starting with each model "group" (Effort, Strategy, etc.) and the "boxes" (model variables) within each group. The entire list of survey questions was reviewed to identify if any additional questions (besides the initial ones identified in the first step) should be mapped to that variable. This seemingly redundant step was taken to try to ensure that the mapping process was as accurate as possible.[23] The results of both efforts were then consolidated into one common reference listing that related model variables by "Group" and "Box" with numbered survey questions.

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[23] With 129 survey questions and over 150 model variables, there is a high potential for error in the mapping process.

Mapping Results

Appendix B contains the details for the mapping process. The first part of Appendix B contains a listing of the survey questions sorted by survey number. The associated model variables are shown in columns to the right of the survey question ("Group" and "Box" names that identify the model variable). The second part of Appendix B contains the same data, but it is sorted by model variable names ("Group" and "Box"). Any associated survey question numbers are shown in the last column of this listing.

Some actual model variables are shown in more than one group. For example, the variable "Trust Among Team Members" appears in both the "Effort" and "Interaction/Communication" groups. In the listings, the associated survey questions for these redundant variables are shown in every group that contains the variable. Finally, some survey questions may appear to be associated with a specific model variable, but the survey question is shown as "unassigned" to any variable. If there appeared to be any ambiguity or uncertainty with the wording of the question in terms of mapping to a variable, the decision was made to not map to that variable. In this way, survey questions could be evaluated for better wording.

Some general observations can be made about the results of mapping the survey questions to the various parts of the proposed model. Only one or two questions address the variables found in the Capital model, and these focus on the primary variable (Resources Available to Team). There are no questions that explore the sources of these capital resources (i.e., local vs. global resources allocation policies) or the financial ability of regions to provide capital/resources for its team members, given a specific company policy. Thus, if the survey identified a capital/resource gap or problem, it may not provide sufficient information to identify the reasons for the gap.

The survey questions addressed several of the variables that are discussed in the Skills portion of the model. Diversity, leadership effectiveness in a variety of areas, cross training, and collective capability are model variables that are covered by survey questions. The survey could be changed to include an analysis of the optimum size of the team, political power and skills among team members, and a more specific discussion of team member skills, such as interpersonal skills and task relevant (technical) skills. In addition, there are no questions that explore the company's ability to provide outside skills to aid the team.

The Effort part of the model is better covered by the survey questions. Many of the variables have at least one question that maps to them. Some variables however do not have questions that would provide valuable information to the researcher. These include positive prior interaction among team members, degree that individual skills are viewed as a match to the required team skills, individual effort applied to tasks, and the influence of fatigue/stress and available time on that individual's effort. Several questions could also be reworded to make them less ambiguous in terms of which model variables are being addressed.

In the Strategy model, several variables are addressed by survey questions. These include acceptance of strategies by both local regions and the global organization, alignment/fit of the team within the larger organization, and group norms that support self-regulation among team members. There are no questions about the source of strategies (internally developed by the team or provided to the team by some external group). Questions that specifically address the appropriateness of the strategies adopted by the team and the quality of the strategies that are developed are also missing.

The survey has several questions that address the variables shown in the Results part of the model. Some of the questions could be reworded to more specifically address certain aspects of the variables that help define team

effectiveness, but in general, the survey adequately covers this portion of the overall model.

The Interaction/Communications model has a few variables that are not covered by the survey questions. These include questions about trust at the organizational level (region to region vs. the individual level), the degree of competition among various regions, what the desired state should be in terms of the quantity of face-to-face interactions (versus what the actual face-to-face interactions are to date), and the quality of the face-to-face interactions. Another important variable that should also be addressed in the survey is the concept of rhythm in ongoing interaction and communications. There are questions that explore how many meetings occur each year, etc., but there is little information to be learned regarding how well the team maintains a continuity or rhythm in their activities.

The survey addresses some of the variables in the final part of the model (Global versus Local Performance Issues). These include the tendency of team members to focus on local issues, team objectives that are complimentary at both the local and global levels, and the career aspirations at the local level for team members. The survey does not adequately address the factors that would affect local pressure on team members to focus on local issues versus global team activities (e.g., both short term and long term local issues, efforts to improve local operations, etc.) It also does not address the ability or history of the global team to aid in solving these local issues.

Summary

The mapping process identified areas of improvement for the design of future surveys. Because the complexity for managing globally dispersed teams is so significant, one could suggest that no one survey can be expected to adequately address all of the potential factors that influence team performance. A researcher needs to balance the desire to acquire as much information as possible with the

need to keep the survey length at an acceptable level, so that participants can complete the survey in a reasonable amount of time. As research on globally dispersed teams continues, the survey document will naturally undergo incremental changes. Based on the SD model presented in this thesis, and the subsequent mapping of the survey questions to the model, specific changes to future surveys are suggested in a later chapter of this thesis.

DATA RESULTS AND ANALYSES

Introduction

In this chapter, the data results from the original survey and manager interviews are presented.[24] The information is organized in the following manner. First, the data results are discussed that identify items the survey participants found to be positive aspects of the Delphi Packard Electric Systems engineering organization in terms of effectively managing globally dispersed teams.

Next, the data results are presented that identify potential areas of improvement for Delphi Packard Electric Systems engineering organization. In addition to specific statistical data for various survey questions, comments from the interviews and/or survey are also quoted to support the author's conclusions, concerning both the positive aspects of the company and potential areas for improvement.

The survey data was initially analyzed by computing a weighted average for each survey question using a scale from-3 to +3 for each survey response (-3=Very strongly disagree, -2=Strongly disagree, -1=Disagree, 0=Neutral, 1=Agree, 2=Strongly agree, 3=Very strongly agree). Any questions that were worded negatively had the weighted average adjusted so that valid comparisons could be made for every question (i.e., each response for negative questions was inverted to get an adjusted and comparable weighted average). All questions were then ranked by the weighted average response to determine which factors/areas were of most concern to the survey respondents as a whole.

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[24] Not all of the data analyses are presented in this paper, due to the confidential nature of some of the responses and the need to protect the anonymity of the participants.

In addition, to the above weighting factors for each response category, different weighting factors were evaluated to see if there was any major change to the overall rankings, for responses that had more points at either end of the response spectrum. [25] The final rankings chosen for publication were a straight average of the three different weighting factors. Appendix C contains the results of this analysis. The survey question list is sorted with the identified areas for improvement at the top of the list and the areas that the company is considered to be doing a good job (i.e., favorable responses) at the bottom of the list.

The data was also analyzed to identify those correlations (measure of how variables are related) that were considered significant. SPSS 10.0 software was used to perform all of the data analyses. Since the data is in the form of ordered categories (Very strongly disagree to Very strongly agree), the Spearman rho coefficient was used to obtain the measure of the bivariate correlation between various questions. Missing values were treated using the "Exclude cases pairwise" option in the software and all tests of significance were used with the "Two-tailed" option set. [26]

In addition, some questions were also analyzed to determine what the response differences were for certain demographic factors (e.g., management level, team type, region of the world, etc). SPSS Boxplots were used to evaluate the spread of responses to a particular survey question based on different demographic variables. Boxplots (also known as box-and-whisker plots) are summary graphs that display the median, quartiles, and extreme values for individual variables. The box represents the interquartile range, which contains the 50% of values. The whiskers are lines that extend from the box to the highest and lowest values, excluding outliers. A line across the box indicates the median. Boxplots are a more

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[25] Responses were also assigned two additional weightings (-5, -3, -1, 0, 1, 3,5 and -9, -3, -1, 0, 1, 3, 9). There was little difference found in terms of the various ranking positions using each of the three different weighting factors.

[26] SPSS Base 10.0 Users Guide, SPSS Inc., 1999, 285-288.

appropriate analysis tool than traditional statistical measures such as the mean and standard deviation, when the data does not necessarily follow a normal distribution. [27]

Positive Areas

Information sharing: The survey respondents believe that in general the engineering horizontal teams are doing a good job of sharing information among the various team members. This supports the original goal of the organization when the global teams were first formed several years ago: to develop and foster information sharing among each region of the world for a variety of engineering functions. Figure 19 shows a summary of the survey questions that discuss the information sharing aspects of the global teams and the ranking of the overall responses.

Rank	Survey Statement	Number of responses						
		VSD	SD	D	N	A	SA	VSA
128	Sharing knowledge with my team members is an important part of my work with the team.	0	0	0	12	38	47	37
119	Success of the team is dependent on the shared contributions of all team members.	0	2	6	12	45	43	26
117	As the team works toward shared goals, relationships among members are becoming stronger.	2	0	8	21	38	42	24
115	Nearly all team members express opinions and ideas freely in most meetings.	0	2	11	14	48	34	21
106	An important information-sharing network has been created among members of the team.	0	1	12	14	55	37	13
96	Working on the team gives me access to useful knowledge that I can get nowhere else.	1	3	8	20	58	31	12

Figure 19 - Information Sharing Survey Questions

The highest possible rank was 129, since there were 129 questions included in the overall ranked listing. This means that the survey respondents agreed very strongly with the statement that sharing knowledge with fellow team members was an important part of the team's work. A large number of people also agreed with equating team success with the degree that members shared contributions in team meetings and, as team members worked toward shared goals, their relationships improved. A large majority of team members agreed that their teams had active participation by all team members during most meetings. To a slighter lesser

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[27] SPSS Base 10.0 Application Guide, SPSS Inc., 1999, 39-41.

extent, people felt that an important information-sharing network had been created among team members, and that working on the team gave people access to useful information that they could not easily obtain from other sources.

Several comments were received from survey respondents that addressed the information sharing aspect of global teams. Some of these comments are listed below:

- "... there is good exchange of information between regions."

- "Today it (the team) is acting as a communications tool to resolve issues within and between regions."

- "I use the members as a 'spring board' for shared information."

- "Having served on three to four different global teams over the past two years, my experience has been that their meetings are most often "information sharing" sessions. This is good – but not good enough."

- "It is a very good opportunity to share information, to learn, and to avoid duplication of efforts."

Figure 20 shows the output of the bivariate correlation analysis as performed by the SPSS 10.0 software for these six survey questions and responses.[28] The data analysis shows that the highest correlation occurs between the important information sharing and useful knowledge questions (0.548 correlation) and the success due to shared contributions and importance of sharing knowledge as part of the member's work on the team (0.519 correlation).

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[28] This correlation analysis example is shown here so that the reader can understand the means by which the SPSS software was used to determine correlation coefficients. Subsequent correlation analysis in this thesis will only include the numeric results of the most significant correlations, instead of the full output table from SPSS.

Correlations

Spearman's rho			Sharing knowledge with members is an important part of of my work with team.	Success of the team depends on shared contributions of all team members.	Relationships are becoming stronger.	Nearly all team members express opinions and ideas freely in most meetings.	Important information sharing network has been created among members.	Team gives me access to useful knowledge that I can get nowhere else.
	Sharing knowledge with members is an important part of of my work with team.	Correlation Coefficient	1.000	.519*	.367*	.354*	.297*	.357*
		Sig. (2-tailed)		.000	.000	.000	.001	.000
		N	134	134	134	129	131	132
	Success of the team depends on shared contributions of all team members.	Correlation Coefficient	.519*	1.000	.402*	.424*	.196*	.351*
		Sig. (2-tailed)	.000		.000	.000	.025	.000
		N	134	134	134	129	131	132
	Relationships are becoming stronger.	Correlation Coefficient	.367*	.402*	1.000	.442*	.422*	.435*
		Sig. (2-tailed)	.000	.000		.000	.000	.000
		N	134	134	135	130	132	133
	Nearly all team members express opinions and ideas freely in most meetings.	Correlation Coefficient	.354*	.424*	.442*	1.000	.289*	.280*
		Sig. (2-tailed)	.000	.000	.000		.001	.001
		N	129	129	130	130	128	129
	Important information sharing network has been created among members.	Correlation Coefficient	.297*	.196*	.422*	.289*	1.000	.548*
		Sig. (2-tailed)	.001	.025	.000	.001		.000
		N	131	131	132	128	132	132
	Team gives me access to useful knowledge that I can get nowhere else.	Correlation Coefficient	.357*	.351*	.435*	.280*	.548*	1.000
		Sig. (2-tailed)	.000	.000	.000	.001	.000	
		N	132	132	133	129	132	133

. Correlation is significant at the .01 level (2-tailed).

*.** Correlation is significant at the .05 level (2-tailed).

Figure 20 - Correlation Analysis - Information Sharing Questions

Figure 21 shows a Boxplot for the survey question, which stated that working on teams gave the team member access to useful knowledge that he/she could obtain nowhere else. For all the team members in the South America and Asia/Pacific regions, there was agreement with this statement, while in Europe and North America there was a wider spread of responses (i.e., mostly agreement, but also some disagreement). In the North America and Europe regions there are significantly more engineering resources within the company than in Asia/Pacific and South America, where the company has a much smaller presence. Thus, it seems logical that these smaller regions would agree with this statement more unanimously than the more established regions, where some respondents may have access to the same useful information, outside the team. [29]

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[29] This Boxplot example is shown here so that the reader can understand the means by which the SPSS software was used to evaluate the responses to various questions due to other factors, such as demographics. Subsequent analysis in this thesis will only include the conclusions found through this type of analysis.
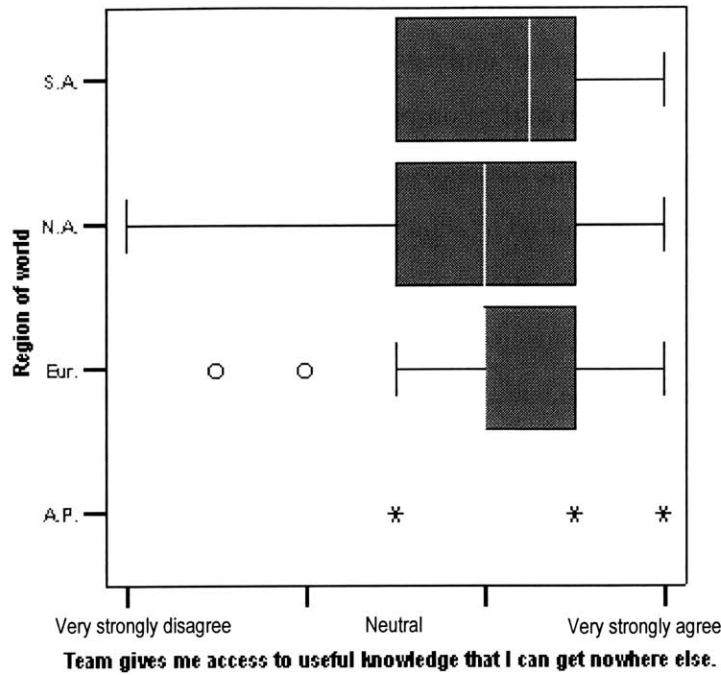
Figure 21 - Boxplot Analysis of Useful Knowledge Survey Question

Analysis of the other questions from the table in Figure 19 showed no significant variation in responses from people in the different regions.

<u>Importance, Commitment, Charter, Scope, and Goals:</u> Another positive area is how the team members feel about the importance of their specific team and their understanding and commitment to the team's charter, scope and goals. Figure 22 includes the survey questions that covered this particular area.

Rank	Survey Statement	VSD	SD	D	N	A	SA	VSA
127	I believe the work of the team is important.	1	2	4	6	30	54	37
126	I am personally committed to achieving the team's goals.	1	0	1	10	36	50	36
122	This team's charter, scope, and goals support the company's higher objectives and strategies.	0	0	1	11	47	51	24
121	I completely understand the team's charter, scope, and goals.	0	1	7	11	40	47	27
105	All members of the team agree on the team's charter, scope, and goals.	0	0	10	18	60	30	15
108	The team members within my region are committed to achieving the team's goals.	0	0	7	20	56	37	12

(Header: **Number of responses** spans VSD, SD, D, N, A, SA, VSA)

Figure 22 - Importance, Commitment, and Goals Survey Questions

A large majority believes that the work of their team is important and they are personally committed to achieving the team goals. The charter (purpose), scope, and goals of the team are understood by the team and are felt to be supportive / consistent with of the company's higher goals and strategies. Most team members agree with the team goals and believe that those members within their own region are committed to achieving the goals.

However, in the area of commitment to the team, there was less agreement among the survey respondents in terms of the relative commitment between local and remote members of the team. Figure 23 shows the responses for the question that suggested a lack of commitment by remote team members as compared to local team members. (Since the desired state would be for everyone to believe that all members are equally committed, it is assumed that people who agreed with the survey statement in Figure 23 are identifying a potential problem area for the company.)

Rank	Survey Statement	Number of responses						
		VSD	SD	D	N	A	SA	VSA
79	Remote team members are less committed than local team members in my same area/office	13	23	36	26	25	6	1

Figure 23 - Remote Team Member Commitment Survey Question

Some of the comments from the various survey respondents that support some of the above conclusions from the survey data include the following:

- *"Global teams are important in order to grow a global company."*

- *"I believe that global teams, if managed effectively, are of great value to the company."*

Bivariate correlation analysis showed that the highest areas of correlation occurred between the question about the goals of the team supporting the company objectives and the questions about member agreement about the goals (0.677 correlation coefficient) and the team member understanding the goals (0.608 correlation coefficient). There was also strong correlation between the question about personal commitment and the question about importance of the work of the

team (0.659 correlation coefficient). There was little correlation between the responses for other combinations of the questions in Figure 22 and Figure 23.

Boxplot analysis of the above questions on importance, commitment, team goals, etc. did not indicate any significant differences in responses for people from different regions of the world, except that the majority of people who expressed concerns about remote team member commitment were from the North American region. Still, the majority of people even from the North American region generally disagreed with the suggestion that remote team members are less committed than are local members.

Team Meetings and Agenda Topics: Survey respondents gave the company high marks in terms of the global teams being able to conduct meetings according to a given agenda and the fact that the meeting topics are of interest to most team members. Figure 24 shows the results of several questions about meeting agenda and the interest level of meeting discussions. There was strong agreement about the importance of a well-defined meeting agenda, that team members followed a given agenda, and that the team leaders did a good job of sticking to the agenda. There was also agreement that local team members and the survey respondents themselves were generally interested in the agenda topics.

Rank	Survey Statement	Number of responses						
		VSD	SD	D	N	A	SA	VSA
129	It is important to have a well defined agenda distributed to team members before the meeting.	1	1	0	2	28	63	40
114	The team members follow the agenda during most meetings.	0	0	1	11	70	43	9
112	The meeting chairperson effectively manages the agenda during the meeting.	0	1	7	20	49	37	14
99	Local team members seem to be interested in meeting discussions.	0	0	2	17	73	34	5
97	The agenda items do not maintain my interest.	13	22	71	21	3	2	1

Figure 24 - Team Meeting Agenda Survey Questions

While the responses to these questions were found to be positive, there was a mixed response to the questions about whether meeting agendas were defined adequately before meetings and how many people recommended agenda items for future meetings. (See Figure 25.)

Rank	Survey Statement	Number of responses						
		VSD	SD	D	N	A	SA	VSA
84	The agenda items for the meetings are typically poorly defined.	9	22	58	25	15	5	0
74	I often recommend agenda items for future meetings.	1	6	15	30	56	14	11

Figure 25 - Additional Agenda Related Survey Questions

The responses to these two survey questions indicate that the team leaders should find better ways to solicit ideas from others on the team and to publish meeting agenda information prior to the meetings. These types of action would have a high likelihood of being well received by the team members, especially since they indicated the importance of having a well-defined agenda before the meeting.

Other Positive Areas: In addition to the two main areas mentioned above, there were several other areas that the respondents felt Delphi Packard Electric Systems was performing at an acceptable level. A brief summary of these findings is listed below, along with the questions (shown by ranking number) that support the conclusions. (See Appendix 3 for a list of the questions and associated rankings).

- Team leaders for the most part see a natural fit between their leadership role on the team and their other assignments. Team leaders also feel they have the skills and training to get the job done. Team members trust their team leaders to represent the team's needs and believe that team leaders can be effective in leading the teams. (Rank numbers 125, 124, 109, 98)

- Team members find that E-mail is a useful tool for communicating outside of meetings and that most team members use the tool effectively. (120, 103)

- There does not appear to be any problems with the clarity of roles, responsibilities, etc. for each team member. The team does a good job of assigning responsibilities for specific tasks during meetings. (107, 102)

- Local supervision supports and understands the goals and importance of the global team. Engineering management (global) also support team leaders in their role on the global team. (111, 110, 100)

- There seem to be very few cultural or personality conflict issues among the team members. Both team leaders and team members find that relationships among the team members are generally good. Team members believe that variation among people helps with finding better solutions, and the different regions work well together. (116, 113, 104, 91) These findings may in part be due to the teams having acceptable norms of behavior and using consensus in their decision-making. (95, 89)

In addition to the survey findings, several comments in the survey and follow-up discussions by the author with various survey participants supported the positive conclusions that are listed above.

Improvement Areas

Face-to-Face Communications: The number one priority in terms of improving global team performance at Delphi Packard Electric Systems is the need to increase the amount of face-to-face communications. Figure 26 shows the three questions that address this topic. People are in very strong agreement that there needs to be more face-to-face meetings among team members. One root cause for the lack of meetings in the past may be financial constraints imposed by the company, which have limited travel funds. These two statements ranked first and third in the survey, in terms of the opportunities that people see for improving global team performance. The importance of face-to-face meetings needs to be taken into account also. People do strongly agree with the effectiveness of face-to-face meetings compared to other distance communications.

Rank	Survey Statement	Number of responses						
		VSD	SD	D	N	A	SA	VSA
1	There is not a sufficient number of opportunities to meet face-to-face with remote team members.	2	1	7	12	36	33	44
3	Travel funds are always available for the team to do its work.	31	27	44	19	8	2	2
123	Traditional face-to-face meetings are much more effective than audio/video conferencing meetings.	1	0	6	6	42	42	38

Figure 26 - Face-to-face Communications Survey Questions

Surprisingly, the absolute values of the magnitude of the correlations coefficients between these three questions were not as high as expected (e.g., absolute values ranging from 0.337 to 0.402).[30] At first, this may suggest that at least some of the team members do not necessarily associate the problems with not having enough face-to-face meetings to a lack of available travel funds. However, subsequent analysis of the comments from survey respondents and the manager interviews did show that most people equated a lack of travel budget with the gap in the number of face-to-face meetings. Many comments from both the interviews and the survey respondents strongly support the statement that a lack of face-to-face meetings is the number one problem for global teams within the company. Only a few of these comments are shown below:

- *"Working on global teams requires a time and expense commitment that we are not always ready to support. The first expense to get cut during 'belt tightening' time is travel. This greatly hampers the effectiveness of the global teams. Face-to-face interface is extremely valuable in terms of trust, relationships, effective implementation, and team commitment. Conference calls and net meeting (in its current state) just don't yield the same results."*

- *"In the past 2 years, out of 7 teams that I have participated, there was no opportunity to meet other team members, mostly due to budget issue."*

- *"Regular face-to-face meetings are cancelled due to cost reductions."*

- *"We must be allowed to resume face-to-face meetings. (Do not allow budget edicts to control travel needs of the business.)"*

- "We just can't get to meet."

- For the last 2 years, the fall Global LP Conference has been canceled due to budget constraints. This does not make for good face-to-face team building."

- "Face-to-face meetings are absolutely necessary."

- "Face-to-face meetings have been reduced over the last 3 years due to budget constraints. This has hurt team performance. The goal should be 4 times minimum a year for face-to-face meetings. The same goal should apply to sub-teams."

Based on Boxplot analyses of these specific questions, the concerns over a lack of face-to-face meetings and the related travel budget restrictions were found to be a common view across all regions of the world and all levels of management. Upper management did have more concerns about the lack of travel budget being available than the other levels of management. This may be because this is the level of management that usually makes the travel budget decisions within the company.

Recognition and Reward: Several questions were asked about the company leadership's ability to recognize and reward global team efforts. Survey results of these questions showed that this is another major area for improvement. Figure 27 shows the results from the questions related to this subject.

Rank	Survey Statement	Number of responses						
		VSD	SD	D	N	A	SA	VSA
6	Corporate compensation policies do not reward work on distributed teams.	0	1	12	38	47	22	6
9	Work on the team is not linked to the compensation I receive from the company.	4	6	19	27	41	19	12
10	As a leader, I can directly influence individual team member's performance rating (PBP).	8	6	13	0	5	3	6
13	I know exactly how my performance is measured on this team.	8	19	31	43	21	5	4
14	Any rewards I receive for my work with the team must come from my immediate supervisor.	3	9	37	21	31	20	11
17	Work on global teams is weighted equally with functional department work on my evaluations.	6	10	48	27	34	5	1
21	No matter how global the focus of my work is, it's what I do locally that gets rewarded.	3	5	44	18	39	18	5

Figure 27 - Recognition and Reward Survey Questions

[30] Since some of the questions were worded negatively, the correlation coefficients are also negative. The absolute value of all correlation coefficients is used throughout this paper.

The survey, and subsequent discussions with some of the team members, indicates that Delphi Packard Electric Systems does not currently have a sufficient formal recognition and reward system in place that specifically addresses those people working on globally dispersed teams. Survey respondents tend to believe that the majority of their compensation and rewards are based on their local efforts.

Team leaders also believe that they are unable to directly influence team member's performance ratings, especially if that member is not in the same region as the team leader. While the above conclusions are far from unanimous among all survey respondents, the number of people who tend to believe that this is a potential problem area is important.

Analysis of the results of most of the questions in Figure 27 showed little differences in the responses by region of the world and by levels of management. Those leaders who were members of upper management did tend to agree more with the statement about being able directly influence team members performance ratings than the other team leaders who were members of middle or lower management. The team leaders that are members of upper management (about 25% of all leaders) mostly agreed with the statement, while those leaders in middle management (50% of all leaders) and lower management (25% of all leaders) disagreed with the statement.

Further Boxplot analysis revealed that for the question posed to leaders regarding their ability to influence team member performance ratings, the team leaders from Europe tended to agree with the statement, while team leaders from North America disagreed with the statement. The majority of team leaders come from the North American region, as do many of the team members. There are no team leaders from the other two regions (Asia/Pacific and South America).

Below are a few of comments that support the above conclusions:

- *"The organization is not geared to acknowledge, appreciate, or reward the contributions made by these sub-teams with the general report out procedure."*

- *"Also, with regard to compensation, there is no clear-cut mandate from the company or management to reward the technical experts with career paths (tech 8, tech 9, etc.) or even with enhanced merit awards. We need to address these issues as we grow our global technical base."*

- *"There has not been any rewards for our contribution to the company or any appreciation from the top management team yet. Most people do agree the horizontal teams are needed to make the company global, but we have had difficulty to motivate staff for their contribution."*

<u>Management Review</u> – Three questions were studied to see what level of management review occurs within the company for globally dispersed teams. It appears that many of the survey respondents (both team members and team leaders) are not reviewing the work of the global team on a regular basis with their local (regional) management or with the company's global management. Figure 28 shows the results of these three questions. (The question about local supervision participation was included to take into account the possibility that the way that local management reviewed the team's work was not through formal reviews, but rather through active participation.)

		Number of responses						
Rank	Survey Statement	VSD	SD	D	N	A	SA	VSA
12	I report to the top engineering management in my region about this team on a regular basis.	13	17	30	22	31	13	1
16	My local supervisor actively participates on the team during global team meetings.	15	19	33	16	21	15	9
25	I report to the top engineering management within the company on a regular basis about this team.	4	4	9	5	14	3	2

Figure 28 - Management Review Survey Questions

Several comments from the manager interviews indicated that there was a need for more involvement on their part in reviewing the teams progress. Both managers discussed their personal plans to become more active in the review and

direction setting process. (Subsequent discussions with other team members confirmed that some of the teams have seen a noticeable change in terms of upper management attention and more frequent and meaningful reviews.)

Some of the survey comments about this subject are shown below:

- *"Team members need to do a better job of dissemination of the team's information within their overall region."*

- *"... the efforts and activities of the global team have not gotten much attention from upper management."*

- *"Stronger support by management to the global team is needed to make local functional areas more supportive to meeting the team's objectives and goals."*

There was very high correlation (0.776) between the questions about reporting to regional management and reporting to company (global) management. One explanation may be that a large number of team members are from the North American region, which is also the location of the global management team. There was less correlation among the other questions in Figure 28.

Regional Boxplot analysis of this subject area indicated some interesting observations. The degree that local supervisors participate in team meetings is much lower for the Asia/Pacific region compared to the other three regions of the world. South American members tend to keep their local management more informed of global team activity than the other regions of the world. European team leaders felt that they kept global management up to date with regular reviews, but North American team leaders had a wider response range to this question.

Boxplot analysis by level of management showed that the response to the question regarding "reporting to regional management" is a function of the level of management of the team member. For the lower levels of management, there appears to be agreement with the statement (less reporting). Middle managers

agree more with the statement and upper managers had the strongest agreement (most reviews with management). The degree that local supervisors participate in meetings is also related to the level of the survey respondent. Local supervisor participation increases as the level of management decreases (i.e., survey respondents at the lower levels of management had more of their supervisors participating in team meetings that those respondents at the middle and upper levels of management.)

Team leadership position / participation – Another potential area for improvement is the degree that the survey members felt that leadership was limited to certain people on the team. Figure 29 contains some of the questions that looked at how the position of team leader is rotated among the various members. The results indicate that within Delphi Packard Electric Systems engineering teams; the team leader position usually remains with one individual. In addition, there is general agreement that the same people are making the decisions in team meetings and demonstrating leadership. However, it also appears that a large number of people do not believe it is necessary to rotate the team leader position.

Rank	Survey Statement	Number of responses						
		VSD	SD	D	N	A	SA	VSA
2	The team leader position is currently rotated on a regular basis among the various members.	41	16	49	20	1	1	1
5	Leadership is exhibited by the same team members during most meetings.	0	0	7	18	63	34	8
7	The same team members appear to be making all the decisions in meetings.	0	3	21	25	49	27	4
8	The team leader position should be rotated on a regular basis among the various members.	17	16	41	30	15	8	3

Figure 29 – Team Leadership Position / Participation Survey Questions

There were no significant comments about this topic from either the manager interviews or the survey respondents' comments. It is suspected that most people on the team accept the current management philosophy of keeping team leaders constant over longer periods of time and do not see any problems with this situation.

There was some correlation (0.473) with regards to the questions about the same people exhibited team leadership in most meetings and same people making decisions in meetings. However, there was little correlation among the other questions and Boxplot analysis of these questions showed no appreciable differences in responses from different regions of the world or levels of management.

Other Improvement Areas: In addition to the four main areas mentioned above, there may be some other areas for improvement. A summary of these possible areas is presented below, along with the related questions (shown by ranking number). (See Appendix C for a list of the questions and associated rankings).

- There may be some global versus local issue dynamics taking place within some teams. Some questions suggest this possibility. For example, there is general agreement that functional department goals take priority over the team goals and that local supervisors support teams as long as they don't disrupt local activities. (Rank numbers 18, 23) However, there appears to be mixed results about whether teams are able to reconcile priorities in or outside of meetings. A crosstab analysis of the two questions about resolving team priorities (inside and outside meetings) showed that more people felt this was not a problem area. In addition, the question about whether local needs are taken into account in global decisions received generally strong support. All regions of the world tended to agree with this statement. (26, 46, 85) The conclusion is that the survey respondents recognize that Delphi Packard Electric Systems is a strongly managed organization at the local/regional level (explaining the responses to rank numbers 18 and 23), but that the global teams are making efforts to include the local needs in the global team's decisions.

- Better training and global policies and procedures may be areas of future improvement (24, 33).

- Some teams may need to make faster decisions. This was found to be especially true for the process and product/process teams and less true for the product and competency teams. (29)

- Finally, there is wide variation in responses to the questions about whether people are satisfied with the team's performance in terms of meeting the objectives of the team (7, 22). No conclusions could be made with regards to any significant differences in response for people from different management levels, regions of the world, team type, or other demographic factors. Some specific team-to-team differences could be observed but the total number of responses for any given team was usually small (i.e., there were typically 4 to 10 responses per team.)

Summary

Given the above data results and analysis, the company can consider different courses of action for leveraging their strengths and targeting specific future actions to certain areas of improvement. In general, people in the company (both team members and leaders) feel good about being part of the global teams: they understand and appreciate the importance of information sharing around the world, they believe that their team's focus (objectives, scope, etc.) is correct, they understand their role, and there are few cultural/relationship issues among the team members. The number one area for improvement that the company needs to focus on is to allow people to communicate more often face-to-face. In addition, management needs to review team activity more frequently and thoroughly, and recognize and reward those teams and individuals that are performing well. Other areas of improvement may be needed for specific teams, but the above areas of improvement should be the starting point for all teams.

RECOMMENDED CHANGES TO FUTURE SURVEY QUESTIONS

Overall Survey Structure

As mentioned earlier, the SD model proposed in this thesis suggests that the performance of globally dispersed teams will suffer if the team has problems in any one of the following areas:

- Lack of effort.

- Lack of or wrong skills applied to the task.

- Lack of material resources or capital.

- Insufficient strategies for executing the team's main objectives.

- Lack of trust at either the team or regional levels.

- Poor communications among team members.

- Global versus local tensions that can divert team efforts.

Team success, however, depends largely, on all of these factors together being at an acceptable level for the team. Given this supposition, it is suggested that future survey questions be organized along these factors to determine which areas are deficient for those teams that are not performing well. In addition, future surveys should be more specific in determining the effectiveness (performance) of team and organizational leaders for various actions.

Based on this approach to the problem, it is recommended that the way that the survey questions were originally grouped needs to change for future surveys. Survey sections with questions that focus on effort, capital, strategy, skills, communications, and global vs. local performance issues should be created. Some of the original survey categories included questions that addressed several parts of the systems dynamics model. For example, the original section that focused on

team processes included questions that addressed variables found in both the effort and strategy sections of the SD model. Rearranging the survey questions into new categories that are directly related to the SD model sections may make it easier for future researchers to identify the key problem areas for specific global teams. In addition, the original Delphi Packard Electric Systems survey had a section that was answered only by team leaders. It is suggested that this section be replaced with a more general leadership effectiveness section that is answered by both team leaders and team members. Finally, trust is a general subject that should be addressed by questions in several different sections of the survey, although it is expected that the new survey section that focuses on effort would contain many of these questions.

Original Survey Categories	Suggested Future Survey Categories	Comments
Demographics	Demographics	
Leader Only	----	Moved to Leadership Effectiveness.
Goals	Strategies / Processes	
Leadership	Leadership Effectiveness	More specific questions on various aspects of leadership.
Processes	----	Moved to Strategies / Processes.
Communication Technology	----	Moved to Interaction / Communication.
Meetings	----	Moved to Interaction / Communication.
Interaction	Interaction / Communication	Includes communication technology & team meeting factors.
Composition	Skills / Team Composition	
Outcomes	Results / Outcomes	
Company	Global vs. Local Issues	Includes local site factors.
Local	----	Moved to Global vs. Local Issues
----	Capital / Material Resources	New category addressing material/capital resource issues.
----	Effort	New category addressing individual & team effort factors.

Figure 30 - Proposed Changes to Future Survey Categories

Figure 30 shows the relationship between the original survey categories and the suggested new survey categories. For each of the original categories that are being replaced, the comments section of the table includes the name of the new

survey category that contains the majority of the original questions that were retained.

In the following sections of this chapter, new survey questions and associated reasons are presented for each of the new survey categories. The specific difference / change from the original survey is also provided for each question. (e.g., a new question not covered in the original survey, a rewording of the original survey question, or a carryover question from the original survey.) Unless otherwise noted, the responses to the new survey questions should use the same 7-point scale as used in the original survey.

Demographics

It is recommended that most of the Demographics section of the survey remain the same as the original survey. The questions about gender, age, work experience, and language are sufficient to be used for analyzing the data results for any of these factors. However, it is recommended that the Demographics section of the survey add a question that identifies the position within the company for the survey respondent (i.e., Executive/Upper Management, Middle Management, First Level Management, and non-supervisory position). Since the author knew nearly all of the survey respondents for the Delphi Packard Electric Systems survey, this information was added to the individual survey results after the fact. Having this information in the original survey document would have simplified the data entry and analysis efforts.

There is also a need for determining how much prior interaction exists between the survey respondent and other team members. While it is possible to include this type of question in the Demographics section, it is recommended that it be moved to the Interaction / Communications part of the survey. One key point about prior interaction is to determine how much of this interaction was positive versus negative. Additional questions are suggested in the Interaction /

Communications section of the survey that explore how extensive the prior interaction was between the survey respondent and the various members of the team. This line of questions is covered in more detail under the Interaction / Communications section of this chapter.

Capital / Material Resources

This is a new section of the proposed survey, which was not addressed adequately in the original survey. The intent is to provide insight to the company and/or outside researchers as to the root cause of any gaps in terms of resource availability to various team members. The original survey identified a question concerning the availability of resources, but did not elaborate on other factors that would affect this availability. The revised survey strives to identify the degree to which a team member depends on the global organization (company) versus the local region for adequate material resources and the willingness and ability of the local regions and/or the company to provide those resources. Figure 31 shows a list of resource related questions that are recommended for future surveys.

Proposed Survey Question	Change
The company provides the global team members with all of the capital and material resources (e.g. money for equipment, computers, etc.) needed to allow the team to be successful.	Reworded question
There is a willingness by the company to provide sufficient material resources for me to be active on the team.	New question
The company is financially able to provide sufficient material resources for me to be active on the team.	New question
I depend on my local region to provide the material resources needed for me to be active on the global team.	New question
The company has global policies that adequately address how to allocate sufficient resources to global teams so that the teams can be successful.	New question
For the near future, the company has the capital and material resources needed to implement the recommendations that come from the global team.	New question
My local region provides me with the capital and material resources needed to allow me to participate fully on the global team.	New question
There is a willingness by my local region's management to provide sufficient material resources for me to be active on the team.	New question

Proposed Survey Question	Change
My local region is financially <u>able</u> to provide sufficient material resources for me to be active on the team.	New question
I depend on the company or other regions to provide the material resources needed for me to be active on the global team.	New question
A lack of material resources (that are not available to one or more local regions) hinders the progress of the global team in terms of meeting its goals.	New question
My local region has local policies that adequately address how to allocate sufficient resources to global team members so that the members can be active on the team.	New question
For the near future, my local region has the capital and material resources needed to implement the recommendations that come from the global team.	New question
The appropriate levels of management in my local region adequately review and approve the material resources required of the global team.	New question
The appropriate levels of management in the organization adequately review and approve the material resources required of the global team.	New question

Figure 31 - Proposed Survey Revisions – Capital / Material Resources

Skills / Team Composition

This revised survey section replaces the older survey section that was called Composition. This section reviews the collective skills that the global team has at its disposal, including team member skills and the availability and the usefulness of outside knowledge/skills from either suppliers or other parts of the company. Figure 32 shows a list of skill and team composition related questions that are recommended for future surveys.

Proposed Survey Question	Change
Diversity among people on the global team helps create better solutions.	Reworded question * [31]
Qualified people with the necessary skills are available in each region to work effectively on the global team.	New question
Each applicable local region provides qualified people with the necessary skill levels to the global team.	New question
There are too few members on the global team to allow the team to be successful.	New question

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[31] MIT had issued a revised version of their industry survey for global teams with some changes from the original survey used for this project earlier this year. An asterisk (*) is shown to reference carryover or reworded questions based on this revised survey from MIT.

Proposed Survey Question	Change
There are too many members on the global team to allow the team to be successful.	New question
The size of the team is optimal to allow the team to be successful.	New question
Our global team has complementary technical (task-relevant) skills.	New question
Our global team has complementary interpersonal (social) skills.	New question
The collective capability of the team is sufficient for the team to be successful.	New question
There is a sufficient amount of cross-training and learning synergy among the global team members for the team to continue to improve its collective capability.	New question
The global team has access to sufficient political power within the organization to be successful.	New question
The global team is able to identify any skill gaps among the existing team membership in a reasonable timeframe.	New question
The global team is able to seek and acquire the needed help outside the team roster to address any skill and/or knowledge gaps.	New question
The company has sufficient levels of outside relevant knowledge and skills for the team to leverage.	New question
Members of the global team are aware of the availability of relevant outside skills and knowledge.	New question
The company has the ability and infrastructure to make outside relevant skills available to the team in a timely manner.	New question
The level of outside skills provided to the team is adequate for the team to be successful.	New question
The appropriate levels of management in my local region adequately review the local team representatives in terms of the skill levels required for the global team to be successful.	New question
The appropriate levels of management in the company adequately review the global team membership in terms of the skill levels required for the global team to be successful.	New question
Functional skills are the most important factor for choosing global team members.	Carryover question *
My prior experience on global teams was an important reason why I was selected for this global team.	Carryover question *
Most team members in the global team have prior experience working in locations with different culture.	Carryover question *
The combination of skills on this global team was carefully chosen to fit the task.	Carryover question
Language is not a barrier to success of global teams.	Carryover question
Cultural differences hinder global team performance.	Carryover question

Proposed Survey Question	Change
Team members of different countries do not work well together on the team.	Carryover question
Training in the company truly prepares people to work on globally dispersed teams.	Carryover question

Figure 32 - Proposed Survey Revisions – Skills and Team Composition

Effort

The original survey asked questions about the amount (%) of work time that the respondent was spending working on a globally dispersed team. Several other questions were asked in various parts of the survey that attempted to address some of the variables that were identified in the SD effort model. Because both individual efforts and the collective team effort are considered to be some of the most critical factors in terms of the success or failure of a global team, the recommendation is that future surveys have a dedicated section that focuses on effort. Figure 33 shows a list of effort related questions that are recommended for future surveys. The fourth question requires a "fill in the blank" answer.

Proposed Survey Question	Change
Remote team members are less productive than team members from my local site.	Reworded question *
Remote team members are less committed than team members from my local site.	Reworded question *
New team members are fully and quickly oriented to work on the global team.	Reworded question *
What percentage of your total work time do you spend on this globally dispersed team? _____ %	Reworded question
Among the members of the global team, duties are divided equitably and fairly.	Reworded question
Success of the team is dependent on the shared contributions and effort of all team members.	Reworded question
I am satisfied with my effort on the global team.	Reworded question
My accountability, roles, and responsibilities on the global team are clear.	Reworded question
The effort I put forth for the global team is sufficient for the team to be successful.	New question

Proposed Survey Question	Change
I put in more effort than other team members on the global team.	New question
The global team's overall (collective) effort is sufficient for the team to be successful.	New question
All other global team members believe that the work of the global team is important.	New question
I wish I could put in more effort on the global team, but there is not enough available time for me to do so.	New question
I find that my work on the global team is stressful and fatiguing.	New question
The overall work of the global team is viewed as meaningful and important by my local organization.	New question
The overall work of the global team is viewed as meaningful and important by my overall company.	New question
I find that the specific tasks that I perform for the team are critical if the team is to be successful.	New question
I get official recognition for working on globally dispersed teams.	New question
I enjoy doing the assigned tasks for the global team.	New question
I sense a shared commitment among all of my fellow team members on the global team.	New question
The company has a system to recognize and reward people who work hard on global teams.	New question
The company has rewards and objectives that focus on the group level versus just the individual level.	New question
There is alignment and synergy among all global team members' efforts.	New question
The appropriate levels of management in my local region adequately review the local team representatives' individual efforts that are expended in order for the global team to be successful.	New question
The appropriate levels of management in the company adequately review the global team's total team effort that is expended in order for the global team to be successful.	New question
My global team members have no input during my individual performance appraisal.	Carryover question *
My global team leader provides formal input during my individual performance appraisal.	Carryover question *
The global team has a formal process to help transition new team members into their new role.	Carryover question *
Transition for new members on the global team happens too quickly.	Carryover question *
I believe the work of the global team is important.	Carryover question
Any rewards I receive for my work with the team must come from my local supervisors.	Carryover question

Proposed Survey Question	Change
Local team members appear interested in meeting discussions	Carryover question
Remote team members appear disinterested during most meetings	Carryover question
Changes in the team membership do not negatively impact global team performance effectiveness.	Carryover question
I have complete confidence and trust in local team members to get the job done.	Carryover question
I have complete confidence and trust in remote team members to get the job done.	Carryover question

Figure 33 - Proposed Survey Revisions — Effort

Team Strategies / Processes

This survey section includes questions from the original Goals and Processes sections, along with new questions that address the variables introduced in the strategic part of the SD model. The intent of the revised survey is to expand the survey scope from a focus on the goals (expected outcomes) of the team to include also the means (strategies) by which the team attempts to achieve the goals. Team processes that include group norms for behavior and decision-making mechanisms are part of the strategic discussion, but additional insight could be gained in this area with additional questions. At the same time it is the author's opinion that some of the questions that deal with team processes would be better placed in the interaction / communications section of the survey, since these questions are directly related to the interactions of team members. Figure 34 shows a list of team strategy and process related questions that are recommended for future surveys.

Proposed Survey Question	Change
The global team has an external mentor with sufficient political power, who helps the global team in reaching its goals.	Reworded question *
I completely understand and agree with the goals of the global team.	Reworded question
All members of the global team understand and agree with the team's goals.	Reworded question
The global team has the autonomy to select strategic options that the organizational leadership may not endorse.	Reworded question

Proposed Survey Question	Change
The global team has created group norms of appropriate behavior among its members.	Reworded question
Strategic and other global team decisions are made based on consensus of all team members.	Reworded question
My local region understands and agrees with the goals of the global team.	New question
The global team itself internally determines the task-appropriate strategies to be used for accomplishing the goals of the team.	New question
The global team relies on others outside the team to determine the strategies to be used for accomplishing the goals of the team.	New question
Internally generated strategies for accomplishing the goals of the global team are of high quality.	New question
Externally generated strategies for accomplishing the goals of the global team are of high quality.	New question
The global team has the ability to develop strategic plans that are innovative.	New question
I completely understand and agree with the global team's strategies for accomplishing the goals.	New question
All members of the global team understand and agree with the team's strategies for accomplishing the goals.	New question
My local region understands and agrees with the global team's strategies for accomplishing the goals.	New question
The global team is efficient in terms of working together to generate task-appropriate team performance strategies.	New question
The global team struggles when it comes to developing, discussing, and agreeing on task-appropriate strategies.	New question
The global team has an internal team member with sufficient political power, who helps the global team in reaching its goals.	New question
All global team members seek to comply with the established group norms.	New question
Group norms encourage situation scanning and strategic planning among all team members.	New question
The global team understands the organizational constraints and requirements that would affect the quality of strategic plans developed by the team.	New question
The global team understands who are the customers of the team's output.	New question
The global team understands the customers' evaluation criteria of the team's output.	New question
All of the parameters that will ultimately affect global team performance are clear and understood by the team.	New question
Global team strategies are viewed by both the larger (global) organization and my local region as a "win-win" situation.	New question
The global team is sufficiently executing task-appropriate team performance strategies.	New question
The appropriate levels of management in my local region adequately review and approve the strategies and goals of the global team.	New question

Proposed Survey Question	Change
The appropriate levels of management in the company adequately review and approve the strategies and goals of the global team.	New question
Global team operating procedures and protocols support successful completion of the team's task.	Carryover question

Figure 34 - Proposed Survey Revisions – Strategies and Processes

Interaction/Communications

This section includes questions that address the interaction among team members and the communications technologies used to facilitate this interaction. Some of the questions that in the original survey dealt with team processes are now included in this part of the survey. Figure 35 shows a list of interaction and communication questions that are recommended for future surveys. The fourth question requires "fill in the blank" answers.

Proposed Survey Question	Change
The team has sufficient opportunities to conduct face-to-face meetings.	Reworded question
I am satisfied with the current set of technologies used in communicating with global team members.	Reworded question
The team members trust our global team leader to fairly represent our global team needs.	Reworded question
The global team has active members in a total of ____ different time zones with the largest time difference between any two time zones being ____ hours.	New question
Global team meetings that are held via distance communications are effective and of high quality.	New question
Global team meetings that are held face-to-face are effective & of high quality.	New question
There is a good fit between existing distance communications technologies within the company and the nature of the work required of the global team.	New question
The global team largely relies on distance communication technologies.	New question
The global team has a good, regular rhythm in terms of communications and interaction among team members.	New question
Before being assigned to this global team, I have had prior interaction with at least some of the team members that I considered a positive experience.	New question
Before being assigned to this global team, I have had prior interaction with at least some of the team members that I considered a negative experience.	New question
The global organization fosters intense competition among the various local regions.	New question

Proposed Survey Question	Change
There is not a high level of trust among the various local regions of the company.	New question
There is a willingness among my local region to align local culture with the company culture.	New question
The company's overriding direction/message to local regions is clear and unambiguous.	New question
It is personally convenient for me to communicate regularly with the rest of my global team members.	New question
There is a high level of trust among most of the global team members.	New question
I do not trust at least one of the members on the global team.	New question
The company has provided cross-cultural training classes to help its employees work effectively on global teams	New question
Internal global team interaction and communications are generally effective.	New question
Interaction and communications between the global team and others outside the team are generally effective.	New question
Work details are often defined when team members talk with each other.	Carryover question *
Over time, the team is creating it's own unique 'history' of stories and ways of doing things.	Carryover question *
Face-to-face meetings are much more effective than remote conferencing meetings (e.g., audio or video teleconference meetings).	Carryover question *
When this global team meets, the team members whose input is needed to accomplish the task are always present.	Carryover question *
The same team members appear to be making all the decisions in global team meetings.	Carryover question *
Communication technologies used for communicating synchronously with remote team members are easy to use.	Carryover question *
Communication technologies used for communicating with remote team members facilitate effective global team meetings.	Carryover question *
I receive sufficient training to use communication technologies most effectively on global teams.	Carryover question *
The company has a strong corporate culture.	Carryover question *
Global team members identify with a corporate culture.	Carryover question *
It is hard to trust the other people on the global team because we do not have time to get to know each other.	Carryover question
Sharing knowledge with my team members is an important part of my work with team.	Carryover question
As the global team continues to work toward a shared goal, the relationships among all the team members are becoming stronger and more important.	Carryover question

Proposed Survey Question	Change
Travel funds are always available for the global team to do its work.	Carryover question
An important information-sharing network has been created among members of the team.	Carryover question
Working on the global team gives me access to useful knowledge I can get nowhere else.	Carryover question
I regularly talk about work related issues with my remote team members outside global team meetings.	Carryover question
I regularly talk about work related issues with my local team members outside global team meetings.	Carryover question
I regularly talk about social issues with my remote team members outside global team meetings.	Carryover question
I regularly talk about social issues with my local team members outside global team meetings.	Carryover question
All global team members express opinions and ideas freely in most meetings.	Carryover question
On a regular basis, global team members take the time during the meetings to share lessons learned at their local sites.	Carryover question
The company promotes cross-cultural working relationships among its workforce.	Carryover question

Figure 35 - Proposed Survey Revisions – Interaction / Communications

Global versus Local Issues

Global team members must address potential conflicts and issues that may arise between their local region and the global organization. This part of the survey combines the local, company sections of the earlier survey, and introduces questions that explore any conflict between local and global parts of the organization. Figure 36 shows a recommended list of questions for future surveys that address these different aspects of globally dispersed teams.

Proposed Survey Question	Change
The needs of the global team and local priorities are rarely reconciled during or after global team meetings.	Reworded question
Team member concerns about individual promotion and career advancement have a negative impact on the performance of the global team.	Reworded question
I have a tendency to want to focus and spend more time on local issues that are outside the global team's scope rather than on the work of the global team.	New question

Proposed Survey Question	Change
My local region can solve most of the local problems that it faces without help from the global team or other regions.	New question
At least one of the remote regions that are represented on the global team needs to rely on the global team for help in solving local problems.	New question
My local region tends to first try to resolve local issues without seeking help from other regions.	New question
My local region is currently facing serious short-term business and economic issues.	New question
My local region is currently facing serious long-term business and economic issues.	New question
There is a significant gap between my local region's actual performance and the desired state of operations.	New question
The global team has a proven record of accomplishment of providing significant improvement at the regional / local level.	New question
The global team is expected to provide significant improvement at the regional / local level.	New question
The global team has a proven record of accomplishment of providing significant improvement at the global (company wide) level.	New question
The global team is expected to provide significant improvement at the global (company wide) level.	New question
The global team strives to have complimentary objectives and strategies that address both local and global issues equally.	New question
My company strives to manage the business by optimizing the local performance of each region through a strong regional management structure.	New question
My company strives to manage the business by optimizing the global performance of the company through a strong global functional management structure.	New question
Work on global teams helps my long-term career objectives.	Carryover question
No matter how global the focus of some of my work is, it is what I do locally that is rewarded.	Carryover question
Work on global teams is weighted equally with functional department work on performance evaluations.	Carryover question
My local supervisor supports global teams as long as they don't disrupt local activities.	Carryover question
Local needs are taken into account in global team decisions.	Carryover question
My local site readily implements the recommendations of the global team.	Carryover question
Contributions of the local sites in global teams are not as appreciated as they should be.	Carryover question
Local management does not understand how to support its employees when they work on globally dispersed teams.	Carryover question

Proposed Survey Question	Change
My local supervisor understands the goals of the globally dispersed team.	Carryover question
Functional department goals take priority over the goals of the global team.	Carryover question
My local supervisor doesn't understand the importance of my work on the global team.	Carryover question
The team is a global initiative, but the company has no global structure of policies and procedures to support it.	Carryover question

Figure 36 - Proposed Survey Revisions – Global versus Local Issues

Leadership Effectiveness

Throughout the proposed SD model, various "leadership effectiveness" variables are presented. This section of the survey combines two of the earlier sections that looked at leadership issues along with other questions that address various leadership effectiveness variables found in different parts of the SD model. Some of the questions are divided into different areas of leadership, including the global team leader, leadership at the local/regional level, and leadership at the global/company level. Figure 37 shows a list of leadership effectiveness questions that are recommended for future surveys.

Proposed Survey Question	Change
Leadership at the global company level understands the major concerns facing global teams in general.	Reworded question
My local leaders appreciate my contribution to the global team.	Reworded question
Company leadership is effective at maintaining a critical level of face-to-face interaction for this global team.	New question
Company leadership is effective at holding regular management reviews of the global team's overall performance.	New question
Company leadership is effective at identifying and addressing problems that arise for the global team.	New question
Company leadership encourages and fosters collective learning among various regions of the company.	New question
Company leadership is effective is at creating the right global teams to address global and/or local issues.	New question
Company leadership is effective at selecting/approving the right people to represent each local region for this global team.	New question

Proposed Survey Question	Change
Company leadership is effective at creating challenging and specific performance objectives for this global team.	New question
Company leadership is effective at recognizing and rewarding global teams that have demonstrated excellent performance.	New question
Company leadership is effective at recognizing and rewarding individuals that have provided significant contributions to global teams.	New question
In general, I believe the company has effective global leaders to manage globally dispersed teams.	New question
Leadership within my local region understands the major concerns facing global teams.	New question
My local leadership is effective at prioritizing the responsibilities of the global team and my other (local) responsibilities.	New question
My local leadership is effective at selecting/approving the right people to represent the local region for this global team.	New question
My local leadership is effective at recognizing and rewarding those local members on the global team that have provided significant contributions to global teams.	New question
In general, I believe that my local region has effective leaders who support both this global team and me.	New question
The global team leader appreciates my contribution to the team.	New question
The global team leader is effective at having regular and productive team meetings.	New question
The global team leader and my local supervisor have sufficient discussions about my overall role and specific performance on the global team.	New question
The global team leader is effective at minimizing any one member from providing an inappropriate amount of input in the team meetings.	New question
The global team leader is effective at creating group synergy among all of the global team members.	New question
The global team leader is effective at recognizing and rewarding those global team members that have provided significant contributions.	New question
The global team leader is effective at recognizing and rewarding the global team as a whole for excellent performance.	New question
In general, I believe that the assigned team leader is effective at leading and managing this global team.	New question
Company leadership does not understand what employees at remote sites need to be successful.	Carryover question
It is clear that in this company employees are valued equally for their contribution no matter what site they come from.	Carryover question

Figure 37 - Proposed Survey Revisions – Leadership Effectiveness

Results / Outcomes

Several of the earlier survey section questions on team outcomes have been revised to be more specific in terms of the three main components that Hackman discusses: task outputs acceptable to those who receive it, ability of members to work together in the future, and member's needs are more than satisfied than frustrated by the experience.[32] Figure 38 shows a list of team results / outcome related questions that are recommended for future surveys.

Proposed Survey Question	Change
Global teams have made a significant impact on the way the company does business.	New question
In the past, the output of the global team has been viewed favorably by those who receive or review it.	New question
The global team members ability to work together in the future has been strengthened.	New question
I am more frustrated than satisfied by the experience of working on this global team.	New question
The global team members would describe the team as being effective.	New question
The customers of the global team would describe the team as being effective.	New question
Company management would describe the output of the global team as being effective.	New question
Any problems with the global team's effectiveness are due to a lack of effort on the part of the team members.	New question
Any problems with the global team's effectiveness are due to poor task-performance strategies that the team is trying to implement.	New question
Any problems with the global team's effectiveness are due to a lack of material resources needed by the team to accomplish its work.	New question
Any problems with the global team's effectiveness are due to the wrong people being on the team (lack of skills and/or lack of political power).	New question
Any problems with the global team's effectiveness are due to difficulty in communications and interaction among the global team members.	New question
Any problems with the global team's effectiveness are due to a lack of trust among at least some of the global team members and/or regions.	New question
Any problems with the global team's effectiveness are due to conflicting requirements and/or expectations between the local regions and the overall (global) company.	New question

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[32] J. Richard Hackman, "The Design of Work Teams", Handbook of Organizational Behavior, 1987

Proposed Survey Question	Change
Any problems with the global team's effectiveness are due to an inability or unwillingness to adopt the team's recommendations by the company as a whole.	New question
Any problems with the global team's effectiveness are due to an inability or unwillingness to adopt the team's recommendations by one or more local regions.	New question
The appropriate levels of management in my local region adequately review and approve the overall progress and effectiveness of the global team.	New question
The appropriate levels of management in the company adequately review and approve the overall progress and effectiveness of the global team.	New question
The success of my global team depends entirely on the team delivering results.	Carryover question *
I know exactly how my performance is measured on this global team.	Carryover question
I am satisfied with my performance on the global team	Carryover question
Considering the company as a whole, globally dispersed teams are successful.	Carryover question
Working together the global team creates solutions that I could not create working alone.	Carryover question
My global team makes fast decisions.	Carryover question
Decisions made in the global team are of high quality	Carryover question
I derive great personal satisfaction from my work with the members of the global team.	Carryover question
I report to the top management at my site about the global team on a regular basis.	Carryover question

Figure 38 - Proposed Survey Revisions – Results / Outcomes

Summary

The above lists of survey questions are not considered "all-inclusive". Other questions may be added to address factors that were omitted from the proposed SD model. The lists are extensive and may be shortened for future surveys so that the time to complete the survey is reasonable. Future researchers may use a subset of the questions for those model areas that are considered to be of less importance or concern to a company. But, some of the questions from each section should be included to verify the importance of each SD model area.

LEADERSHIP RECOMEMNDATIONS

Introduction

In prior chapters, leadership effectiveness was shown to be an important factor in globally dispersed team performance. In any organization, "leadership" will mean different things to different people in the organization. Team members on some global teams may consider the most important leader to be the team leader or perhaps a combination of the team leader and their everyday supervisor / manager in the local region that they represent on the global team. Global team leaders may view "leadership" as coming from middle or upper management at the global organization level and/or the management in the various regions with which their team interfaces.

In this chapter the topic of leadership effectiveness in terms of managing globally dispersed teams is discussed from several different perspectives. The specific perspectives apply more directly to the organizational structure currently at Delphi Packard Electric Systems, but it is expected that much of this discussion could also apply to other large global organizations that are managing globally dispersed teams.

The conclusions and recommendations presented here are based on the survey data collected for this project, along with the suggested role from the SD model for various actions related to leadership effectiveness. The specific leadership leverage points are grouped by the sub-models presented in the overall system dynamic model. (i.e., effort, interaction/communication, skills, etc.) Several variables were presented in the various SD sub-models that including the words "Leadership effectiveness". This chapter expands on those variables and presents

suggestions on how leaders can evaluate their own performance and the performance of the organization as a whole.

The leadership effectiveness leverage points are also divided into three general categories of leaders:

- Team leader - Leaders assigned to manage typically one specific globally dispersed team. (They may be at any level of management.)

- Local leader - Middle and upper level managers responsible for local/regional performance, whose involvement with globally dispersed teams usually includes at least one person from their region being assigned to the global team. (The assumption is that the global team's output will affect the local regions in some manner.)

- Global leader - Middle and upper level managers responsible for the global performance of one or more global teams.

While the focus of this chapter is on leadership, global team members not in formal leadership roles may also find it of interest for at least two reasons: shared leadership and better expectations of formal leaders. This chapter outlines what formal leaders need to do to be effective in guiding and managing global teams. However, many of the suggestions that are presented below may also apply to those team members who routinely practice shared leadership within their teams.

If a leader is defined as someone who guides, conducts, or manages a group of people, then it is recognized that in some teams leadership can come from any or every member of the team at different points in time. The concept of shared leadership is well documented as having a higher probability of occurring if global

teams are highly motivated and self-managed.[33] Different team members will assume different leadership roles, especially if the team consists of members with a diverse set of skills and experiences. Members who understand and acknowledge the concept of shared leadership (and what can be expected to occur in global teams) will provide the team with the potential to grow in terms of leadership capability. For example, when the global team is addressing matters of importance to one specific region of the world, the team would do well to look to the specific team members from that region to lead the team's efforts.

However, it would be a mistake to conclude that highly motivated globally dispersed teams (that share leadership roles) do not also need some formal type of recognized leadership.[34] Formal, recognized leaders are needed to help drive teams to the stage where shared leadership can begin to occur. They are also needed to keep teams at that stage especially as the team moves from accomplishing one set of goals and objectives to starting another set. Team members need to have an understanding of how leaders can be more effective, especially if they are asked to provide feedback to leaders during management reviews with regards to what is keeping the global team from performing at a high level.

Team Leader

Delphi Packard Electric Systems management believes that global teams need a formal, recognized leader that is directly involved in the team's efforts on a regular basis. At the time of the survey, within Delphi Packard Electric Systems every global team had a team leader position that was published and recognized by the other team members and the rest of the organization. For all teams, this was only one individual, who was assigned to the position of team leader.

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[33] Jessica Lipnack and Jeffrey Stamps, Virtual Teams - Reaching Across Space, Time and Organizations with Technology, (New York: Wiley) 120.
[34] McDermott, Lynda, Brawley, Nolan and Waite, William, World Class Teams: Working Across Borders., (New York: Wiley) 8.

For globally dispersed teams at Delphi Packard Electric Systems, the team leader resides and spends the majority of his time in one particular region of the world. For most teams, the team leader's region has at least one other team member to represent that region of the world on the team. For a few teams within Delphi Packard Electric Systems the team leaders have an additional role as the sole member that represented that region of the world on those teams. When this dual responsibility situation occurs, the team leader needs to recognize the potential for conflict that could occur during meeting discussions and negotiations among team members about what the direction of the global team should be. Understanding and dealing with global versus local issues may be especially difficult for those team leaders that are the sole representative of a local region.

Team leaders need to focus on many of the leadership effectiveness variables that are identified in the sub-models in the overall model. However, some areas of the model may be of more importance to the team leader, compared to other levels of management, since the team leader may be in a better position to assess the team's ongoing performance. For example, the team leader who regularly participates in team meetings may have the best perspective of how well the team members interact and communicate with each other. Team leaders may also be better able to assess the skill levels of the team members and the effort that the various team members make toward completing projects. Team leaders, however, may be too close to the day-to-day activities to best judge if the team is employing the best task-appropriate strategies, of if the team is using outside skills and resources adequately. Finally, many capital issues may be beyond the scope of a team leader to address, and the team leader may need to rely on upper management from the different regions. Team leaders who include all elements of the SD model during management reviews will be able to flag those areas that require the attention of other members of the management team.

Figure 39 through Figure 45 shows the leadership leverage points grouped by the various sections from the overall SD model and the key focus areas for team leaders within the model groups. Those leadership leverage points that are shown in **bold italic** text are areas of improvement for the company.

Model	Area of Focus	Leadership Leverage Points
Capital	Resources available to the team / Gap analysis	• Determine the need and availability of global and local resources (capital) required for the team members (or regions) to complete their work. • *Identify and present any resource gaps during management reviews.*

Figure 39- Team Leader Leverage Points (Capital)

Model	Area of Focus	Leadership Leverage Points
Skills	Leadership effectiveness at selecting team members and team leaders	• Determine and communicate the minimum required (task-relevant) skills for team members to those people who are responsible for staffing teams. • Communicate the expected/appropriate level of effort and skills that will be required of team members from various regions of the world, especially if the required effort/roles may vary from region to region. • Periodically review the optimum number of people on the team, both collectively and from each region of the world and adjust team membership accordingly. • Periodically assess your own skills in terms of leading the team and determine areas of self-improvement.
Skills	Leadership effectiveness in fostering collective learning	• Encourage collective learning by recognizing those team members that provide training and those members that regularly seek to learn from others. • Publicize the lessons collectively learned to people outside the team, including local leaders, global management, and other teams.
Skills	Leadership effectiveness in minimizing inappropriate weighting of individual contributions	• Monitor contributions of each team member during group meetings and assess who needs to be more active during discussions and who needs to be less active. • Privately poll team members to get their feedback about the degree to which they believe that their personal skills are being utilized. • Minimize process losses when determining skills available to the team by encouraging everyone to participate at an appropriate level during meetings.
Skills	Sufficiency of knowledge and skills applied to tasks / Gap analysis	• Determine the need and sufficiency of knowledge and skills applied to tasks by the team. • *Identify and present any skill gaps during management reviews.*

Figure 40- Team Leader Leverage Points (Skills)

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Model	Area of Focus	Leadership Leverage Points
Effort	Leadership effectiveness at creating challenging and specific performance objectives	• Develop with the team members the specific performance objectives that would meet the expectations of those people who will review and/or use the team's output. • *Balance the performance objectives so that they are challenging for the team members, but also feasible in a reasonable amount of time.*
Effort	Leadership effectiveness at providing positive consequences for excellent performance	• Identify and communicate to the team the evaluation criteria for overall team performance. • *Actively seek out, recognize, and reward excellent performance within the team.* • *Communicate to the global organization and regional groups, those teams that are performing at an excellent level.*
Effort	Leadership effectiveness at rewarding individuals working on global teams	• Identify and communicate to the team members the evaluation criteria for individual performance. • *Actively seek out, recognize, and reward excellent performance at the individual member level.* • *Communicate to the appropriate regional groups, those individuals that are performing at an excellent level.*
Effort	Leadership effectiveness at developing group synergy among team members	• Invest early in the team formation the time needed to develop group processes that involve all team members. • Seek to include all members of the team in discussions and strive for consensus wherever possible. • Develop alternative processes when consensus is not achievable in the time available to the team. • Minimize process losses in terms of the overall effort applied to the project, by ensuring that everyone's roles, accountabilities, and responsibilities are clearly communicated and acknowledged, especially when specific tasks are determined and assigned to the various members of the team.
Effort	Monitoring individual's effort and commitment	• Periodically assess and privately discuss with individual team members their effort and motivation. • Determine areas for improving the team member's view of the project as a whole, and their view of the specific tasks that are being worked on. • Understand the local (regional) situations for individual team members, and adjust accordingly the individual workloads. Reassess as changes in the situations occur. • Communicate with other team members the need to adjust workloads and manage expectations.
Effort	Team effort assigned to tasks / Gap analysis	• Determine the total team effort applied to tasks. • *Identify and present any effort gaps during management reviews.*

Figure 41- Team Leader Leverage Points (Effort)

Model	Area of Focus	Leadership Leverage Points
Strategy	Leadership effectiveness at developing group synergy among team members	• Seek to include all members of the team in strategic discussions and strive for consensus wherever possible. • Encourage team members to seek input of others within their region when identifying alternative strategic options and plans.
Strategy	Clarity of parameters regarding performance situation	• At least annually, discuss with the team members their understanding of the teams customers (users of the team's outputs) and what these customers' various expectations might entail. Focus on the tangible outputs of the team and how the team will be evaluated by both internal management and external customers. • Determine and review with the team, the constraints and requirements that the team must adhere to. Include material resources that are available to the team and that might be a factor in evaluating alternative strategic options/plans.
Strategy	Sufficiency of group norms to encourage situation scanning and strategy planning	• Initially establish through consensus decision making with the team, a set of group norms that will govern future meetings and discussions. • Ensure that group norms include some aspect of self-regulation. (Make sure that the team has some process in place to prevent the team from taking on unrealistic goals, strategic plans, etc.) • Enforce compliance to the group norms by privately reviewing with team members any problems /violation that appear to be or coming or actually occurring.
Strategy	Acceptance of team generated performance strategies by local regions	• *Identify and present the strategic plans developed by the team to local regional leaders.* • Seek feedback / acceptance of the internally generated strategies from the local regional leaders. • Utilize those team members from the specific region to help in this communication.
Strategy	Acceptance of team generated performance strategies by global organization	• *Identify and present the strategic plans developed by the team during global management reviews.* • Seek feedback and acceptance of the internally generated strategies from the global leadership.
Strategy	Task-appropriate team strategies	• Evaluate the degree that all team strategies will be viewed as having the potential of yielding positive results for both local regions and the global organization as a whole. • Evaluate the effectiveness of all of the strategies that the team has generated internally. • Evaluate the feasibility and effectiveness of any strategies that the team has been given by the rest of the organization.

Figure 42- Team Leader Leverage Points (Strategy)

Model	Area of Focus	Leadership Leverage Points
Results	Degree that tasks outputs are accepted by those who receive it	• Collect and document feedback from customers in terms of the team's outputs and the degree to which the team has met the customers' expectations. • *Prepare a summary of the positive and negative customer feedback for management review. Include an assessment of the fundamental gaps (factors) that could be contributing to poor team performance and the strengths of the team n terms of the same list of factors.*
Results	Degree that individual members are more satisfied than frustrated by the group experience.	• Solicit feedback from individual team members about their personal experiences on the team. • Ensure that member confidentiality is understood and maintain the trust of the team member during this process. • Identify sources of frustration and evaluate feasibility of correcting the situation. • Evaluate and propose changes to team membership (when appropriate) during management reviews.
Results	Degree that capability of the team to work together in the future is strengthened or maintained.	• *Prepare an assessment of the abilities of the team in terms of future team efforts. Base the assessment on customer feedback, private and group discussions with the team members, and personal observations.* • *Present this assessment during the management review, and then solicit and communicate feedback to the rest of the team.*
Results	Actual global team effectiveness / Gap analysis	• *Solicit management's assessment of team effectiveness during management reviews.* • *Document and communicate this information to the rest of the team.* • Consider and implement changes to various contributing factors to improve team performance.

Figure 43- Team Leader Leverage Points (Results)

Model	Area of Focus	Leadership Leverage Points
Interaction	Behavior modeled by leaders	• Set an attitude of organizational and individual trust by treating all team members in an unbiased fashion. • Strive to communicate frequently outside regular team meetings with all members of the team, using e-mail, telephone, and face-to-face visits, when possible. • Practice active listening with all team members and seek input from all for ways to continuously improve.
Interaction	Quality of face-to-face interaction	• Solicit input from the team members regarding individual preferences for activities to be coordinated before, during, and after formal face-to-face meetings. • Work with the team members to develop the meeting agenda and extracurricular activities (if any).

Model	Area of Focus	Leadership Leverage Points
Interaction	Leadership effectiveness at maintaining critical level of face-to-face interaction	• *Work with the team members to plan and document the preferred schedule of face-to-face meetings. Include the tasks to be done by the team in the face-to-face meetings, the location of the meetings, and the duration and time of year for the meetings.* • *Communicate the need and above plan for the face-to-face meetings during management reviews with global leaders and local leaders. Secure funding and approvals from the appropriate management levels and communicate the results to the team.*
Interaction	Willingness and ability of team members to use non face-to-face media/process.	• Confirm that all team members understand and are able to use the technologies regularly employed for non face-to-face meetings. Train when necessary. • Strive to schedule non face-to-face meetings so that no one region is more inconvenienced than another. If multiple regions of the world are regularly involved in meetings and one region must participate late at night or early morning due to global time zones, then consider rotating the schedule throughout the year so that each region shares the personal inconvenience.
Interaction	Effectiveness of actual non face-to-face communication / interaction	• Establish / adhere to group norms for remote meetings. • Set and follow an agenda that includes specific action items to be reviewed but also includes time for open discussion among the regions. Publish the agenda at least one week prior to the meeting and solicit input from the team members. Revise agenda based on feedback and republish prior to the meeting. • Include all team members in the communication / interaction by regularly polling the other regions for input during the meeting and seeking concurrence in all team decisions. All regions need to be represented. • Solicit feedback outside team meetings regarding the effectiveness of the last few meetings. Ask specific questions about individual / regional concerns, solicit specific opinions regarding the need for any changes, and seek suggestions for future improvement.
Interaction	Ability to maintain rhythm in interaction / communications	• Establish group norms with regards to meeting attendance and schedules. Strive for consensus that all meetings will occur on a regular, uninterrupted basis. • When a meeting needs to be rescheduled, reschedule within a short period of the originally planned date. Do not skip meetings. • Periodically review the performance of the team within a team meeting and consider revising the meeting frequency based on this feedback. (Increase meeting frequency if the team is not meeting expectations.)

Figure 44- Team Leader Leverage Points (Interaction)

Model	Area of Focus	Leadership Leverage Points
Global vs. local performance issues	Local pressure	• Review and understand the local pressures that may exist for various members of the team, by discussing with local leadership the current situation. • Discuss these local pressures within the team meetings, the effect on various team members, and seek consensus to adjust task assignments accordingly.
Global vs. local performance issues	Degree that global team activities are viewed as a short term distraction/ problem at the local level	• Review with local leaders what their opinion is regarding the role that the global team can play in terms of helping with local performance issues. • Discuss with the team how the global team can help with short term, local performance issues, while still meeting their original goals.
Global vs. local performance issues	Degree that global team activities have complimentary objectives at the global and local levels (win-win)	• Consider revising the global team's objectives to make them more complimentary with local objectives and needs. Discuss the possibilities with local and global leaders during management reviews.
Global vs. local performance issues	Global team efforts applied to local improvement issues)	• Discuss with the team members, how the global team can specifically help in a local improvement effort. • Present ideas to local leaders and get their feedback/approval for involving the global team. • *Regularly report the progress of local improvement efforts by the global team to both local and global leaders.* • *Communicate success stories among all of the different regions for where the global team has helped improve a specific local/regional performance situation.*

Figure 45- Team Leader Leverage Points (Global vs Local Issues)

Local Leader

Delphi Packard Electric Systems has a long history of relying heavily on local leadership to solve local problems. The entire company is organized with a strong regional management hierarchy; so local leaders wield significant power within their region and within the company as a whole. Local leaders are asked to support global initiatives through active participation on various global teams, by assigning capable representatives to these teams from the local region. Figure 46 through Figure 52 includes some suggestions for local regional leaders that are trying to support global teams. Again, those leadership leverage points that are shown in **bold italic** text are areas that are identified by the survey respondents as potential areas of improvement for the company.

Model	Area of Focus	Leadership Leverage Points
Capital	Amount of local resources available to team members within a given local region	• Review the local policies in place for providing capital (material resources) to the local representatives on the team. Initiate and follow-up on any required revisions to current policies. • Determine any potential problem area in terms of securing the local capital needed for the team to do it work and discuss with the local team members some suggestions for possible alternative sources.
Capital	Resources available to the team / Gap analysis	• **During management reviews, discuss with the team leader any capital / material resource gaps.** • Work with other regions to learn of/develop alternative sources for capital.

Figure 46- Local Leader Leverage Points (Capital)

Model	Area of Focus	Leadership Leverage Points
Skills	Leadership effectiveness at selecting team members and team leaders	• Review the minimum required (task-relevant) skills for team members and suggest/select the appropriate candidates within the region to serve on the team. • Communicate with the selected candidate all of the local region's expectations, in terms of effort, travel, etc. • Periodically review with the team leader the optimum number of people needed to be on the team from the local region and adjust team membership accordingly.
Skills	Leadership effectiveness in fostering collective learning	• Encourage collective learning within the region by working with the local team members to communicate the lessons learned with others in the region.
Skills	Sufficiency of knowledge and skills applied to tasks / Gap analysis	• **Review with the local team members any specific skill gaps that are brought up during management reviews.**

Figure 47- Local Leader Leverage Points (Skills)

Model	Area of Focus	Leadership Leverage Points
Effort	Leadership effectiveness at rewarding individuals working on global teams	• Review with the local team members the team leader's evaluation criteria for individual performance. • **Actively seek out, recognize, and reward excellent performance within the team by local team members.**
Effort	Monitoring individual's effort and commitment	• Periodically assess and privately discuss with individual team members their specific effort and motivation. • Communicate with the team leader any need to adjust local member workload, due to changes in the local situation.
Effort	Team effort assigned to tasks / Gap analysis	• **Review with the local team members any specific effort gaps that are brought up during management reviews.**

Figure 48- Local Leader Leverage Points (Effort)

Model	Area of Focus	Leadership Leverage Points
Strategy	Clarity of parameters regarding performance situation	• Provide to local team members the regional perspective with regards to the constraints and requirements placed on the team.
Strategy	Acceptance of team generated performance strategies by local regions	• *Review and provide feedback to local team members of the strategic plans developed by the team.*
Strategy	Task-appropriate team strategies	• Evaluate the degree that all team strategies will be viewed as having the potential of yielding positive results for the local region.

Figure 49- Local Leader Leverage Points (Strategy)

Model	Area of Focus	Leadership Leverage Points
Results	Degree that tasks outputs are accepted by those who receive it	• Provide regional feedback to the global team with regards to the team's outputs.
Results	Degree that individual members are more satisfied than frustrated by the group experience.	• Review and resolve proposed changes to local membership during management reviews.
Results	Degree that capability of the team to work together in the future is strengthened or maintained.	• Review and provide regional feedback to the global team with regards to the future of the team.
Results	Actual global team effectiveness / Gap analysis	• *Provide a regional perspective during management reviews of the global team's overall results.*

Figure 50- Local Leader Leverage Points (Results)

Model	Area of Focus	Leadership Leverage Points
Interaction	Leadership effectiveness at maintaining critical level of face-to-face interaction	• *Review proposed travel plans for the local team members and identify sources of funding.* • *Support local team members needs to meet face-to-face by providing necessary funding for travel.*
Interaction	Quality of face-to-face interaction	• *Determine with the team leader and local members, the appropriate level of participation by local leaders in face-to-face team meetings held within the region.* • Participate in face-to-face meetings held within the region per prior agreement with the team leader and provide a local perspective directly to the global team.

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Model	Area of Focus	Leadership Leverage Points
Interaction	Behavior modeled by leaders / Trust among regions	• Set an attitude of organizational and individual trust by treating all team members with respect and dignity. • Strive to communicate frequently with other regional leaders and develop a high level of trust among regions. • Practice active listening with local team members and seek ways to continuously improve.

Figure 51- Local Leader Leverage Points (Interaction)

Model	Area of Focus	Leadership Leverage Points
Global vs. local performance issues	Local pressure	• Discuss local pressures with the team leader and local team members and seek consensus to adjust task assignments accordingly.
Global vs. local performance issues	Degree that global team activities are viewed as a short term distraction/ problem at the local level	• Provide input to the team leader and local members with regards to the role that the global team can play in terms of helping with local performance issues.
Global vs. local performance issues	Degree that global team activities have complimentary objectives at the global and local levels (win-win)	• *Review with local team members the global team's objectives and determine possible ways to make them more complimentary with local objectives and needs.* • *Discuss the possibilities with other regional and global leaders during management reviews.*
Global vs. local performance issues	Global team efforts applied to local improvement issues	• *Communicate success stories among all of the different regions for where the global team has helped improve a specific local/regional performance situation.*

Figure 52- Local Leader Leverage Points (Global vs Local Issues)

Global Leader

The director of engineering at Delphi Packard Electric Systems has global responsibility for all of engineering. In addition, several engineering managers have global responsibility for certain key products, processes, and engineering competencies that span more than one region of the world. These global leaders work closely with regional leaders to ensure that both local and global initiatives are met. Figure 53 through Figure 59 include suggestions for global leaders that are trying to direct global team efforts.

Model	Area of Focus	Leadership Leverage Points
Capital	Amount of global resources available to team members	• Review the global policies in place for providing capital (material resources) to the team. Initiate and follow-up on any required revisions to current policies. • Determine any potential problem area in terms of securing the capital needed for the team to do it work and discuss with the team leaders some suggestions for possible alternative sources.
Capital	Resources available to the team / Gap analysis	• *During management reviews, discuss with the team leader any capital / material resource gaps.* • Work with all regions to learn of/develop alternative sources for capital.

Figure 53- Global Leader Leverage Points (Capital)

Skills	Leadership effectiveness at creating appropriate global teams	• Determine the priorities of the global organization and identify any new global teams that are needed based on those priorities. • Evaluate the capability of the organization to support the new global teams that are needed and those that are already in place. • Adjust the number of global teams to match needs and organizational capability.
Skills	Leadership effectiveness at selecting team members and team leaders	• Review the minimum required (task-relevant) skills for team leaders and suggest/select the appropriate candidates to lead on the team. • Communicate with the selected leader all of the global region's expectations in terms of results. • Periodically review with the team leader the optimum number of people needed to be on the team from the regions and adjust team membership accordingly.
Skills	Leadership effectiveness in fostering collective learning	• Encourage collective learning across tams within the global organization by working with the team leaders to communicate the lessons learned by the team with other teams.
Skills	Outside skills/people available to the team	• Review the availability of skills in resources outside the team membership and suggest alternative resources to the team leader. • Review and develop improvement plans for the quality of the organizational delivery system that gets the right skills to the right teams.
Skills	Sufficiency of knowledge and skills applied to tasks / Gap analysis	• *Schedule and conduct regular management reviews that are comprehensive, including addressing skill issues on the team.*

Figure 54- Global Leader Leverage Points (Skills)

Model	Area of Focus	Leadership Leverage Points
Effort	Leadership effectiveness at rewarding individuals working on global teams	• Review the global organizational system that provides performance feedback to individuals and adjust accordingly the standard evaluation criteria to recognize the value and importance of global work.
Effort	Quality of a supportive organizational recognition/reward system at the team level	• *Review and revise/develop an organizational reward system that recognizes global teams that are performing in an excellent fashion.* • *Actively seek out, recognize, and reward those teams that are excellent performers.*
Effort	Team effort assigned to tasks / Gap analysis	• *Schedule and conduct regular management reviews that are comprehensive, including addressing effort issues on the team.*

Figure 55- Global Leader Leverage Points (Effort)

Model	Area of Focus	Leadership Leverage Points
Strategy	Clarity of parameters regarding performance situation	• Provide to team leaders the global perspective with regards to the constraints and requirements placed on the team.
Strategy	Acceptance of team generated performance strategies by local regions	• Review and provide feedback to team leaders of the strategic plans developed by the team.
Strategy	Quality of strategies generated outside the team	• Review the need for upper management to develop specific strategies for a team, beyond the team generated strategies. • Develop global strategies that include specific regional needs such that the local regions are accepting of the strategies. • Communicate with regional leaders to resolve differences and present these higher-level strategies to the team leaders.
Strategy	Task-appropriate team strategies	• *Evaluate the degree that all team strategies will be viewed as having the potential of yielding positive results for the global organization and all regions.* • *If possible, include these strategy evaluations as part of formal management reviews.*

Figure 56- Global Leader Leverage Points (Strategy)

Model	Area of Focus	Leadership Leverage Points
Results	Degree that tasks outputs are accepted by those who receive it	• Provide global feedback to the global team leader with regards to the quality and quantity of the team's outputs.
Results	Degree that individual members are more satisfied than frustrated by the group experience.	• Review and resolve proposed changes to team leadership and membership during management reviews.

Model	Area of Focus	Leadership Leverage Points
Results	Degree that capability of the team to work together in the future is strengthened or maintained.	• Review and provide global feedback to the global team leader with regards to the future of the team.
Results	Actual global team effectiveness / Gap analysis	• *Schedule and conduct regular management reviews that are comprehensive, including addressing all issues.* • *Provide a global perspective during management reviews of the global team's overall results.*

Figure 57- Global Leader Leverage Points (Results)

Model	Area of Focus	Leadership Leverage Points
Interaction	Leadership effectiveness at maintaining critical level of face-to-face interaction	• *Review/approve proposed travel plans for all global teams and identify sources of funding for each team.* • *Support the need for global teams to meet face-to-face by providing necessary funding for travel.* • *Require a minimum number of face-to-face meetings each year for all high priority teams.*
Interaction	Capability of company global communication infrastructure	• Assess the capability of the company to provide a sufficient communications infrastructure to all regions of the world and all team members through discussions with team leaders at management reviews. • Also, discuss with team leaders their opinions regarding the fit of the existing communication infrastructure capabilities with the specific needs of the global team. • Review with regional leaders the improvements that are required to upgrade the communications infrastructure to acceptable levels and coordinate/implement action plans accordingly.
Interaction	Quality of face-to-face interaction	• *Determine with the team leader, the appropriate level of participation by global leaders in face-to-face team meetings.* • *Participate in face-to-face meetings per prior agreement with the team leader and provide a global perspective directly to the team.*
Interaction	Behavior modeled by leaders / Trust among regions	• Set an attitude of organizational and individual trust by treating all teams with respect and dignity. • Strive to communicate frequently with regional leaders and develop a high level of trust among regions. • Practice active listening with team leaders and seek ways to continuously improve.

Figure 58- Global Leader Leverage Points (Interaction)

Model	Area of Focus	Leadership Leverage Points
Global vs. local performance issues	Local pressure	• Discuss local pressures with the regional leaders and team leaders and seek consensus to adjust regional membership and task assignments accordingly.
Global vs. local performance issues	Degree that global team activities are viewed as a short term distraction/ problem at the local level	• Provide input to the team leader and regional leaders with regards to the role that the global team could play in terms of helping with local performance issues.
Global vs. local performance issues	Degree that global team activities have complimentary objectives at the global and local levels (win-win)	• *Review with team leaders the global team's objectives and determine possible ways to make them more complimentary with all of the regions' objectives and needs.* • *Discuss the possibilities with other regional and global leaders during management reviews.*

Figure 59- Global Leader Leverage Points (Global vs Local Issues)

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CHANGES WITHIN THE COMPANY AND GENERAL CONCLUSIONS

Delphi Packard Electric Systems engineering management has already started to make changes with regards to the management of global engineering teams based on this project. This change process continues to evolve and is not yet complete, but some of the changes that have been discussed, agreed upon, and implemented to date are presented below.

Changes in Global Team Structure and Alignment

As mentioned earlier, at the beginning of this project the company's 36 global engineering teams were grouped into four categories, based on the team's primary focus: product, process, product/process, and competency teams. These categories described the general purpose of the global teams, but they were not always in alignment with the way that the organization managed the rest of its engineering business. (For example, there is no manager of "product" engineering within the company, but instead there are several mangers with different product line responsibilities.) Thus, even though each team was grouped under one of the four categories, there was little in common among these teams in terms of synergy, leadership, etc. The results of the survey indicated that there was no correlation in terms of responses from people within these various team groupings. For example, people that were part of any of the competency teams did not necessarily have common responses to various questions in the survey. The same was true for the product teams, process teams, etc. This finding led management to consider other ways to group teams.

Early in the project, the author observed that the main global teams that were considered to be performing well (by both upper management and the team members themselves) had two common characteristics. First, these global teams

usually had a different structure with 2-3 global sub-teams under its control. These global sub-teams performed a lot of the detailed work for the main horizontal global team. [35] Also, these global sub-teams were staffed with lower level managers and engineers from all over the world, but these sub-teams were not included in the count of the 36 main global teams that the organization formally tracked. This finding was more the result of follow-up discussions by the author with various team members and team leaders versus any rigid data analysis from the survey results.

Second, the teams that were performing well also had a high degree of upper level management oversight and direction. Interviews with these managers revealed that the global teams were directly aligned within that manager's primary (everyday) responsibility, and thus the managers wanted to be involved in the global team's efforts and results. These managers had created the sub-team structure for each of the main global teams under their jurisdiction, to encourage some level of direct involvement in global coordination activities for all of their organization's leaders. Middle level managers were assigned responsibility to coordinate the work between all of the sub-teams and the main team. The survey data was analyzed at the specific engineering manager level and this analysis revealed that certain upper managers had teams under them that showed higher levels of performance than other managers did. [36] These successful managers were the ones that were employing the sub-team structure approach.

These observations were discussed during several meetings with the global engineering staff, which consists of upper level global managers and regional managers. This group eventually agreed to restructure all of the global engineering teams using the sub-team approach that was currently being used by the more successful global main teams.

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[35] Teams that were not considered to be performing at an acceptable level, did not have a formal sub-team structure, but instead relied on informal methods to accomplish the work of the team.

[36] This specific analysis was omitted from the body of this report to preserve the anonymity of the managers.

Eight different main global teams called steering committee teams were created to address certain areas of engineering. Each of these steering committee teams was assigned to one upper level manager that also had day-to-day responsibilities for that part of the business. This alignment was an effort to improve the overall synergy between the global teams' efforts and the everyday activity that naturally occurs within the regions.

During several workshops, each upper level manager who had responsibility for a steering committee team created a set of sub-teams that would be under the steering committee's control and responsibility. Often one of the previously recognized global horizontal team (out of the original 36 teams) was moved into a sub-team category under one of the steering committees. Many of the competency-based teams were aligned under one of two steering committees that dealt with common global engineering processes or engineering systems. In some cases, new sub-teams were created to address certain needs of the business that previously did not have a recognized global team assigned to it.

The eight steering committee teams are shown below:

- Modular products
- Bussed Electrical Centers
- Switches
- Power and Signal Distribution
- Manufacturing Engineering
- Component Engineering
- Engineering Systems
- Common Engineering Processes

These steering committee teams consist of an upper level manager as the team leader and have team members that are either middle level regional

managers, and/or team leaders of the sub-teams. Each of these main teams has at least two to six sub-teams that report directly to the steering committee. Some of the steering committees now have up to nine to 14 sub-teams.[37] Nearly all sub-teams are lead by middle level managers that report directly to the steering committee head. In this manner, the engineering director and the rest of the engineering organization know who is accountable for any particular global team or global sub-team. Today, a total of 59 sub-teams exist under the control and direction of the eight steering committee teams.

Four key global teams were also identified that did not easily fit as part of any one of the eight steering committee teams. Responsibility for these particular global teams was assigned either to the director of engineering or to another global engineering manager. These teams will be reviewed and managed separately from the rest of the global steering committee teams. Examples of these types of special teams include human resource management (HRM), material cost reduction, etc.

Changes in Management Review

Another area of change within the company is the manner in which future management reviews will be held. In the past, the 36 global teams were reviewed by management at different levels within the company and at different times. Some teams were rarely part of formal management reviews, but instead were managed very informally. (This was especially true for those mature teams that had existed in the organization for a long time.) When the company survey revealed that inadequate management reviews were considered an area for future improvement, the global engineering leadership team decided to explore ways to improve future management reviews.

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[37] Details of the specific sub-teams that are under each specific steering committee are considered proprietary to Delphi Packard Electric Systems and are not reported here.

A decision was made by the global engineering staff to formalize future management reviews beginning in 2001 for all global teams. Today the global engineering staff typically meets once each month via video-conferencing to discuss everyday engineering, business, and customer related matters. Beginning in January 2001, the agenda for each of these monthly meetings will now include two hours for formal management reviews of two different steering committees and their sub-teams (one hour review per steering committee). The progress and issues for each of the eight steering committee teams will be formally reviewed by this management team two times a year (i.e., approximately six months apart per review). Agendas for the 2001 monthly meetings have already been established and distributed to each of the steering committees, so that they can prepare ahead of time for the management review in a particular month. The few global teams that are not under any particular steering committee were also scheduled for management reviews in certain months of the year. Figure 60 shows the current management review schedule for all of the global engineering teams during 2001. The teams shown in italic are the special teams that are not under any specific steering committee. (The months of July and December were left open for general discussions by the group regarding global team management and progress of all of the global teams within the company as a whole.)

- January/June
  - Manufacturing Engineering Steering Committee
  - *HRM and Global Footprint Teams*
- February/August
  - Common Eng. Procedures Steering Committee
  - Component Engineering Steering Committee
- March/September
  - Switch Steering Committee
  - *Material Cost Reduction and Lean Teams*
- April/October
  - PASDS+ Engineering Steering Committee
  - Engineering Systems Steering Committee
- May/November
  - Modular Products Steering Committee
  - BEC Steering Committee
- July/December
  - Open

Figure 60- 2001 Management Review Schedule

It is hoped that regular, formal management reviews for all of the global engineering teams will result in continued improvement within Delphi Packard Electric Systems. By including all of the aspects of the SD model in the scope of the management review process, the team leaders and other leaders in the company can identify those areas of improvement that need to be prioritized.

Impact on Delphi Automotive Systems

The recent global team changes within Delphi Packard Electric Systems have been reviewed with the parent corporation, Delphi Automotive Systems. (Delphi Packard Electric Systems is one of six divisions in Delphi Automotive Systems.) Delphi Automotive Systems also uses global teams to manage several aspects of the company, such as the Engineering Task Team, Financial Task Team, Manufacturing Task Team, Personal Task Team, etc. Representatives from various regions of the world and various Delphi divisions participate on these teams along with representatives from Delphi headquarters in Troy, Michigan. For example, the Engineering Task Team consists of engineering directors from each Delphi division, regional engineering directors from Europe, Asia, and South America, and several other people from Delphi Automotive Systems headquarters.

The engineering director from Delphi Packard Electric Systems has recently reviewed with the Engineering Task Team the latest efforts at Delphi Packard Electric Systems to improve their global engineering teams. Some of the lessons learned at Delphi Packard Electric Systems are now being applied to the Engineering Task Team. As the Engineering Task Team develops sub-teams to do much of the detailed work of the larger team, it is expected that these sub-teams will also benefit from some of the recent findings regarding global team performance at Delphi Packard Electric Systems.

Conclusions

In many ways, this particular research effort supports the general findings of many other researchers that have also studied globally dispersed teams. Some conclusions were included in earlier parts of this thesis. Below are a few more conclusions that the author would like to emphasize.

- Much of the prior literature and research efforts focused on areas of the system dynamics that are considered unique to globally dispersed teams, such as the importance of distance communication technologies, global versus local issues, and cultural differences among people of different regions of the world. However, the results of this particular research indicate that many of the underlying dynamics that exist in all teams, both co-located and globally dispersed, may be just as important factors in analyzing how to improve team performance. For example, several of the fundamental issues presented by Hackman's general team model (i.e., effort, strategy, capital, skills, etc.) were identified by survey respondents as potential causes of varying degree of performance in the teams and individual members. The SD model that was presented attempts to bring all of these factors into one comprehensive model.

- The organizational "system" of people working together on globally dispersed teams is very complex. Relatively simple models of how the "system" works may not adequately describe all of the dynamics that can drive the system. This thesis is just another step in a continued effort at describing the causal loop dynamics that drive the system of globally dispersed teams. Much more work needs to be done in this area of SD modeling to really understand the true nature of this type of organizational "system".

- Obviously, surveying actual global team members is a useful way to identify areas of concern and improvement. An unexpected added

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benefit to the survey process was the feedback that the author received from many of the survey respondents, who said that they genuinely appreciated the chance to voice an opinion about the subject of global teams. Most people on global teams understood the importance of working across regions and borders to improve the company's engineering efforts and most people wanted to seek areas of improvement. Conducting a survey to solicit their specific input was not considered by most people to be a waste of their time, but rather was considered as a good opportunity to be part of the improvement process.

- The author's last conclusion is that at least for Delphi Packard Electric Systems it is clear that the fundamental means to real improvement for global teamwork rests mostly with the company's global and regional leaders. The benefits of good global teamwork are recognized by nearly everyone in the company. If company leaders are truly dedicated to funding face-to-face meetings for the global teams and are personally active in managing the teams via a formal structure and review process, then there is a large potential for continuing improvement. It is the author's opinion that most of the global team leaders and global team members are willing to work hard at making these teams successful. These teams simply need capable and dedicated leaders at the global and regional levels that are supportive of the overall effort and willing to recognize and reward excellent global team performance.

It is hoped that this project will guide future efforts at improving global team performance within Delphi Packard Electric Systems. It is also hoped that this project will help future academic research that continues to focus on understanding globally dispersed teams in the industry world.

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Appendix A – Original Global Team Survey

Delphi Packard Electric Research Project on Global Engineering Horizontal Teams

The purpose of this survey is to provide information to ensure that the conditions are in place to develop and support high performance geographically dispersed (Global Engineering Horizontal) teams within Delphi Packard Electric.

Also, I am administering this survey as part of my Masters degree requirement at Massachusetts Institute of Technology (MIT). The information from this survey will be combined with similar survey data from other companies by MIT faculty and staff as part of a larger research project. Delphi confidential information will be removed from any specific data that is shared with MIT.

All of your responses are strictly confidential. Individual responses will not be seen by anyone within
Delphi Packard Electric except Chris Burns. Your help in providing this important information is appreciated.

The aggregated data will be used by the research team to identify areas of concern to members of geographically dispersed teams and for feedback to engineering management and team leaders for developing action plans to better support geographically dispersed teams.

If you have any questions concerning this survey, please contact Chris Burns at:

        Email :   Chris.Burns@delphiauto.com
  or telephone : 1- 330-505-3201

If you have received this survey, you are considered to be a member of at least 1 team. If you do not believe that you are a member of a team, or if you believe that you have received this file in error, please contact Chris Burns at the above telephone number as soon as possible.

Please try to complete and return this survey within two weeks of receiving it.
This survey is voluntary; omit any questions you are unable to or uncomfortable in answering.
This is NOT a test. There are no right answers, just your candid opinion.

You may want to print out certain worksheets, or the entire workbook to assist in entering the information, but this is optional. If you wish to print the entire workbook, from the Excel menu, select File, Print, and then check the Entire Workbook option in the "Print What" dialogue box.

In creating this survey, I have tried to make it as easy as possible for you to complete it and return it electronically. It is my goal that you would be able to complete this survey in less than 60 minutes, but I realize that some people may need a longer period of time. I appreciate each of you taking the time necessary to complete this survey.

You may save this file to your hard drive at any time, while you are completing the survey. It is recommended that you periodically save the file, so that you do not lose any of your work.

You may save the file using the same, original file name, as was distributed to you.

Thank you.

Chris Burns

Appendix A - 1 Cover Sheet (Part 1)

General Instructions on Completing This Survey:

This Excel file is comprised of 14 worksheets which discuss various subject areas. For example this worksheet is the "Intro." worksheet. The different worksheets can be selected by clicking on the tabs at the bottom of the screen (Intro., Demographics, Leader Only, Goals, ..., Local, End). Each worksheet will have specific instructions at the beginning of that particular worksheet. Please review and complete all worksheets that are included in this file. After you have finished all 14 sections, please save the completed file & E-mail it to Chris.Burns@Delphiauto.com.

Some of the questions in this survey ask that you select one of several options that appear below or to the right of the question or statement. You are to choose the one option that best matches the description of how you feel about the item. This can be done by moving the mouse to the appropriate response circle and clicking the left mouse button.

For example, if you were asked how much you agree with the statement "I enjoy the weather here." and feel that you agree, click the left mouse button at the circle under the Agree option shown below. If you change your mind, you can simply click on another circle and your new response will be accepted. You can practice by clicking the options below.

	Very strongly disagree	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Very strongly agree
I enjoy the weather here.	○	○	○	○	○	○	○

Other questions will require that that you simply enter a number or some text. In these cases, the cell will be boxed and shaded in yellow, for where you are to enter your response.

Be sure to read the specific instructions that appear at the beginning of each section and to read the response choices carefully before choosing your answers.

Appendix A - 2 Cover Sheet (Part 2)

<u>Specific Instructions:</u>

In this section you are asked a number of questions about your background. This information will allow comparisons among different groups of employees and comparisons with similar groups of employees.

Are you ...   ◯ Female   ◯ Male

How old were you on your last birthday? ▪▪▪▪ years

How many years have you been working in your current assignment? ▪▪▪▪ years

How many years have you been working for Delphi Packard Electric Systems? ▪▪▪▪ years

How many years have you been working in industry? ▪▪▪▪ years

In which region of the world is your current work location?
◯ North America   ◯ Asia/Pacific
◯ Europe   ◯ South America

What is the <u>highest</u> level of your education that you have <u>completed</u>? (If you are from outside the United States, please check the option that you believe best fits your own educational experience.)

◯ High school only
◯ Some college or technical training, but no degree (1-3 years)
◯ Associate Degree (2 year college degree)
◯ Graduated from 4-year college or university (Bachelors degree)
◯ Some graduate school but no advanced degree
◯ Master's degree or equivalent in technical discipline (Engineering., math, science, etc.)
◯ Master's degree or equivalent in business / management
◯ Multiple masters degrees in both technical discipline and business
◯ Doctorate degree or equivalent

Please complete the following 2 tables, with regards to languages.

First language spoken
(Select one option only)

◯ English   ◯ Chinese
◯ German   ◯ Portuguese
◯ Spanish   ◯ French
◯ Japanese   ◯ Other ▪▪▪▪

All languages spoken
(Check all that apply)

☑ English   ☐ Portuguese
☐ German   ☐ Japanese
☐ Spanish   ☐ Chinese
☐ French   ☐ Other ▪▪▪▪

Have you had any work experience outside your home country (>6 months)?   ◯ Yes   ◯ No

Have you had any living experience outside your home country (>6 months)?   ◯ Yes   ◯ No

Have you ever participated in any "cultural awareness" training classes?   ◯ Yes   ◯ No

Appendix A - 3 Demographics (Part 1)

How many global engineering horizontal teams are you a member of ? [ ] team(s)

Indicate the team for which you will be completing this survey by selecting 1 choice in the table below. You must select only one team for your answers in this specific survey.

(If you are a member of more than one team, please select the one team that you believe you are most active, familiar, or involved with. If, you wish to complete this survey for more than 1 team, you may do so by first completing this file for 1 team and save it to your hard drive. Then save this file using a different name for another team and editing your responses accordingly based on your experience with that specific team. You may wish to complete this survey for more than 1 team, especially if your experiences are significantly different from team to team. Remember to send all files back to the author.)

Competency Teams

⦿ Math Based Engineering	○ Global Standards
○ Application Engineering	○ GQS
○ DFM/DFA	○ HRM
○ E/E Systems Design Architecture Capability	○ Intellectual Property
○ Electronics Integration	○ Materials
○ Engineering Information Management	○ Product Development Process
○ Environmental Technology	○ Technology Leveraging Management
○ Global Footprint	○ Testing & Validation

Product Teams

○ BEC's
○ Cable
○ Components
○ Hi Density Electronic Connection Systems
○ Modular Products
○ Wiring

Product/Process Teams

○ Fiber Optics
○ Flex Circuits
○ Ignition
○ Sensors
○ Switches

Process Teams

○ BEC's
○ Cable
○ Components: Assembly
○ Components: Molding
○ Components: Stamping
○ Modular Products
○ Wiring: Assembly Methods and Tooling
○ Wiring: Assembly Process
○ Wiring: Lead Prep

Using the table below, enter the number of people that are on this team from the various regions. Include yourself in your region's totals. Also, include those people who are listed on the published team listings on the Delphi Website, as well as others who may not be listed, but who have participated in team meetings or other team activities.

	GM NAO	Europe	Asia / Pacific	PI North Amer.	South Amer.	PHI
Total # of people represented on the team	0	0	0	0	0	0

On average, what percentage of your total work time do you spend on this particular team project?

○ Less than 1%	○ 6% to10%	○ 26% to 50%
○ 1% to 5%	○ 11% to 25%	○ More than 50%

Only if you are a member of more than one of the teams listed above, please answer the following question.

When compared to the other global horizontal teams that I am on, my experience with the team that I have selected is:

○ Best.	○ Better than Average	○ Average	○ Worst than average	○ Worst

Appendix A - 4 Demographics (Part 2)

Specific Instructions for Designated Team Leaders Only:

If you are a designated team leader, complete the following section, concerning team membership and your role as a designated leader. If you are not the designated team leader, skip this section and go to the next worksheet.

Only complete this section based on your experiences as the team leader for: **Math Based Engineering**

Are changes in team membership planned and anticipated?	○ Yes ○ No
How frequently has the team membership changed over the last year?	[____] times

Indicate to what extent you agree or disagree with these statements.

	Very strongly disagree	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Very strongly agree
There is a natural fit between my leadership role on this specific team & my "everyday" job.	○	○	○	○	○	○	○
Leading and managing this team is a more difficult task than my other responsibilities.	○	○	○	○	○	○	○
I have the skills and training that are necessary to effectively lead and manage this team.	○	○	○	○	○	○	○
I am satisfied with my own level of performance in terms of leading and managing this team.	○	○	○	○	○	○	○
I am satisfied with the team's level of performance in terms of meeting the team objectives.	○	○	○	○	○	○	○
I am satisfied with the team's level of performance in terms of the relationships within the team.	○	○	○	○	○	○	○
Delphi P's engineering management team is supportive of my role as the leader of this team.	○	○	○	○	○	○	○
I report to the top engineering management within the company on a regular basis about this team.	○	○	○	○	○	○	○
As a leader, I can directly influence individual team member's performance rating (PBP).	○	○	○	○	○	○	○
I see little difference between communications among local team members vs. remote members.	○	○	○	○	○	○	○
The rest of the Delphi P organization is supportive of my role as the leader of this team.	○	○	○	○	○	○	○

Fill in the number of meetings and the level of technology used during 1999.

	Meetings in 1999
Telephone conference only	
Telephone conference with Microsoft Netmeeting	
Video/audio conference with or without Microsoft Netmeeting	
Face to face (Multiple regions & >=75% of members in attendance)	
Face to face (Multiple regions but <75% of members in attendance)	
Total	0

Appendix A - 5 Leader Only

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Please answer the following questions, based on only your opinion. Do not consult others when determining your responses. In addition to the reference material provided in this document, please consider any other information that you have regarding your team's objectives and goals, while you answer these questions.

Only complete this section based on your experiences as a member of: Math Based Engineering

	Very strongly disagree	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Very strongly agree
This team's charter, scope, and goals support the company's higher objectives and strategies.	O	O	O	O	O	O	O
All members of the team agree on the team's team's charter, scope, and goals.	O	O	O	O	O	O	O
I completely understand the team's charter, scope, and goals.	O	O	O	O	O	O	O
I believe the work of the team is important.	O	O	O	O	O	O	O
The charter, scope, and goals are sufficiently defined to effectively evaluate team performance.	O	O	O	O	O	O	O
The team members within my region are committed to achieving the team's goals.	O	O	O	O	O	O	O
The team members outside my region are committed to achieving the team's goals.	O	O	O	O	O	O	O
I am personally committed to achieving the team's goals.	O	O	O	O	O	O	O
As the team works toward shared goals, relationships among members are becoming stronger.	O	O	O	O	O	O	O
I am satisfied with the team's level of performance in terms of meeting the team objectives.	O	O	O	O	O	O	O
I am satisfied with the team's level of performance in terms of the relationships within the team.	O	O	O	O	O	O	O

Appendix A - 6 Goals

Specific Instructions:

*Please answer the following questions, based on only your opinion. Do not consult others when determining your responses. **These questions deal with team leadership (including designated leaders and informal leadership).***

Only complete this section based on your experiences as a member of: Math Based Engineering

	Very strongly disagree	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Very strongly agree
The team members trust our designated team leader to fairly represent our team needs.	O	O	O	O	O	O	O
The meeting chairperson effectively manages the agenda during the meeting.	O	O	O	O	O	O	O
The same team members appear to be making all the decisions in meetings.	O	O	O	O	O	O	O
The team has the autonomy to select options that the team leader does not endorse.	O	O	O	O	O	O	O
The responsibility for chairing meetings appropriately rotates among all team members.	O	O	O	O	O	O	O
Leadership is exhibited by the same team members during most meetings.	O	O	O	O	O	O	O
I have complete confidence and trust in the team leader to effectively manage and lead this team.	O	O	O	O	O	O	O
Nearly all team members express opinions and ideas freely in most meetings.	O	O	O	O	O	O	O
The team leader position is currently rotated on a regular basis among the various members.	O	O	O	O	O	O	O
The team leader position should be rotated on a regular basis among the various members.	O	O	O	O	O	O	O

Appendix A - 7 Leadership

Please answer the following questions, based on only your opinion. Do not consult others when determining your responses. **These questions deal with the processes that the team members use to complete tasks.**

Only complete this section based on your experiences as a member of: **Math Based Engineering**

	Very strongly disagree	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Very strongly agree
Team decisions are made based on consensus of all team members.	O	O	O	O	O	O	O
I have complete confidence and trust in *local* team members to get the job done.	O	O	O	O	O	O	O
I have complete confidence and trust in *remote* team members to get the job done.	O	O	O	O	O	O	O
My role on the team is unclear and/or confusing.	O	O	O	O	O	O	O
The team has created acceptable standards of appropriate behavior among its members.	O	O	O	O	O	O	O
Team operating procedures and protocols support successful completion of the team's work.	O	O	O	O	O	O	O
Success of the team is dependent on the shared contributions of all team members.	O	O	O	O	O	O	O
Sharing knowledge with my team members is an important part of my work with the team.	O	O	O	O	O	O	O
Remote team members are less productive than local team members in my same area/office	O	O	O	O	O	O	O
Remote team members are less committed than local team members in my same area/office	O	O	O	O	O	O	O
It is difficult to trust people on the team because we do not have enough time to know each other.	O	O	O	O	O	O	O
I do the best I can in my team work because my team members' success depends on me.	O	O	O	O	O	O	O

Appendix A - 8 Processes

Specific Instructions:

Please answer the following questions, based on only your opinion. Do not consult others when determining your responses. **These questions deal with the communications technologies used when conducting team meetings.**

Only complete this section based on your experiences as a member of: **Math Based Engineering**

	Very strongly disagree	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Very strongly agree
I am satisfied with the communication technologies at my site that are used for team meetings.	O	O	O	O	O	O	O
The technology used for communicating with remote team members is easy to use.	O	O	O	O	O	O	O
I am completely trained in setting up the communications technologies for team meetings.	O	O	O	O	O	O	O
The current setup of chairs, table, audio/video equipment, etc at *my location* is satisfactory.	O	O	O	O	O	O	O
The current setup of chairs, table, audio/video equipment, etc at *remote sites* is satisfactory.	O	O	O	O	O	O	O
The meeting environment at my site lets me feel that I am collaborating with remote members.	O	O	O	O	O	O	O
The environment at the remote site lets me feel that I am collaborating with remote members.	O	O	O	O	O	O	O
The ability to whisper or cross talk is very important during team meetings.	O	O	O	O	O	O	O
At my local site, people regularly cross talk with other team members during team meetings.	O	O	O	O	O	O	O
At remote sites, people regularly cross talk with other team members during team meetings.	O	O	O	O	O	O	O
Cross talk during team meetings is disruptive.	O	O	O	O	O	O	O
At my local site, we often "mute" or block the local cross talk from remote sites.	O	O	O	O	O	O	O
Overall, the technology used for communicating with remote sites facilitates effective meetings.	O	O	O	O	O	O	O
E-mail is a useful alternative communication technology for the team outside of meetings.	O	O	O	O	O	O	O
All team members use E-mail effectively for communicating outside of team meetings.	O	O	O	O	O	O	O

Appendix A - 9 Communications Technology

Specific Instructions:

*Please answer the following questions, based on only your opinion. Do not consult others when determining your responses. **These questions deal with the team meeting content and the conduct of team members during meetings.***

Only complete this section based on your experiences as a member of: Math Based Engineering

	Very strongly disagree	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Very strongly agree
It is important to have a well defined agenda distributed to team members before the meeting.	O	O	O	O	O	O	O
The agenda items for the meetings are typically poorly defined.	O	O	O	O	O	O	O
The agenda items do not maintain my interest.	O	O	O	O	O	O	O
I often recommend agenda items for future meetings.	O	O	O	O	O	O	O
The team members follow the agenda during most meetings.	O	O	O	O	O	O	O
Local team members seem to be interested in meeting discussions.	O	O	O	O	O	O	O
Remote team members seem to be interested in meeting discussions.	O	O	O	O	O	O	O
Responsibility for specific tasks is agreed upon during team meetings.	O	O	O	O	O	O	O
The needs of the team and local priorities are not reconciled during meetings.	O	O	O	O	O	O	O
Ambiguous tasks are clarified with all team members during meetings.	O	O	O	O	O	O	O
On a regular basis, team members take the time to share lessons learned at local sites.	O	O	O	O	O	O	O

Appendix A - 10 Meetings

Specific Instructions:

Please answer the following questions, based on only your opinion. Do not consult others when determining your responses. These questions deal with team member interaction outside of team meetings.

Only complete this section based on your experiences as a member of: **Math Based Engineering**

	Very strongly disagree	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Very strongly agree
Responsibility for specific tasks is agreed upon outside team meetings.	O	O	O	O	O	O	O
The needs of the team and local priorities are reconciled outside meetings.	O	O	O	O	O	O	O
Potentially unclear or confusing tasks are clarified with team members outside meetings.	O	O	O	O	O	O	O
Traditional face-to-face meetings are much more effective than audio/video conferencing meetings.	O	O	O	O	O	O	O
E-mail and/or web postings are *not* as important as phone and/or audio/video conferencing.	O	O	O	O	O	O	O
I regularly talk about work related issues with my *remote* team members outside team meetings.	O	O	O	O	O	O	O
I regularly talk about work related issues with my *local* team members outside team meetings.	O	O	O	O	O	O	O
I regularly talk about social issues with my *remote* team members outside team meetings.	O	O	O	O	O	O	O
I regularly talk about social issues with my *local* team members outside team meetings.	O	O	O	O	O	O	O
There is not a sufficient number of opportunities to meet face-to-face with remote team members.	O	O	O	O	O	O	O

Appendix A - 11 Interaction

Specific Instructions:

Please answer the following questions, based on only your opinion. Do not consult others when determining your responses. These questions deal with the structure and composition of the team in terms of members' abilities.

Only complete this section based on your experiences as a member of: **Math Based Engineering**

	Very strongly disagree	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Very strongly agree
The combinations of skills on this team was carefully chosen to fit the task.	O	O	O	O	O	O	O
The variety of skills among team members complements one another.	O	O	O	O	O	O	O
Language is not a barrier to team success.	O	O	O	O	O	O	O
Variation among people on the team helps create better solutions.	O	O	O	O	O	O	O
Cultural differences hinder the team's performance.	O	O	O	O	O	O	O
Team members from different regions do not work well together on the team.	O	O	O	O	O	O	O
Changes in the team membership negatively impact team performance effectiveness.	O	O	O	O	O	O	O
Among the individual members of the team, duties are divided equitably (fairly).	O	O	O	O	O	O	O
Among the various regions of the team, duties are divided equitably (fairly).	O	O	O	O	O	O	O
New team members are fully oriented to the work of the team.	O	O	O	O	O	O	O

Appendix A - 12 Composition

Specific Instructions:

Please answer the following questions, based on only your opinion. Do not consult others when determining your responses. ***These questions deal with the outcomes or results of the team's efforts.***

Only complete this section based on your experiences as a member of: **Math Based Engineering**

	Very strongly disagree	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Very strongly agree
The team makes fast decisions.	O	O	O	O	O	O	O
Team decisions are of high quality.	O	O	O	O	O	O	O
I never expected to learn as much as I do from other members of the team.	O	O	O	O	O	O	O
Working together, the team creates solutions that I could not create working only in my region.	O	O	O	O	O	O	O
An important information-sharing network has been created among members of the team.	O	O	O	O	O	O	O
Working on the team gives me access to useful knowledge that I can get nowhere else.	O	O	O	O	O	O	O
I derive great personal satisfaction from my work with the members of the team.	O	O	O	O	O	O	O
I am satisfied with my performance on the team.	O	O	O	O	O	O	O
Work on global teams helps my long term career objectives.	O	O	O	O	O	O	O
Work on the team is not linked to the compensation I receive from the company.	O	O	O	O	O	O	O
I know exactly how my performance is measured on this team.	O	O	O	O	O	O	O
Concerns about individual promotion and career have an impact on the performance of the team.	O	O	O	O	O	O	O
Serious communication problems reduce performance effectiveness of most team projects.	O	O	O	O	O	O	O

Appendix A - 13 Outcomes

Specific Instructions:

Please answer the following questions, based on only your opinion. Do not consult others when determining your responses. These questions deal with the larger organization (Delphi Packard Electric engineering.)

Only complete this section based on your experiences as a member of: **Math Based Engineering**

	Very strongly disagree	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Very strongly agree
Considering the engineering organization as a whole, distributed (global) teams are successful.	O	O	O	O	O	O	O
Training in this company truly prepares people to work effectively on distributed (global) teams.	O	O	O	O	O	O	O
Company leadership is committed to the changes that the team makes.	O	O	O	O	O	O	O
Corporate compensation policies do not reward work on distributed teams.	O	O	O	O	O	O	O
The team has all of the material resources (e.g., computers, etc.) needed to make it successful.	O	O	O	O	O	O	O
Travel funds are always available for the team to do its work.	O	O	O	O	O	O	O
The organization promotes cross-cultural working relationships among its workforce.	O	O	O	O	O	O	O
The organization values employees equally for their contribution, no matter what their region.	O	O	O	O	O	O	O
Top management understands the goals of the team.	O	O	O	O	O	O	O
The company does not understand what employees at non-US sites need to be successful.	O	O	O	O	O	O	O
The team is a global initiative, but the company has no global policies/procedures to support it.	O	O	O	O	O	O	O
The company appreciates my contribution to the team.	O	O	O	O	O	O	O

Appendix A - 14 Company

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Specific Instructions:

Please answer the following questions, based on only your opinion. Do not consult others when determining your responses. These questions deal with issues at your local site or region.

Only complete this section based on your experiences as a member of: Math Based Engineering

	Very strongly disagree	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Very strongly agree
Any rewards I receive for my work with the team must come from my immediate supervisor.	O	O	O	O	O	O	O
No matter how global the focus of my work is, it's what I do locally that gets rewarded.	O	O	O	O	O	O	O
Work on global teams is weighted equally with functional department work on my evaluations.	O	O	O	O	O	O	O
My local supervisor supports global teams as useful as long as they don't disrupt local activities.	O	O	O	O	O	O	O
Local needs are taken into account in global team decisions.	O	O	O	O	O	O	O
My local site readily implements the recommendations of the global team.	O	O	O	O	O	O	O
Working on a dispersed team has changed how I relate to my coworkers at my local site.	O	O	O	O	O	O	O
The contribution of my local region is not as appreciated as it should be by the top leadership.	O	O	O	O	O	O	O
Local management does not understand how to support its employees when they do global work.	O	O	O	O	O	O	O
My local supervisor understands the goals of the team.	O	O	O	O	O	O	O
My local supervisor actively participates on the team during global team meetings.	O	O	O	O	O	O	O
Functional department goals take priority over the goals of the team.	O	O	O	O	O	O	O
My local supervisor does not understand the importance of the work I do for this team.	O	O	O	O	O	O	O
I report to the top engineering management in my region about this team on a regular basis.	O	O	O	O	O	O	O

Appendix A - 15 Local

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End of survey

If you have any additional comments about your experiences with global teams, please include them below.

Comments (optional):

This completes the survey. Thank you for taking the time to answer the questions as candidly as possible.

Your answers will be analyzed along with the responses from others at Delphi Packard Electric who work on the various horizontal teams. Once the data has been analyzed a written report will be given to each team, that provides a general summary of how the team as a whole feels about various aspects of global team work. Specific actions to improve a particular team's performance will also be suggested.

I will share as much information as I can for each team, without jeopardizing the confidentiality of each person's individual response. Until I know the exact number of responses for each team, I cannot predict exactly what that information will include.

Every individual's specific responses will be kept strictly confidential, so that no one can work backwards, given the data summary, to try and determine a specific response from a certain region or individual.

Please check the table below to see that you have answered all sections and save your work at this time. Then, please send this entire file as an E-mail attachment to: Chris.Burns@Delphiauto.com

You completed this survey based on your experiences as a member of: Math Based Engineering

Worksheet Name	Questions That You Answered	Total Survey Questions	
Demographics	2	17	
Leader Only	*0*	*14*	*(Note: This is for designated leaders only)*
Goals	0	11	
Leadership	0	10	
Processes	0	12	
Tech.	0	15	
Meetings	0	11	
Interaction	0	10	
Composition	0	10	
Outcomes	0	13	
Company	0	12	
Local	0	14	
Total	**2**	**149**	

Thank you very much.

Appendix A - 16 Summary

APPENDIX B – MAPPING OF SURVEY TO SYSTEM DYNAMICS MODEL

#	Survey Statement	Group	Box
1	I have the skills and training that are necessary to effectively lead and manage this team.	Skills	Collective capability of team members and leaders
2	I am satisfied with the team's level of performance in terms of the relationships within the team.	Results	Degree that capability of team to work together in the future is maintained or strengthened
3	Delphi P's engineering management team is supportive of my role as the leader of this team.		
4	There is a natural fit between my leadership role on this specific team & my "everyday" job.	Global vs. Local Performance Issues	Degree that global team activities have complimentary objectives at the global and local levels
5	Leading and managing this team is a more difficult task than my other responsibilities		
6	I am satisfied with my own level of performance in terms of leading and managing this team.	Results	Degree that individual members are more satisfied than frustrated by group experience
7	I am satisfied with the team's level of performance in terms of meeting the team objectives.	Results	Degree that task outputs are acceptable to those who receive or review it
8	I report to the top engineering management within the company on a regular basis about this team.	Capital	Presence of team gap analysis
8	I report to the top engineering management within the company on a regular basis about this team.	Effort	Presence of team gap analysis
8	I report to the top engineering management within the company on a regular basis about this team.	Results	Presence of team gap analysis
8	I report to the top engineering management within the company on a regular basis about this team.	Skills	Presence of team gap analysis
9	As a leader, I can directly influence individual team member's performance rating (PBP).	Effort	Leadership effectiveness at rewarding individuals working on global teams
10	I see little difference between communications among local team members vs. remote members.		
11	The rest of the Delphi P organization is supportive of my role as the leader of this team.		
12	This team's charter, scope, and goals support the company's higher objectives and strategies.	Skills	Degree that global teams are viewed as meaningful and necessary to both global and local organizations
12	This team's charter, scope, and goals support the company's higher objectives and strategies.	Strategy	Alignment/fit of team within global organization
13	All members of the team agree on the team's charter, scope, and goals.	Effort	Alignment/Synergy of individual efforts
14	I completely understand the team's charter, scope, and goals.	Strategy	Understanding of team constraints and requirements
15	I believe the work of the team is important.	Effort	Degree that individual tasks are viewed as meaningful, whole piece of work

#	Survey Statement	Group	Box
16	The team members within my region are committed to achieving the team's goals.	Effort	Degree that group owns the tasks and has responsibility for the outcomes
16	The team members within my region are committed to achieving the team's goals.	Effort	Shared commitment among team members
17	The team members outside my region are committed to achieving the team's goals.	Effort	Degree that group owns the tasks and has responsibility for the outcomes
17	The team members outside my region are committed to achieving the team's goals.	Effort	Shared commitment among team members
18	I am personally committed to achieving the team's goals.	Effort	Individual desire to work on global projects
19	I am satisfied with the team's level of performance in terms of the relationships within the team.	Results	Degree that capability of team to work together in the future is maintained or strengthened
20	The charter, scope, and goals are sufficiently defined to effectively evaluate team performance.	Results	Desired state of team effectiveness
21	As the team works toward shared goals, relationships among members are becoming stronger.	Results	Degree that capability of team to work together in the future is maintained or strengthened
22	I am satisfied with the team's level of performance in terms of meeting the team objectives.	Results	Degree that task outputs are acceptable to those who receive or review it
23	The team members trust our designated team leader to fairly represent our team needs.	Effort	Trust among team members
23	The team members trust our designated team leader to fairly represent our team needs.	Interaction / Communications	Trust among team members
24	The meeting chairperson effectively manages the agenda during the meeting.	Effort	Minimal coordination and motivation losses
25	The team has the autonomy to select options that the team leader does not endorse.		
26	The responsibility for chairing meetings appropriately rotates among all team members.		
27	Leadership is exhibited by the same team members during most meetings.		
28	I have complete confidence and trust in the team leader to effectively manage and lead this team.	Effort	Trust among team members
28	I have complete confidence and trust in the team leader to effectively manage and lead this team.	Interaction / Communications	Trust among team members
28	I have complete confidence and trust in the team leader to effectively manage and lead this team.	Skills	Degree that team leaders are effective
29	Nearly all team members express opinions and ideas freely in most meetings.		
30	The team leader position is currently rotated on a regular basis among the various members.		
31	The same team members appear to be making all the decisions in meetings.	Skills	Leadership effectiveness in minimizing inappropriate weighting of individual contributions

#	Survey Statement	Group	Box
32	The team leader position should be rotated on a regular basis among the various members.		
33	My role on the team is unclear and/or confusing.	Effort	Clarity of roles, responsibilities, accountabilities
34	The team has created acceptable standards of appropriate behavior among its members.	Strategy	Consensus among team members about group norms
35	Success of the team is dependent on the shared contributions of all team members.		
36	Sharing knowledge with my team members is an important part of my work with the team.	Skills	Leadership effectiveness in fostering collective learning
37	I do the best I can in my team work because my team members' success depends on me.	Effort	Degree that group tasks are viewed as motivationally engaging
38	Team decisions are made based on consensus of all team members.		
39	I have complete confidence and trust in local team members to get the job done.	Effort	Trust among team members
39	I have complete confidence and trust in local team members to get the job done.	Interaction / Communications	Trust among team members
40	I have complete confidence and trust in remote team members to get the job done.	Effort	Trust among team members
40	I have complete confidence and trust in remote team members to get the job done.	Interaction / Communications	Trust among team members
41	Team operating procedures and protocols support successful completion of the team's work.	Strategy	Sufficiency of group norms to support self-regulation
42	Remote team members are less productive than local team members in my same area/office		
43	Remote team members are less committed than local team members in my same area/office	Effort	Shared commitment among team members
44	It is difficult to trust people on the team because we do not have enough time to know each other.	Interaction / Communications	Quantity of face-to-face interaction
45	E-mail is a useful alternative communication technology for the team outside of meetings.	Interaction / Communications	Capability of company global communication infrastructure
45	E-mail is a useful alternative communication technology for the team outside of meetings.	Interaction / Communications	Fit between non face-to-face communications media/process and nature of team's tasks
46	All team members use E-mail effectively for communicating outside of team meetings.	Interaction / Communications	Effectiveness of actual non face-to-face interaction/communications
47	I am satisfied with the communication technologies at my site that are used for team meetings.	Interaction / Communications	Effectiveness of company's non face-to-face communications media/process
48	The technology used for communicating with remote team members is easy to use.	Interaction / Communications	Personal convenience
49	I am completely trained in setting up the communications technologies for team meetings.	Interaction / Communications	Willingness and ability of team members to use non face-to-face media/process
50	The current setup of chairs, table, audio/video equipment, etc at my location is satisfactory.		

#	Survey Statement	Group	Box
51	The current setup of chairs, table, audio/video equipment, etc at remote sites is satisfactory.		
52	The meeting environment at my site lets me feel that I am collaborating with remote members.		
53	The environment at the remote site lets me feel that I am collaborating with remote members.		
54	The ability to whisper or cross talk is very important during team meetings.		
55	At my local site, people regularly cross talk with other team members during team meetings.		
56	At remote sites, people regularly cross talk with other team members during team meetings.		
57	Cross talk during team meetings is disruptive.		
58	At my local site, we often "mute" or block the local cross talk from remote sites.		
59	Overall, the technology used for communicating with remote sites facilitates effective meetings.	Interaction / Communications	Effectiveness of actual non face-to-face interaction/communications
60	It is important to have a well defined agenda distributed to team members before the meeting.		
61	The agenda items do not maintain my interest.		
62	The team members follow the agenda during most meetings.		
63	Local team members seem to be interested in meeting discussions.		
64	Remote team members seem to be interested in meeting discussions.		
65	Responsibility for specific tasks is agreed upon during team meetings.	Effort	Clarity of roles, responsibilities, accountabilities
66	The agenda items for the meetings are typically poorly defined.		
67	I often recommend agenda items for future meetings.		
68	The needs of the team and local priorities are not reconciled during meetings.	Global vs. Local Performance Issues	Local leadership effectiveness at prioritizing and assigning individual work between short term and long term efforts
68	The needs of the team and local priorities are not reconciled during meetings.		
69	Ambiguous tasks are clarified with all team members during meetings.	Effort	Clarity of roles, responsibilities, accountabilities
70	On a regular basis, team members take the time to share lessons learned at local sites.	Skills	Cross training within team and learning synergy among team members
71	Traditional face-to-face meetings are much more effective than audio/video conferencing meetings.	Interaction / Communications	Reliance on non-face-to-face communications
72	I regularly talk about work related issues with my local team members outside team meetings.		

#	Survey Statement	Group	Box
73	There is not a sufficient number of opportunities to meet face-to-face with remote team members.	Interaction / Communications	Quantity of face-to-face interaction
74	Responsibility for specific tasks is agreed upon outside team meetings.	Effort	Clarity of roles, responsibilities, accountabilities
75	The needs of the team and local priorities are reconciled outside meetings.	Global vs. Local Performance Issues	Local leadership effectiveness at prioritizing and assigning individual work between short term and long term efforts
76	Potentially unclear or confusing tasks are clarified with team members outside meetings.	Effort	Clarity of roles, responsibilities, accountabilities
77	E-mail and/or web postings are not as important as phone and/or audio/video conferencing		
78	I regularly talk about work related issues with my remote team members outside team meetings.		
79	I regularly talk about social issues with my remote team members outside team meetings.		
80	I regularly talk about social issues with my local team members outside team meetings.		
81	The variety of skills among team members complements one another.	Skills	Degree that team is moderately diverse
82	Language is not a barrier to team success.		
83	Variation among people on the team helps create better solutions.	Skills	Degree that team is moderately diverse
84	Team members from different regions do not work well together on the team.	Interaction / Communications	Willingness of local regions to align local culture with company culture
85	The combinations of skills on this team was carefully chosen to fit the task.	Skills	Leadership effectiveness at selecting team members and team leaders
86	Cultural differences hinder the team's performance.	Interaction / Communications	Willingness of local regions to align local culture with company culture
87	Changes in the team membership negatively impact team performance effectiveness.	Effort	Team member turnover
87	Changes in the team membership negatively impact team performance effectiveness.	Interaction / Communications	Team member turnover
88	Among the individual members of the team, duties are divided equitably (fairly).		
89	Among the various regions of the team, duties are divided equitably (fairly).		
90	New team members are fully oriented to the work of the team.		
91	Team decisions are of high quality.		
92	An important information-sharing network has been created among members of the team.		
93	Working on the team gives me access to useful knowledge that I can get nowhere else.	Skills	Cross training within team and learning synergy among team members
94	The team makes fast decisions.	Effort	Minimal coordination and motivation losses

#	Survey Statement	Group	Box
95	I never expected to learn as much as I do from other members of the team.	Skills	Cross training within team and learning synergy among team members
96	Working together, the team creates solutions that I could not create working only in my region.		
97	I derive great personal satisfaction from my work with the members of the team.	Results	Degree that individual members are more satisfied than frustrated by group experience
98	I am satisfied with my performance on the team.	Results	Degree that individual members are more satisfied than frustrated by group experience
99	Work on global teams helps my long term career objectives.	Global vs. Local Performance Issues	Career aspirations at local level
100	Work on the team is not linked to the compensation I receive from the company.	Effort	Degree that global teamwork is viewed as potentially rewarding
101	I know exactly how my performance is measured on this team.	Effort	Leadership effectiveness at creating challenging and specific performance objectives
102	Concerns about individual promotion and career have an impact on the performance of the team.	Global vs. Local Performance Issues	Career aspirations at local level
103	Serious communication problems reduce performance effectiveness of most team projects.	Interaction / Communications	Internal team global interaction / communications
104	Travel funds are always available for the team to do its work.	Interaction / Communications	Travel budget restrictions
105	The company appreciates my contribution to the team.	Effort	Leadership effectiveness at rewarding individuals working on global teams
106	Considering the engineering organization as a whole, distributed (global) teams are successful.	Results	Actual global team effectiveness
107	Training in this company truly prepares people to work effectively on distributed (global) teams.		
108	Company leadership is committed to the changes that the team makes.	Strategy	Acceptance of team generated task performance strategies by global organization
109	Corporate compensation policies do not reward work on distributed teams.	Effort	Awareness of organizational reward system for global teamwork
109	Corporate compensation policies do not reward work on distributed teams.	Effort	Leadership effectiveness at rewarding individuals working on global teams
110	The team has all of the material resources (e.g., computers, etc.) needed to make it successful.	Capital	Resources available to team
110	The team has all of the material resources (e.g., computers, etc.) needed to make it successful.	Results	Resources available to team
110	The team has all of the material resources (e.g., computers, etc.) needed to make it successful.	Strategy	Resources available to team
111	The organization promotes cross-cultural working relationships among its workforce.	Interaction / Communications	Willingness of local regions to align local culture with company culture
112	The organization values employees equally for their contribution, no matter what their region.		
113	Top management understands the goals of the team.	Effort	Degree that outcomes are visible to global organization

#	Survey Statement	Group	Box
113	Top management understands the goals of the team.	Strategy	Sufficiency of global organizational management review of team strategies
114	The company does not understand what employees at non-US sites need to be successful.		
115	The team is a global initiative, but the company has no global policies/procedures to support it.		
116	Local needs are taken into account in global team decisions.	Strategy	Degree that team generated strategies are viewed as win-win by both the global organization and each region
117	My local site readily implements the recommendations of the global team.	Strategy	Acceptance of team generated task performance strategies by local regions
118	My local supervisor understands the goals of the team.		
119	My local supervisor does not understand the importance of the work I do for this team.	Effort	Degree that group outputs are viewed as meaningful to the local organization
120	Any rewards I receive for my work with the team must come from my immediate supervisor.	Effort	Presence of rewards and objectives that focus at the group, not individual, level
121	No matter how global the focus of my work is, it's what I do locally that gets rewarded.	Effort	Degree that global teamwork is viewed as potentially rewarding
122	Work on global teams is weighted equally with functional department work on my evaluations.	Global vs. Local Performance Issues	Local leadership effectiveness at prioritizing and assigning individual work between short term and long term efforts
123	My local supervisor supports global teams as useful as long as they don't disrupt local activities	Global vs. Local Performance Issues	Degree that global team activities are viewed as a short term distraction / problem at the local level
123	My local supervisor supports global teams as useful as long as they don't disrupt local activities	Global vs. Local Performance Issues	Local individual team member tendency to focus on local issues rather than global issues
124	Working on a dispersed team has changed how I relate to my coworkers at my local site.		
125	The contribution of my local region is not as appreciated as it should be by the top leadership.		
126	Local management does not understand how to support its employees when they do global work.		
127	My local supervisor actively participates on the team during global team meetings.		
128	Functional department goals take priority over the goals of the team.		
129	I report to the top engineering management in my region about this team on a regular basis.		
		Capital	Ability of global organization to provide resources to local members
		Capital	Ability of local regions to provide resources to local members
		Capital	Amount of global resources available to team members within all local regions

#	Survey Statement	Group	Box
		Capital	Amount of local resources available to team members within a given local region
		Capital	Degree that local members depend on global organization for capital to acquire resources
		Capital	Degree that local members depend on local regions for capital to acquire resources
		Capital	Financial state of global organization
		Capital	Global policy regarding resource allocation to global team members
		Capital	Identified resource gap
		Capital	Local policy regarding resource allocation to global team members
		Capital	Required state of available resources
		Capital	Willingness / desire of global organization to provide resources to local members
		Capital	Willingness / desire of local regions to provide resources to local members
		Effort	Degree that required group task skills match individual skills
		Effort	Fatigue/stress
		Effort	Identified effort gap
		Effort	Individual efforts applied to tasks
		Effort	Leadership effectiveness at developing group synergy among team members
		Effort	Leadership effectiveness at providing positive consequences for excellent performance
		Effort	Mutual professional respect
		Effort	Optimum number of team members
		Effort	Positive prior interaction among team members
		Effort	Quality of a supportive organizational recognition/reward system at the team level
		Effort	Recognition of team performance objectives that are challenging but also realistic
		Effort	Required state of effort
		Effort	Team effort applied to tasks
		Effort	Time available to work on global projects
		Global vs. Local Performance Issues	Actual performance of local operations
		Global vs. Local Performance Issues	Capability of existing local resources to address short term issues
		Global vs. Local Performance Issues	Day to day exposure of local activities and concerns

#	Survey Statement	Group	Box
		Global vs. Local Performance Issues	Degree of influence of local strategies, culture, and practice
		Global vs. Local Performance Issues	Degree of local direct reporting structure
		Global vs. Local Performance Issues	Degree that global team activities are helpful in improving local operations
		Global vs. Local Performance Issues	Desired state of local operations
		Global vs. Local Performance Issues	Efforts to improve local operations
		Global vs. Local Performance Issues	Gap between local desired state and actual local operations
		Global vs. Local Performance Issues	Global efforts applied to short term local improvement issues
		Global vs. Local Performance Issues	Global vs. Local Performance Issues
		Global vs. Local Performance Issues	Local efforts applied to short term local improvement issues
		Global vs. Local Performance Issues	Local pressure
		Global vs. Local Performance Issues	Long term local business and economic concerns
		Global vs. Local Performance Issues	Organizational strategy to manage the overall business at a local level vs. global level
		Global vs. Local Performance Issues	Reliance on local efforts to improve global operations
		Global vs. Local Performance Issues	Reliance on local efforts to improve local operations
		Global vs. Local Performance Issues	Short term local issues
		Interaction / Communications	Ability to maintain rhythm in interaction / communications
		Interaction / Communications	Behavior modeled by leaders
		Interaction / Communications	Degree of competition among various regions for limited business opportunities
		Interaction / Communications	Degree of importance and/or urgency of global tasks
		Interaction / Communications	Distance
		Interaction / Communications	Effectiveness of actual face-to-face interaction/communications
		Interaction / Communications	External team global interaction / communications

#	Survey Statement	Group	Box
		Interaction / Communications	Face-to-face interaction gap
		Interaction / Communications	Financial pressures
		Interaction / Communications	Leadership effectiveness at maintaining critical level of face-to-face interaction
		Interaction / Communications	Need for face-to-face interaction
		Interaction / Communications	Organizational trust among different regions
		Interaction / Communications	Positive prior interaction among team members
		Interaction / Communications	Quality of face-to-face interaction
		Interaction / Communications	Quality, quantity, and clarity of overriding company messages and supporting data
		Interaction / Communications	Strength of global organizational (Company) culture among all regions
		Interaction / Communications	Strength of local (Regional) cultures
		Results	Gap between desired state and actual team effectiveness
		Results	Sufficiency of knowledge and skills applied to tasks
		Results	Task-appropriate team performance strategies
		Results	Team effort applied to tasks
		Skills	Availability of relevant skills in outside resources
		Skills	Degree that team members have high task-relevant skills
		Skills	Degree that team members have interpersonal skills
		Skills	Degree that team members have political power within the global organization and local regions
		Skills	Identified skill gap
		Skills	Leadership effectiveness in creating appropriate global teams
		Skills	Minimal process losses while determining skills available to team
		Skills	Outside skills/people provided to team
		Skills	Population of qualified and available candidates within region to potentially be on the team
		Skills	Quality of delivery system of outside resource skills

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#	Survey Statement	Group	Box
		Skills	Required state of available skills
		Skills	Sufficiency of knowledge and skills applied to tasks
		Skills	Team awareness of outside resources
		Strategy	Clarity of parameters regarding performance situation
		Strategy	Degree that team can create innovative strategic plans
		Strategy	Degree that team members have political power within the global organization
		Strategy	Degree that team members have political power within the local regions
		Strategy	Degree that team members seek to comply with group norms
		Strategy	Leadership effectiveness at developing group synergy among team members
		Strategy	Local acceptance of global organization's culture / strategies
		Strategy	Minimal process losses while determining strategies
		Strategy	Quality of strategies generated outside the team
		Strategy	Quality of task performance strategies developed internally by the team
		Strategy	Sufficiency of group norms to encourage situation scanning and strategy planning
		Strategy	Task-appropriate team performance strategies
		Strategy	Team access to data about likely consequences of alternative strategies
		Strategy	Understanding of who are the end users of the team's output and their evaluation criteria

Appendix B - 1 Mapping Sorted by Survey Question

Group	Box	#	Survey Statement
Capital	Ability of global organization to provide resources to local members		
Capital	Ability of local regions to provide resources to local members		
Capital	Amount of global resources available to team members within all local regions		
Capital	Amount of local resources available to team members within a given local region		
Capital	Degree that local members depend on global organization for capital to acquire resources		
Capital	Degree that local members depend on local regions for capital to acquire resources		
Capital	Financial state of global organization		
Capital	Global policy regarding resource allocation to global team members		
Capital	Identified resource gap		
Capital	Local policy regarding resource allocation to global team members		
Capital	Presence of team gap analysis	8	I report to the top engineering management within the company on a regular basis about this team.
Capital	Required state of available resources		
Capital	Resources available to team	110	The team has all of the material resources (e.g., computers, etc.) needed to make it successful.
Capital	Willingness / desire of global organization to provide resources to local members		
Capital	Willingness / desire of local regions to provide resources to local members		
Effort	Alignment/Synergy of individual efforts	13	All members of the team agree on the team's charter, scope, and goals.
Effort	Awareness of organizational reward system for global teamwork	109	Corporate compensation policies do not reward work on distributed teams.
Effort	Clarity of roles, responsibilities, accountabilities	33	My role on the team is unclear and/or confusing.
Effort	Clarity of roles, responsibilities, accountabilities	65	Responsibility for specific tasks is agreed upon during team meetings.
Effort	Clarity of roles, responsibilities, accountabilities	69	Ambiguous tasks are clarified with all team members during meetings.
Effort	Clarity of roles, responsibilities, accountabilities	74	Responsibility for specific tasks is agreed upon outside team meetings.
Effort	Clarity of roles, responsibilities, accountabilities	76	Potentially unclear or confusing tasks are clarified with team members outside meetings.

Group	Box	#	Survey Statement
Effort	Degree that global teamwork is viewed as potentially rewarding	100	Work on the team is not linked to the compensation I receive from the company.
Effort	Degree that global teamwork is viewed as potentially rewarding	121	No matter how global the focus of my work is, it's what I do locally that gets rewarded.
Effort	Degree that group outputs are viewed as meaningful to the local organization	119	My local supervisor does not understand the importance of the work I do for this team.
Effort	Degree that group owns the tasks and has responsibility for the outcomes	16	The team members within my region are committed to achieving the team's goals.
Effort	Degree that group owns the tasks and has responsibility for the outcomes	17	The team members outside my region are committed to achieving the team's goals.
Effort	Degree that group tasks are viewed as motivationally engaging	37	I do the best I can in my team work because my team members' success depends on me.
Effort	Degree that individual tasks are viewed as meaningful, whole piece of work	15	I believe the work of the team is important.
Effort	Degree that outcomes are visible to global organization	113	Top management understands the goals of the team.
Effort	Degree that required group task skills match individual skills		
Effort	Fatigue/stress		
Effort	Identified effort gap		
Effort	Individual desire to work on global projects	18	I am personally committed to achieving the team's goals.
Effort	Individual efforts applied to tasks		
Effort	Leadership effectiveness at creating challenging and specific performance objectives	101	I know exactly how my performance is measured on this team.
Effort	Leadership effectiveness at developing group synergy among team members		
Effort	Leadership effectiveness at providing positive consequences for excellent performance		
Effort	Leadership effectiveness at rewarding individuals working on global teams	9	As a leader, I can directly influence individual team member's performance rating (PBP).
Effort	Leadership effectiveness at rewarding individuals working on global teams	105	The company appreciates my contribution to the team.
Effort	Leadership effectiveness at rewarding individuals working on global teams	109	Corporate compensation policies do not reward work on distributed teams.
Effort	Minimal coordination and motivation losses	24	The meeting chairperson effectively manages the agenda during the meeting.
Effort	Minimal coordination and motivation losses	94	The team makes fast decisions.
Effort	Mutual professional respect		
Effort	Optimum number of team members		
Effort	Positive prior interaction among team members		
Effort	Presence of rewards and objectives that focus at the group, not individual, level	120	Any rewards I receive for my work with the team must come from my immediate supervisor.

Group	Box	#	Survey Statement
Effort	Presence of team gap analysis	8	I report to the top engineering management within the company on a regular basis about this team.
Effort	Quality of a supportive organizational recognition/reward system at the team level		
Effort	Recognition of team performance objectives that are challenging but also realistic		
Effort	Required state of effort		
Effort	Shared commitment among team members	16	The team members within my region are committed to achieving the team's goals.
Effort	Shared commitment among team members	17	The team members outside my region are committed to achieving the team's goals.
Effort	Shared commitment among team members	43	Remote team members are less committed than local team members in my same area/office
Effort	Team effort applied to tasks		
Effort	Team member turnover	87	Changes in the team membership negatively impact team performance effectiveness.
Effort	Time available to work on global projects		
Effort	Trust among team members	23	The team members trust our designated team leader to fairly represent our team needs.
Effort	Trust among team members	28	I have complete confidence and trust in the team leader to effectively manage and lead this team.
Effort	Trust among team members	39	I have complete confidence and trust in local team members to get the job done.
Effort	Trust among team members	40	I have complete confidence and trust in remote team members to get the job done.
Global vs. Local Performance Issues	Actual performance of local operations		
Global vs. Local Performance Issues	Capability of existing local resources to address short term issues		
Global vs. Local Performance Issues	Career aspirations at local level	99	Work on global teams helps my long term career objectives.
Global vs. Local Performance Issues	Career aspirations at local level	102	Concerns about individual promotion and career have an impact on the performance of the team.
Global vs. Local Performance Issues	Day to day exposure of local activities and concerns		
Global vs. Local Performance Issues	Degree of influence of local strategies, culture, and practice		
Global vs. Local Performance Issues	Degree of local direct reporting structure		
Global vs. Local Performance Issues	Degree that global team activities are helpful in improving local operations		
Global vs. Local Performance Issues	Degree that global team activities are viewed as a short term distraction / problem at the local level	123	My local supervisor supports global teams as useful as long as they don't disrupt local activities

Group	Box	#	Survey Statement
Global vs. Local Performance Issues	Degree that global team activities have complimentary objectives at the global and local levels	4	There is a natural fit between my leadership role on this specific team & my "everyday" job.
Global vs. Local Performance Issues	Desired state of local operations		
Global vs. Local Performance Issues	Efforts to improve local operations		
Global vs. Local Performance Issues	Gap between local desired state and actual local operations		
Global vs. Local Performance Issues	Global efforts applied to short term local improvement issues		
Global vs. Local Performance Issues	Global vs. Local Performance Issues		
Global vs. Local Performance Issues	Local efforts applied to short term local improvement issues		
Global vs. Local Performance Issues	Local individual team member tendency to focus on local issues rather than global issues	123	My local supervisor supports global teams as useful as long as they don't disrupt local activities
Global vs. Local Performance Issues	Local leadership effectiveness at prioritizing and assigning individual work between short term and long term efforts	68	The needs of the team and local priorities are not reconciled during meetings.
Global vs. Local Performance Issues	Local leadership effectiveness at prioritizing and assigning individual work between short term and long term efforts	75	The needs of the team and local priorities are reconciled outside meetings.
Global vs. Local Performance Issues	Local leadership effectiveness at prioritizing and assigning individual work between short term and long term efforts	122	Work on global teams is weighted equally with functional department work on my evaluations.
Global vs. Local Performance Issues	Local pressure		
Global vs. Local Performance Issues	Long term local business and economic concerns		
Global vs. Local Performance Issues	Organizational strategy to manage the overall business at a local level vs. global level		
Global vs. Local Performance Issues	Reliance on local efforts to improve global operations		
Global vs. Local Performance Issues	Reliance on local efforts to improve local operations		
Global vs. Local Performance Issues	Short term local issues		
Interaction / Communications	Ability to maintain rhythm in interaction / communications		
Interaction / Communications	Behavior modeled by leaders		
Interaction / Communications	Capability of company global communication infrastructure	45	E-mail is a useful alternative communication technology for the team outside of meetings.

Group	Box	#	Survey Statement
Interaction / Communications	Degree of competition among various regions for limited business opportunities		
Interaction / Communications	Degree of importance and/or urgency of global tasks		
Interaction / Communications	Distance		
Interaction / Communications	Effectiveness of actual face-to-face interaction/communications		
Interaction / Communications	Effectiveness of actual non face-to-face interaction/communications	46	All team members use E-mail effectively for communicating outside of team meetings.
Interaction / Communications	Effectiveness of actual non face-to-face interaction/communications	59	Overall, the technology used for communicating with remote sites facilitates effective meetings.
Interaction / Communications	Effectiveness of company's non face-to-face communications media/process	47	I am satisfied with the communication technologies at my site that are used for team meetings.
Interaction / Communications	External team global interaction / communications		
Interaction / Communications	Face-to-face interaction gap		
Interaction / Communications	Financial pressures		
Interaction / Communications	Fit between non face-to-face communications media/process and nature of team's tasks	45	E-mail is a useful alternative communication technology for the team outside of meetings.
Interaction / Communications	Internal team global interaction / communications	103	Serious communication problems reduce performance effectiveness of most team projects.
Interaction / Communications	Leadership effectiveness at maintaining critical level of face-to-face interaction		
Interaction / Communications	Need for face-to-face interaction		
Interaction / Communications	Organizational trust among different regions		
Interaction / Communications	Personal convenience	48	The technology used for communicating with remote team members is easy to use.
Interaction / Communications	Positive prior interaction among team members		
Interaction / Communications	Quality of face-to-face interaction		
Interaction / Communications	Quality, quantity, and clarity of overriding company messages and supporting data		
Interaction / Communications	Quantity of face-to-face interaction	44	It is difficult to trust people on the team because we do not have enough time to know each other.
Interaction / Communications	Quantity of face-to-face interaction	73	There is not a sufficient number of opportunities to meet face-to-face with remote team members.
Interaction / Communications	Reliance on non-face-to-face communications	71	Traditional face-to-face meetings are much more effective than audio/video conferencing meetings.

Group	Box	#	Survey Statement
Interaction / Communications	Strength of global organizational (Company) culture among all regions		
Interaction / Communications	Strength of local (Regional) cultures		
Interaction / Communications	Team member turnover	87	Changes in the team membership negatively impact team performance effectiveness.
Interaction / Communications	Travel budget restrictions	104	Travel funds are always available for the team to do its work.
Interaction / Communications	Trust among team members	23	The team members trust our designated team leader to fairly represent our team needs.
Interaction / Communications	Trust among team members	28	I have complete confidence and trust in the team leader to effectively manage and lead this team.
Interaction / Communications	Trust among team members	39	I have complete confidence and trust in local team members to get the job done.
Interaction / Communications	Trust among team members	40	I have complete confidence and trust in remote team members to get the job done.
Interaction / Communications	Willingness and ability of team members to use non face-to-face media/process	49	I am completely trained in setting up the communications technologies for team meetings.
Interaction / Communications	Willingness of local regions to align local culture with company culture	84	Team members from different regions do not work well together on the team.
Interaction / Communications	Willingness of local regions to align local culture with company culture	86	Cultural differences hinder the team's performance.
Interaction / Communications	Willingness of local regions to align local culture with company culture	111	The organization promotes cross-cultural working relationships among its workforce.
Results	Actual global team effectiveness	106	Considering the engineering organization as a whole, distributed (global) teams are successful.
Results	Degree that capability of team to work together in the future is maintained or strengthened	2	I am satisfied with the team's level of performance in terms of the relationships within the team.
Results	Degree that capability of team to work together in the future is maintained or strengthened	19	I am satisfied with the team's level of performance in terms of the relationships within the team.
Results	Degree that capability of team to work together in the future is maintained or strengthened	21	As the team works toward shared goals, relationships among members are becoming stronger.
Results	Degree that individual members are more satisfied than frustrated by group experience	6	I am satisfied with my own level of performance in terms of leading and managing this team.
Results	Degree that individual members are more satisfied than frustrated by group experience	97	I derive great personal satisfaction from my work with the members of the team.
Results	Degree that individual members are more satisfied than frustrated by group experience	98	I am satisfied with my performance on the team.
Results	Degree that task outputs are acceptable to those who receive or review it	7	I am satisfied with the team's level of performance in terms of meeting the team objectives.
Results	Degree that task outputs are acceptable to those who receive or review it	22	I am satisfied with the team's level of performance in terms of meeting the team objectives.
Results	Desired state of team effectiveness	20	The charter, scope, and goals are sufficiently defined to effectively evaluate team performance.

Group	Box	#	Survey Statement
Results	Gap between desired state and actual team effectiveness		
Results	Presence of team gap analysis	8	I report to the top engineering management within the company on a regular basis about this team.
Results	Resources available to team	110	The team has all of the material resources (e.g., computers, etc.) needed to make it successful.
Results	Sufficiency of knowledge and skills applied to tasks		
Results	Task-appropriate team performance strategies		
Results	Team effort applied to tasks		
Skills	Availability of relevant skills in outside resources		
Skills	Collective capability of team members and leaders	1	I have the skills and training that are necessary to effectively lead and manage this team.
Skills	Cross training within team and learning synergy among team members	70	On a regular basis, team members take the time to share lessons learned at local sites.
Skills	Cross training within team and learning synergy among team members	93	Working on the team gives me access to useful knowledge that I can get nowhere else.
Skills	Cross training within team and learning synergy among team members	95	I never expected to learn as much as I do from other members of the team.
Skills	Degree that global teams are viewed as meaningful and necessary to both global and local organizations	12	This team's charter, scope, and goals support the company's higher objectives and strategies.
Skills	Degree that team is moderately diverse	81	The variety of skills among team members complements one another.
Skills	Degree that team is moderately diverse	83	Variation among people on the team helps create better solutions.
Skills	Degree that team leaders are effective	28	I have complete confidence and trust in the team leader to effectively manage and lead this team.
Skills	Degree that team members have high task-relevant skills		
Skills	Degree that team members have interpersonal skills		
Skills	Degree that team members have political power within the global organization and local regions		
Skills	Identified skill gap		
Skills	Leadership effectiveness at selecting team members and team leaders	85	The combinations of skills on this team was carefully chosen to fit the task.
Skills	Leadership effectiveness in creating appropriate global teams		
Skills	Leadership effectiveness in fostering collective learning	36	Sharing knowledge with my team members is an important part of my work with the team.

Group	Box	#	Survey Statement
Skills	Leadership effectiveness in minimizing inappropriate weighting of individual contributions	31	The same team members appear to be making all the decisions in meetings.
Skills	Minimal process losses while determining skills available to team		
Skills	Outside skills/people provided to team		
Skills	Population of qualified and available candidates within region to potentially be on the team		
Skills	Presence of team gap analysis	8	I report to the top engineering management within the company on a regular basis about this team.
Skills	Quality of delivery system of outside resource skills		
Skills	Required state of available skills		
Skills	Sufficiency of knowledge and skills applied to tasks		
Skills	Team awareness of outside resources		
Strategy	Acceptance of team generated task performance strategies by global organization	108	Company leadership is committed to the changes that the team makes.
Strategy	Acceptance of team generated task performance strategies by local regions	117	My local site readily implements the recommendations of the global team.
Strategy	Alignment/fit of team within global organization	12	This team's charter, scope, and goals support the company's higher objectives and strategies.
Strategy	Clarity of parameters regarding performance situation		
Strategy	Consensus among team members about group norms	34	The team has created acceptable standards of appropriate behavior among its members.
Strategy	Degree that team can create innovative strategic plans		
Strategy	Degree that team generated strategies are viewed as win-win by both the global organization and each region	116	Local needs are taken into account in global team decisions.
Strategy	Degree that team members have political power within the global organization		
Strategy	Degree that team members have political power within the local regions		
Strategy	Degree that team members seek to comply with group norms		
Strategy	Leadership effectiveness at developing group synergy among team members		
Strategy	Local acceptance of global organization's culture / strategies		
Strategy	Minimal process losses while determining strategies		
Strategy	Quality of strategies generated outside the team		

Group	Box	#	Survey Statement
Strategy	Quality of task performance strategies developed internally by the team		
Strategy	Resources available to team	110	The team has all of the material resources (e.g., computers, etc.) needed to make it successful.
Strategy	Sufficiency of global organizational management review of team strategies	113	Top management understands the goals of the team.
Strategy	Sufficiency of group norms to encourage situation scanning and strategy planning		
Strategy	Sufficiency of group norms to support self-regulation	41	Team operating procedures and protocols support successful completion of the team's work.
Strategy	Task-appropriate team performance strategies		
Strategy	Team access to data about likely consequences of alternative strategies		
Strategy	Understanding of team constraints and requirements	14	I completely understand the team's charter, scope, and goals.
Strategy	Understanding of who are the end users of the team's output and their evaluation criteria		
		3	Delphi P's engineering management team is supportive of my role as the leader of this team.
		5	Leading and managing this team is a more difficult task than my other responsibilities
		10	I see little difference between communications among local team members vs. remote members.
		11	The rest of the Delphi P organization is supportive of my role as the leader of this team.
		25	The team has the autonomy to select options that the team leader does not endorse.
		26	The responsibility for chairing meetings appropriately rotates among all team members.
		27	Leadership is exhibited by the same team members during most meetings.
		29	Nearly all team members express opinions and ideas freely in most meetings.
		30	The team leader position is currently rotated on a regular basis among the various members.
		32	The team leader position should be rotated on a regular basis among the various members.
		35	Success of the team is dependent on the shared contributions of all team members.
		38	Team decisions are made based on consensus of all team members.
		42	Remote team members are less productive than local team members in my same area/office

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Group	Box	#	Survey Statement
		50	The current setup of chairs, table, audio/video equipment, etc at my location is satisfactory.
		51	The current setup of chairs, table, audio/video equipment, etc at remote sites is satisfactory.
		52	The meeting environment at my site lets me feel that I am collaborating with remote members.
		53	The environment at the remote site lets me feel that I am collaborating with remote members.
		54	The ability to whisper or cross talk is very important during team meetings.
		55	At my local site, people regularly cross talk with other team members during team meetings.
		56	At remote sites, people regularly cross talk with other team members during team meetings.
		57	Cross talk during team meetings is disruptive.
		58	At my local site, we often "mute" or block the local cross talk from remote sites.
		60	It is important to have a well defined agenda distributed to team members before the meeting.
		61	The agenda items do not maintain my interest.
		62	The team members follow the agenda during most meetings.
		63	Local team members seem to be interested in meeting discussions.
		64	Remote team members seem to be interested in meeting discussions.
		66	The agenda items for the meetings are typically poorly defined.
		67	I often recommend agenda items for future meetings.
		68	The needs of the team and local priorities are not reconciled during meetings.
		72	I regularly talk about work related issues with my local team members outside team meetings.
		77	E-mail and/or web postings are not as important as phone and/or audio/video conferencing
		78	I regularly talk about work related issues with my remote team members outside team meetings.
		79	I regularly talk about social issues with my remote team members outside team meetings.
		80	I regularly talk about social issues with my local team members outside team meetings.
		82	Language is not a barrier to team success.
		88	Among the individual members of the team, duties are divided equitably (fairly).

Group	Box	#	Survey Statement
		89	Among the various regions of the team, duties are divided equitably (fairly).
		90	New team members are fully oriented to the work of the team.
		91	Team decisions are of high quality.
		92	An important information-sharing network has been created among members of the team.
		96	Working together, the team creates solutions that I could not create working only in my region.
		107	Training in this company truly prepares people to work effectively on distributed (global) teams.
		112	The organization values employees equally for their contribution, no matter what their region.
		114	The company does not understand what employees at non-US sites need to be successful.
		115	The team is a global initiative, but the company has no global policies/procedures to support it.
		118	My local supervisor understands the goals of the team.
		124	Working on a dispersed team has changed how I relate to my coworkers at my local site.
		125	The contribution of my local region is not as appreciated as it should be by the top leadership.
		126	Local management does not understand how to support its employees when they do global work.
		127	My local supervisor actively participates on the team during global team meetings.
		128	Functional department goals take priority over the goals of the team.
		129	I report to the top engineering management in my region about this team on a regular basis.

Appendix B - 2 Mapping Sorted by System Dynamics Model Variables

Rank	Survey Statement	Neg.	V S D	S D	D	N	A	S A	V S A
1	There is not a sufficient number of opportunities to meet face-to-face with remote team members.	-1	2	1	7	12	36	33	44
2	The team leader position is currently rotated on a regular basis among the various members.		41	16	49	20	1	1	1
3	Travel funds are always available for the team to do its work.		31	27	44	19	8	2	2
4	The responsibility for chairing meetings appropriately rotates among all team members.		23	22	44	26	5	6	1
5	Leadership is exhibited by the same team members during most meetings.	-1	0	0	7	18	63	34	8
6	Corporate compensation policies do not reward work on distributed teams.	-1	0	1	12	38	47	22	6
7	The same team members appear to be making all the decisions in meetings.	-1	0	3	21	25	49	27	4
8	The team leader position should be rotated on a regular basis among the various members.		17	16	41	30	15	8	3
9	Work on the team is not linked to the compensation I receive from the company.	-1	4	6	19	27	41	19	12
10	As a leader, I can directly influence individual team member's performance rating (PBP).		8	6	13	0	5	3	6
11	I regularly talk about social issues with my remote team members outside team meetings.		10	14	40	31	31	6	0
12	I report to the top engineering management in my region about this team on a regular basis.		13	17	30	22	31	13	1
13	I know exactly how my performance is measured on this team.		8	19	31	43	21	5	4
14	Any rewards I receive for my work with the team must come from my immediate supervisor.	-1	3	9	37	21	31	20	11
15	The company does not understand what employees at non-US sites need to be successful.	-1	1	4	25	38	41	15	2
16	My local supervisor actively participates on the team during global team meetings.		15	19	33	16	21	15	9
17	Work on global teams is weighted equally with functional department work on my evaluations.		6	10	48	27	34	5	1
18	Functional department goals take priority over the goals of the team.	-1	3	9	24	30	39	22	3
19	Leading and managing this team is a more difficult task than my other responsibilities	-1	3	1	9	3	17	7	1
20	Changes in the team membership negatively impact team performance effectiveness.	-1	2	4	30	41	35	17	3
21	No matter how global the focus of my work is, it's what I do locally that gets rewarded.	-1	3	5	44	18	39	18	5
22	At my local site, we often "mute" or block the local cross talk from remote sites.		9	8	37	35	29	9	3
23	My local supervisor supports global teams as useful as long as they don't disrupt local activities	-1	6	6	33	26	37	19	5
24	Training in this company truly prepares people to work effectively on distributed (global) teams.		3	14	42	31	35	6	2
25	I report to the top engineering management within the company on a regular basis about this team.		4	4	9	5	14	3	2
26	The needs of the team and local priorities are reconciled outside meetings.		2	8	29	45	42	3	0
27	Responsibility for specific tasks is agreed upon outside team meetings.		2	10	29	37	48	5	0
28	I see little difference between communications among local team members vs. remote members.		2	1	16	6	9	4	2
29	The team makes fast decisions.		6	7	32	32	43	11	2
30	Working on a dispersed team has changed how I relate to my coworkers at my local site.		4	4	34	36	41	6	2
31	The current setup of chairs, table, audio/video equipment, etc at remote sites is satisfactory.		4	9	13	60	27	10	2
32	I am satisfied with the team's level of performance in terms of meeting the team objectives.		0	7	10	8	8	7	1
33	The team is a global initiative, but the company has no global policies/procedures to support it.	-1	3	12	39	36	23	11	5
34	Local management does not understand how to support its employees when they do global work.	-1	3	12	41	25	36	10	3
35	New team members are fully oriented to the work of the team.		4	6	22	52	39	8	2
36	At remote sites, people regularly cross talk with other team members during team meetings.	-1	6	6	27	46	39	4	2
37	E-mail and/or web postings are not as important as phone and/or audio/video conferencing		4	10	45	23	26	21	5
38	I never expected to learn as much as I do from other members of the team.		2	8	28	41	41	11	1
39	At my local site, people regularly cross talk with other team members during team meetings.	-1	9	4	36	25	51	5	2
40	The team has all of the material resources (e.g., computers, etc.) needed to make it successful.		3	4	34	26	52	11	2
41	I am completely trained in setting up the communications technologies for team meetings.		6	6	45	19	30	23	6
42	Potentially unclear or confusing tasks are clarified with team members outside meetings.		2	7	23	25	66	7	0

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Rank	Survey Statement	Neg.	VSD	SD	D	N	A	SA	VSA
43	The environment at the remote site lets me feel that I am collaborating with remote members.		1	6	18	58	33	11	2
44	Among the various regions of the team, duties are divided equitably (fairly).		4	2	28	35	51	8	3
45	Among the individual members of the team, duties are divided equitably (fairly).		3	2	28	35	49	11	1
46	The needs of the team and local priorities are not reconciled during meetings.	-1	2	15	41	38	26	9	0
47	The meeting environment at my site lets me feel that I am collaborating with remote members.		2	6	26	33	52	11	3
48	Serious communication problems reduce performance effectiveness of most team projects.	-1	10	18	36	22	27	12	6
49	The contribution of my local region is not as appreciated as it should be by the top leadership.	-1	2	13	41	41	21	6	1
50	I am satisfied with the team's level of performance in terms of meeting the team objectives.		2	8	27	33	41	20	3
51	I regularly talk about social issues with my local team members outside team meetings.		2	4	25	37	39	21	2
52	Company leadership is committed to the changes that the team makes.		0	5	20	37	51	16	1
53	I am satisfied with my performance on the team.		3	6	24	25	49	21	4
54	Overall, the technology used for communicating with remote sites facilitates effective meetings.		2	5	24	29	51	20	3
55	I have complete confidence and trust in remote team members to get the job done.		1	5	18	35	55	16	2
56	The company appreciates my contribution to the team.		1	3	11	35	67	11	0
57	The organization values employees equally for their contribution, no matter what their region.		2	5	23	37	34	23	6
58	I am satisfied with my own level of performance in terms of leading and managing this team.		2	3	11	6	6	8	5
59	Concerns about individual promotion and career have an impact on the performance of the team.	-1	9	16	36	38	25	1	3
60	The current setup of chairs, table, audio/video equipment, etc at my location is satisfactory.		4	5	24	16	55	27	3
61	I regularly talk about work related issues with my remote team members outside team meetings.		3	7	25	15	51	24	7
62	On a regular basis, team members take the time to share lessons learned at local sites.		2	3	18	36	45	19	6
63	Remote team members are less productive than local team members in my same area/office	-1	10	19	38	31	21	10	1
64	Team operating procedures and protocols support successful completion of the team's work.		0	6	14	40	42	25	3
65	The ability to whisper or cross talk is very important during team meetings.	-1	14	11	39	34	33	4	0
66	The combinations of skills on this team was carefully chosen to fit the task.		2	6	14	26	56	25	4
67	My local site readily implements the recommendations of the global team.		1	3	11	37	53	21	3
68	I am satisfied with the communication technologies at my site that are used for team meetings.		2	7	24	15	51	28	6
69	Top management understands the goals of the team.		2	5	11	37	47	22	6
70	Ambiguous tasks are clarified with all team members during meetings.		0	1	14	30	65	18	2
71	Considering the engineering organization as a whole, distributed (global) teams are successful.		3	2	17	27	59	17	8
72	Team decisions are of high quality.		1	5	8	31	58	27	1
73	The team has the autonomy to select options that the team leader does not endorse.		1	1	12	39	48	22	4
74	I often recommend agenda items for future meetings.		1	6	15	30	56	14	11
75	Cultural differences hinder the team's performance.	-1	8	18	57	26	21	3	0
76	The rest of the Delphi P organization is supportive of my role as the leader of this team.		0	1	5	15	10	7	3
77	The charter, scope, and goals are sufficiently defined to effectively evaluate team performance.		1	3	16	34	54	16	10
78	The organization promotes cross-cultural working relationships among its workforce.		0	5	14	23	66	20	5
79	Remote team members are less committed than local team members in my same area/office	-1	13	23	36	26	25	6	1
80	Work on global teams helps my long term career objectives.		3	5	9	37	44	27	9
81	The team members outside my region are committed to achieving the team's goals.		1	1	15	34	50	29	4
82	The technology used for communicating with remote team members is easy to use.		1	7	17	23	50	26	10
83	It is difficult to trust people on the team because we do not have enough time to know each other.	-1	16	20	46	23	16	9	2
84	The agenda items for the meetings are typically poorly defined.	-1	9	22	58	25	15	5	0
85	Local needs are taken into account in global team decisions.		2	1	8	19	73	24	4
86	Language is not a barrier to team success.		3	5	14	6	71	29	7
87	I derive great personal satisfaction from my work with the member of the team.		2	2	13	35	45	22	12

Rank	Survey Statement	Neg.	V S D	S D	D	N	A	S A	V S A
								Total # of responses by answer type (Very Strongly Disagree, etc.)		
88	Working together, the team creates solutions that I could not create working only in my region.		2	1	16	17	63	26	7
89	Team decisions are made based on consensus of all team members.		2	0	14	24	53	35	4
90	Cross talk during team meetings is disruptive.		0	1	22	31	45	17	17
91	I am satisfied with the team's level of performance in terms of the relationships within the team.		1	3	14	26	48	32	10
92	I do the best I can in my team work because my team members' success depends on me.		1	4	10	31	47	26	13
93	Remote team members seem to be interested in meeting discussions.		0	0	6	20	73	28	4
94	The variety of skills among team members complements one another.		0	0	6	29	61	32	6
95	The team has created acceptable standards of appropriate behavior among its members.		0	1	8	30	50	34	9
96	Working on the team gives me access to useful knowledge that I can get nowhere else.		1	3	8	20	58	31	12
97	The agenda items do not maintain my interest.	-1	13	22	71	21	3	2	1
98	I have complete confidence and trust in the team leader to effectively manage and lead this team.		4	2	4	28	40	32	18
99	Local team members seem to be interested in meeting discussions.		0	0	2	17	73	34	5
100	My local supervisor does not understand the importance of the work I do for this team.	-1	19	21	57	18	9	2	2
101	I have complete confidence and trust in local team members to get the job done.		0	1	11	24	45	38	13
102	Responsibility for specific tasks is agreed upon during team meetings.		0	1	4	13	74	34	7
103	All team members use E-mail effectively for communicating outside of team meetings.		0	0	14	22	47	37	14
104	Team members from different regions do not work well together on the team.	-1	13	35	59	18	8	2	0
105	All members of the team agree on the team's charter, scope, and goals.		0	0	10	18	60	30	15
106	An important information-sharing network has been created among members of the team.		0	1	12	14	55	37	13
107	My role on the team is unclear and/or confusing.	-1	18	34	49	16	13	2	1
108	The team members within my region are committed to achieving the team's goals.		0	0	7	20	56	37	12
109	The team members trust our designated team leader to fairly represent our team needs.		0	1	5	23	48	40	12
110	My local supervisor understands the goals of the team.		0	2	8	17	51	32	17
111	Delphi P's engineering management team is supportive of my role as the leader of this team.		0	1	2	9	11	12	6
112	The meeting chairperson effectively manages the agenda during the meeting.		0	1	7	20	49	37	14
113	Variation among people on the team helps create better solutions.		0	0	3	16	61	44	10
114	The team members follow the agenda during most meetings.		0	0	1	11	70	43	9
115	Nearly all team members express opinions and ideas freely in most meetings.		0	2	11	14	48	34	21
116	I am satisfied with the team's level of performance in terms of the relationships within the team.		0	0	4	6	13	10	8
117	As the team works toward shared goals, relationships among members are becoming stronger.		2	0	8	21	38	42	24
118	I regularly talk about work related issues with my local team members outside team meetings.		0	1	6	17	45	41	21
119	Success of the team is dependent on the shared contributions of all team members.		0	2	6	12	45	43	26
120	E-mail is a useful alternative communication technology for the team outside of meetings.		0	1	4	7	53	48	22
121	I completely understand the team's charter, scope, and goals.		0	1	7	11	40	47	27
122	This team's charter, scope, and goals support the company's higher objectives and strategies.		0	0	1	11	47	51	24
123	Traditional face-to-face meetings are much more effective than audio/video conferencing meetings.		1	0	6	6	42	42	38
124	I have the skills and training that are necessary to effectively lead and manage this team.		0	0	1	3	12	15	10
125	There is a natural fit between my leadership role on this specific team & my "everyday" job.		2	2	1	1	9	9	17
126	I am personally committed to achieving the team's goals.		1	0	1	10	36	50	36
127	I believe the work of the team is important.		1	2	4	6	30	54	37
128	Sharing knowledge with my team members is an important part of my work with the team.		0	0	0	12	38	47	37
129	It is important to have a well defined agenda distributed to team members before the meeting.		1	1	0	2	28	63	40

Appendix C - 1 Ranking of Survey Responses