



Management of Distributed Projects

Helsinki University of Technology
May 3-4, 2006

Roberto Evaristo, Ph.D.
University of Illinois, Chicago
evaristo@uic.edu

Course Plan

- Distribution in projects – connection with virtual teams
- Description of practical cases and common issues
- Trust (sources, management, difficulties, long-term perspectives)
- Project risks increased by distribution
- Governance and ownership in distributed projects
- Role of culture in the management of distributed projects (organizational and national culture): how to take advantage of synergies, how to avoid traditional problems
- Context or mutual knowledge: what others know that I do not know?
- Knowledge Management in distributed projects: knowledge sharing and transfer across time and projects; strategies and approaches to increase transfer
- The importance of objective alignment
- Lessons: what works, what doesn't
- Conclusions

Main argument throughout the workshop

- Trust is related to performance
- Trust depends on expectation satisfaction
- Expectation satisfaction depends on
 - Culture understanding
 - Context Sharing
 - Communication Protocols
- Enablers for expectation satisfaction
 - Knowledge Management (Sharing and Transfer)
 - Project Management
 - Governance and Ownership
 - Objective Alignment
- Considering
 - Increased Risk Due to Project Distribution



Introduction

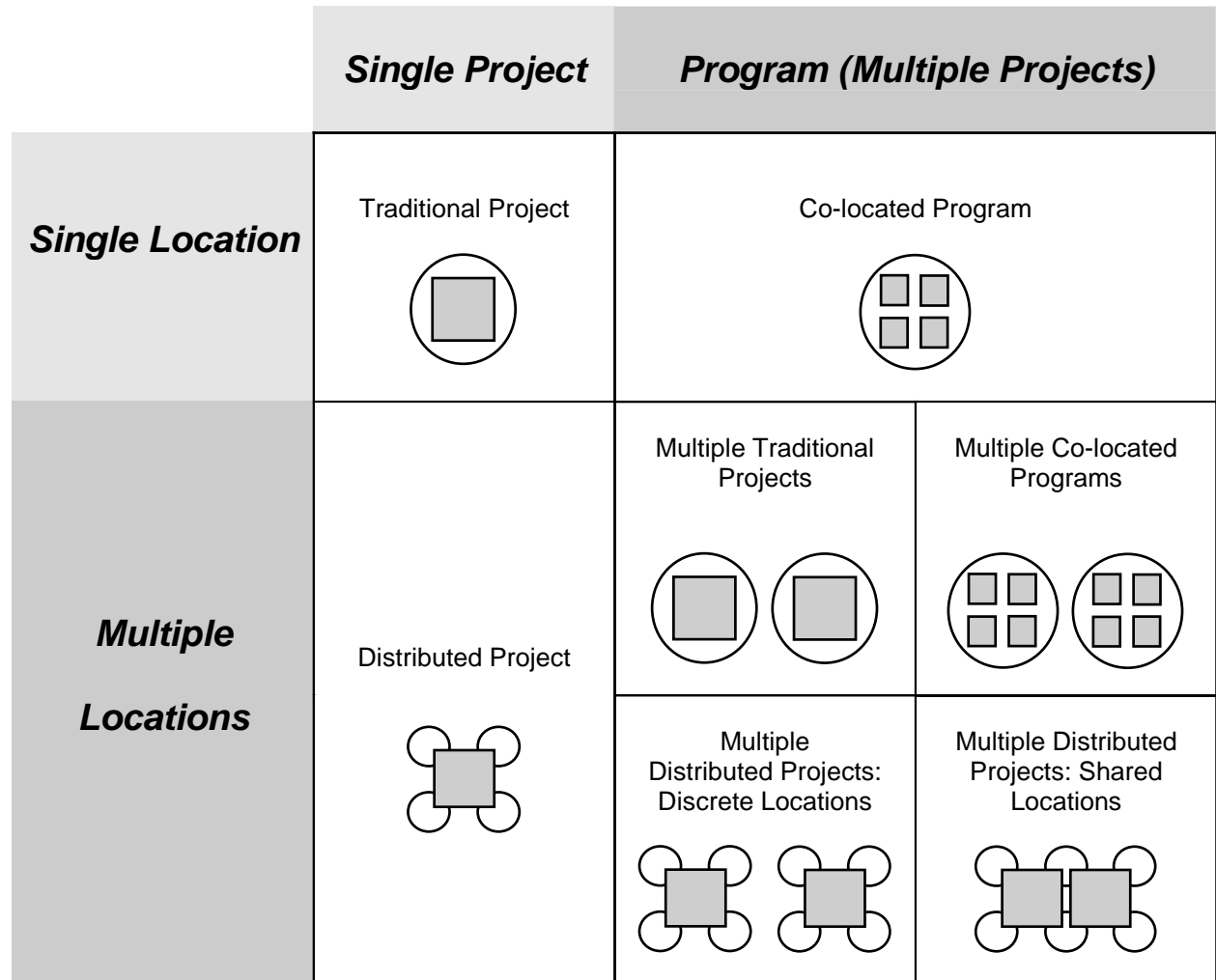
- Class Introduction of Workshop participants
- Discussion of objectives and approaches
- Keep in mind: some is known on this area, but much more still needs to be learned; one of our objectives here is to move forward on the subject to a point where there is no right or wrong answers – and provides an opportunity to contribute to the workshop combined group learning process.
- Flexible concentration on Seminar topics.




Distribution in Projects


- Types of Distribution
- “Distributedness”
- Understanding Virtual Team Development
- Technology Adaptation: The Case of a Computer Supported Inter-Organizational Virtual Team

Typology of Distributed Projects

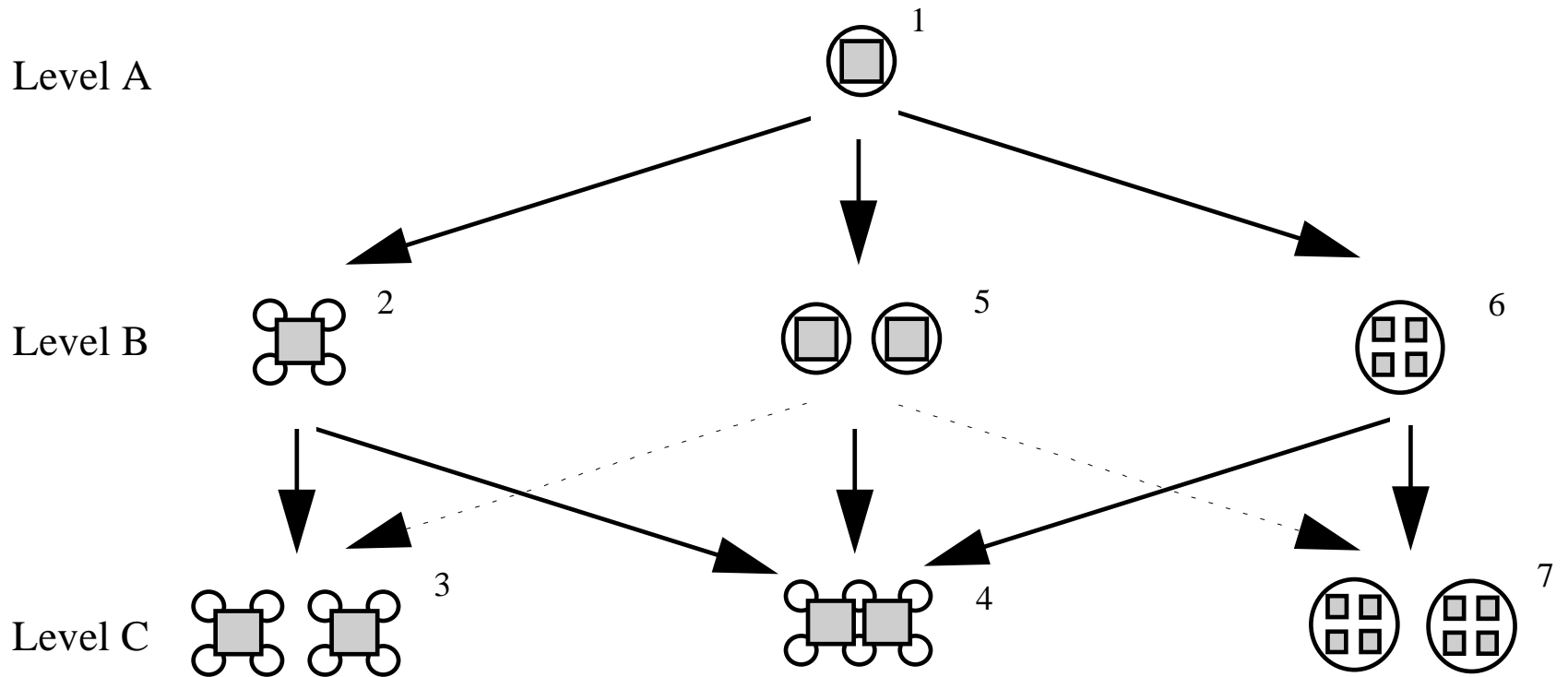


Where:

 = Project

 = Location

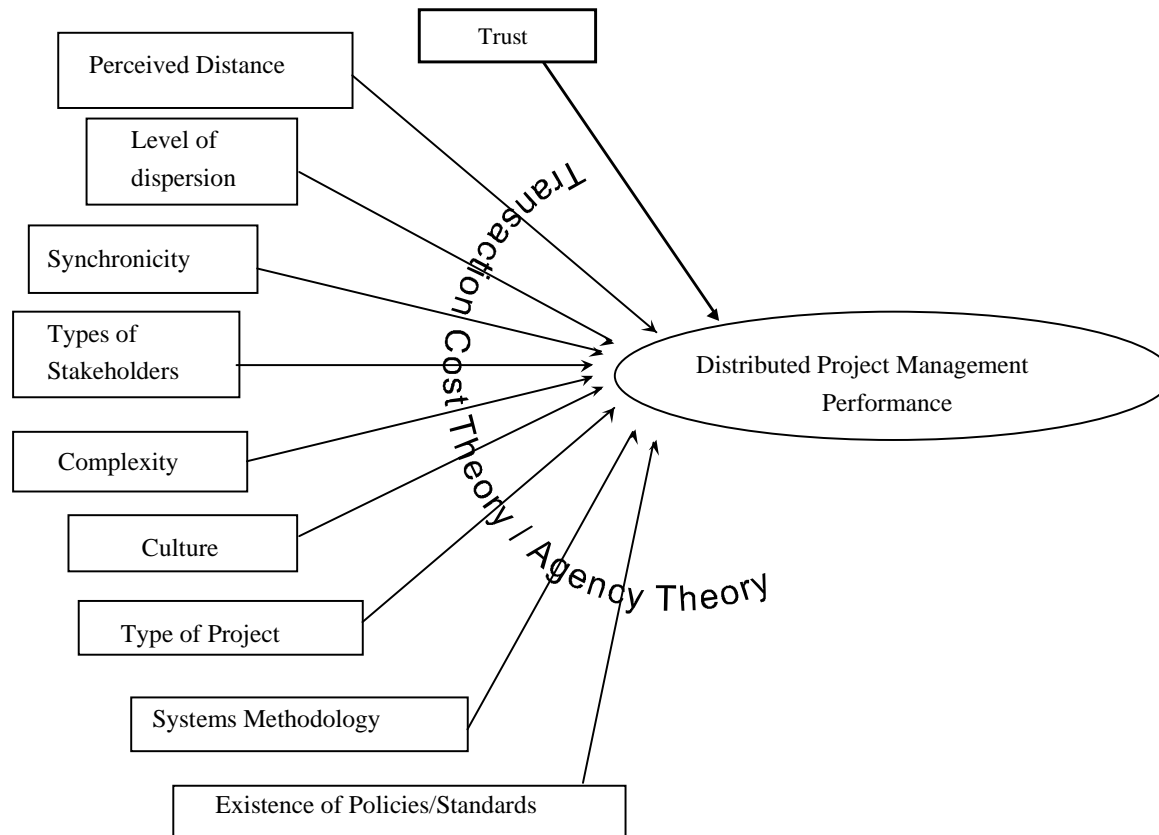
Knowledge Creation



“Distributedness”

- Distributed teams may have many different characteristics (or dimensions) that differentiate it from a co-located team
 - May magnify or amplify the risks previously discussed
 - Interested in interactions between the risk factors and dimensions
- Team is distributed if it has sub-teams separated on one or more of these dimensions.

“Distributedness” Dimensions





Virtual Team Development

- Interaction of Micro and Macro Processes
- There is a maturation over the life of a project
 - Initiation
 - Exploration
 - Collaboration
 - Culmination and Dissolution

Technology Adaptation in Virtual Environments

- Inter-organizational team
- Adapted use of collaborative technology to correct misalignment between org environment, group, and technology structures.



Group Discussion

- Are different types of distribution and “distributedness” a concept that can add value to your daily work?

Description of Real Examples (Motivation)

- Non-consensual negotiation in distributed collaboration
- Description of programmers' behavior – bringing issues related to culture and trust
 - Ambiguity, Uncertainty avoidance
 - Language issues
 - Others



Management of Distributed
Projects, © Roberto Evaristo, 2006

Trust

- What is Trust?
Kramer, R. “Trust and Distrust in Organizations: Emerging Perspectives, Enduring Questions”
- Transaction Cost Explanation of Trust
- Principal-Agent Relationship



Transaction Cost Theory

- Transaction Cost Economics (Coase, 1937; Williamson, 1981)
- Three dimensions of transaction cost
 - Asset Specificity
 - “Site Specific Assets” – Thompson (1967)
 - Uncertainty
 - Opportunism – “Acting with Guile” (Williamson, 1981)
 - Frequency of Transaction
 - If knowledge is exchanged at a high rate it becomes common and loses value

Principal Agent Theory

- Principal Agent Problem – Jensen and Meckling (1973)
- Various costs associated with aligning agent behavior to reflect principal's goals
 - Monitoring Cost
 - Incentive alignment is crucial
 - Local Vs. global goal attainment
 - Logic of Collective Action (Olson, 1971)
 - Bonding Cost
 - Time
 - Opportunity Cost
 - Risk of Knowledge Misuse

Bases of Trust Within Organizations

- Dispositional trust
- History-based trust
- Third parties as conduits of trust
- Category-based trust, Role-based trust
- Rule-based trust



Barriers to Trust

- Dynamics of distrust and suspicion
- “lack of confidence”
- “Suspicion can be triggered by a variety of circumstances, including situations where perceivers have forewarnings that another might be insincere or untrustworthy, in which their expectations have been violated, and when they recognize situational cues or possess contextual information that suggests another might have ulterior motives.”
- “In other words, once alerted to the possibility of deception, individuals may be predisposed to avoid a rush to judgment, remaining open to the prospect that there is more to a situation than meets the eye.”

Technologies that undermine trust

- Surveillance software (increasing evidence that such tools generate the very behavior they are supposed to eliminate)
- Also trucker's log

Fragility of Trust

- Trust is easier to destroy than to create



Trust in Global Teams

- Jarvenpaa, S. Knoll, K. And Leidner, D. “Is Anybody Out There? Antecedents of Trust in Global Virtual Teams”





High trust teams

- Proactive orientation
- Task versus procedural orientation
- Positive tone
- Rotating leadership
- Task goal clarity
- Role division and specificity
- Time management
- Nature of feedback
- Frequency and pattern of interaction



Conclusion on TRUST

- What does this all mean to Software Outsourcing?
- Actionable items



Group discussion

- How does this fit into our experience here in Finland? Can you provide examples?

Increased Risk in Distributed Projects

- Erickson and Evaristo, 2006
- Grabowski and Roberts, 1999

Motivation

- Significant investment in IT development projects
- Project management is a key skill
- Risk management part of “good” project management
- Distributed teams for IT development commonplace
 - Global corporations
 - Outsourcing
- Distributed teams have different characteristics or dimensions of being distributed
- Risk studies of SW or IT development projects have not distinguished between distributed and co-located teams

Key Questions

- How are project risks magnified or multiplied when projects are developed by distributed teams?
 - Unit of Analysis – IT development projects
 - Perspective – project manager/project team

Risk Management

- Assessing Risk
 - Identification
 - Likelihood of occurrence/potential damage
 - Evaluation of Risk Exposure
- Control/Manage the Risk

Risk Factor Groups Defined

Risk Factors	Source or Nature of Risk
Sponsorship/ Ownership	<ul style="list-style-type: none"> • No executive ownership of plan • PM lacks mandate for the project • Lack of commitment from key stakeholders
Relationship Management	<ul style="list-style-type: none"> • Manage stakeholder involvement • Lack of stakeholder involvement • Managing multiple relationships with stakeholders • Unclear Roles and Responsibilities
Project Management & Planning (combined from Schmidt)	<ul style="list-style-type: none"> • Inadequate or insufficient project management Skills • Inadequate or insufficient project management process • Bad project management execution • Inadequate project planning
Scheduling	<ul style="list-style-type: none"> • Artificial deadlines • Conflicting priorities • Timing of resource availability
Development Processes	<ul style="list-style-type: none"> • Inappropriate or insufficient process • Unnecessarily using unproven method/process
Personnel & Staffing (combined from Schmidt)	<ul style="list-style-type: none"> • Inadequate skills or knowledge • Turnover/loss of key personnel • Lack of skilled individuals • Insufficient staffing levels • Volatile staffing

Team “Distributedness”

Relationship between sub-teams

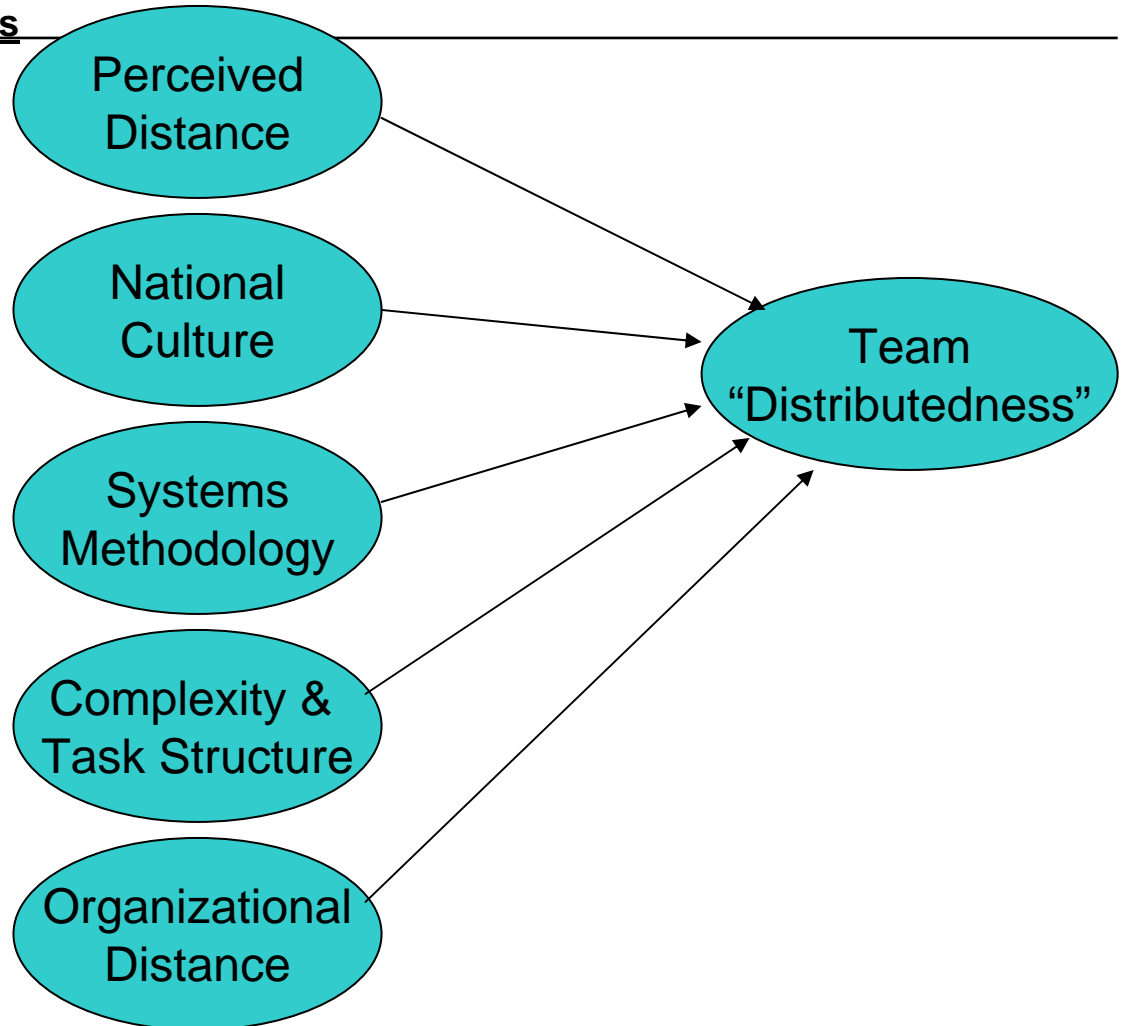
- Spatial distance
- Temporal distance

- Working norms
- Behavior expectations
- Native and working languages

- Design methodologies
- SW development processes

- Task structure
- Complexity of hand-offs

- Organizational relationship
- Organizational cultures



Risk Factors and Dimensions of “Distributedness”

	Perceived Distance	National Culture	Systems Methodology	Task Structure	Organizational Distance
Sponsorship & Ownership					
Relationship Management					
Project Management & Planning					
Scheduling					
Development Processes					
Personnel & Staffing					

Sponsorship/Ownership Risk

- Importance of stakeholder objective alignment
- Importance of executive ownership and commitment
- Interactions with dimensions of “distributedness”
 - More difficult to achieve alignment and ownership
 - National culture - Major
 - Potential for differing expectations
 - Different perspectives of ownership – uncertainty avoidance
 - Language differences
 - Organizational distance - Major
 - Complex agency relationships
 - Vested interests
 - Differing views of project scope
 - Perceived distance - Moderate
 - Communication difficulties - increased
 - Inconsistencies between “local owners”

Project Management & Planning Risk

- Proper planning key to successful projects
- Monitoring and control to react to inevitable variances
- Interactions with dimensions of “distributedness”
 - What done locally versus distributed sub-teams (Transaction cost theory)
 - Relationship between cost and resource availability
 - National culture - Major
 - Team alignment and ownership of project plan
 - Communications difficulties from language and culture
 - Systems methodology – Major
 - Different methodologies make project plan more complex
 - Multiple definitions of deliverables
 - Task structure – Major
 - Lack of clarity on task objectives
 - Ambiguous Tasks and task boundaries
 - Unclear Ownership
 - Organizational distance – Major
 - Difficulty managing change
 - Difficulty aligning project plans
 - More complex coordination during execution
 - Perceived distance – Moderate
 - Lack of face-face interactions between project manager and project team
 - Difficulties due to asynchronous communication
 - Potential for inaccurate information

Risks and Dimensions of “Distributedness”

	Perceived Distance	National Culture	Systems Methodology	Task Structure	Organizational Distance
Sponsorship & Ownership	Moderate	Major	Minor	None	Major
Relationship Management	Major	Major	Moderate	Moderate	Major
Project Management & Planning	Moderate	Major	Major	Major	Major
Scheduling	Moderate	Moderate	Minor	Minor	Major
Development Processes	Major	Moderate	Major	Major	Major
Personnel & Staffing	Major	Major	Moderate	Moderate	Major

Risk Factors

Risk Factors included	Risk Factors excluded
<ul style="list-style-type: none">○ Sponsorship/ Ownership○ Relationship management○ Project management & Planning○ Scheduling○ Development Processes○ Personnel & Staffing	<ul style="list-style-type: none">○ Corporate Environment○ Scope○ Requirements○ Funding○ Technology○ External Dependencies

Relationship Management Risk

- Managing relationship with all stakeholders
- Managing relationship with users
- Creating trust
- Interactions with dimensions of “distributedness”
 - Complicates relationships and trust
 - Perceived distance – Major
 - Compromises ability to build and manage relationships
 - Difficulty building trust
 - National culture – Major
 - Potential for Broken Expectations
 - Language barriers impairing communication and trust
 - Organizational distance – Major
 - Complexity of relationships
 - Different corporate cultures
 - Unclear motivation and rationale between sub-teams
 - Systems methodologies – Moderate
 - Gaps between user needs and system design
 - Misunderstood interfaces creating communications difficulties between sub-teams
 - Task structure – Moderate
 - Lower task structure implies ambiguity or confusion in the process
 - Difficulties aligning assumptions
 - Difficulties resolving misunderstandings on progress

Scheduling Risk

- Timing of specific tasks
- Resource negotiations
- Availability of specific resources needed by tasks
- Resource control important to project success
- Interactions with dimensions of “distributedness”
 - Allocation of resources to sub-teams
 - Organizational distance – Major
 - Different views of priorities
 - Misaligned priorities causing improper resource allocation
 - Perceived distance – Moderate
 - Difficulties managing and controlling project resources
 - Lack of face-to-face interactions
 - Asynchronous communications
 - Difficulties insuring right resources are available when required
 - More complex negotiation process with resource owners
 - National culture – Moderate
 - Cultural differences on expectations
 - Acceptance of unrealistic schedules
 - Willingness to admit to resource availability issues
 - Misunderstandings about holidays and overtime
 - Language impeding negotiation process

Development Processes Risk

- Lack of established processes
- Use of inappropriate processes
- Poor execution and potential quality issues
- Interactions with dimensions of “distributedness”
 - Increased misunderstandings and conflict
 - Potential for lack of consistency
 - Perceived distance – Major
 - Risk of similar tasks being done in different ways
 - Communication unable to counterbalance processes shortcomings
 - Systems methodologies – Major
 - Inconsistent quality due to different methodologies employed
 - Incoherent processes between subsystems increase inconsistent results
 - Implementation errors may be overlooked or missed
 - Task structure – Major
 - Ambiguous task definition magnify process inadequacies
 - Inadequate processes can’t compensate for poor task definition
 - Organizational distance – Major
 - Inconsistent, inadequate, and mismatched processes more likely
 - Potential divergence of tools and processes
 - National culture – Moderate
 - Communication difficulties magnify the difficulties due to poor processes

Implications/Conclusions

- Project managers need knowledge about risk factors
 - Distributed teams significantly magnify risks
 - If PM aware, then can take countermeasures

Risk Mitigation in Virtual Teams

- Risk Propensity in Virtual Organizations
- How these four processes enhance reliability and mitigate risk:
 - Organizational Structuring and Design, Communication, Culture and Trust



Group Discussion

- How do you deal with risk in your current projects? Please provide examples that worked very well and at least one which did not.



Enabler: Governance and Ownership in Distributed Projects

Governance

- Dimensions of the Governance Continuum
 - Ownership types (i.e., contract, alliance, joint venture, wholly owned/captive)
 - Locus of control (black box, staff augmentation, transparent box, independent subcontractor teams)
 - Perceived distance (i.e., collocated, driving distance, flying distance, across continents)
 - Distance between managers and managed unit (on-site and off-site manager)
 - Level of aggregation of managed unit (milestone, project, program, physical unit)
 - Bottom line: governance has a wide range of possibilities.

Simplified Governance Table

	Contracts	Alliances	Joint Ventures	Captive
Staff Augmentation (single/teams)				
Black box				
Transparent box				
Independent subcontractor teams				

Dynamic evolution (maturation) across different stages of the continuum

○ Examples:

- 3M
- Accenture & Verizon
- SPSS
- Large Consumer Goods Organization (complex structure)
- Large Retailer and associated Outsourcer

Expectation Satisfaction: Culture

- What is culture?
- Different definitions and perspectives
- Hofstede:
 - Individualism vs. collectivism
 - Power Distance
 - Masculinity vs. Femininity
 - Uncertainty Avoidance
 - Time Horizon
- Consequences for Business Relationships

Cultural Characteristics of Sample Countries

	Brazil	U.S.	India
Power Distance	69	40	77
Individualism / Collect	38	91	48
Uncertainty Avoidance	76	46	40
Masculinity Femininity	49	62	56

Trompenaars' Cultural Dimensions (selected)

- Universalism versus particularism:
societal versus personal obligation
 - U.S. much more universalist than Brazil
- Individualism vs. collectivism
- Neutral vs. affective relationships
(emotional)
 - Brazil slightly more affective than U.S.

Trompenaars' Cultural Dimensions (selected)

- Specific vs. diffuse relationships: degree of involvement in relationships
 - Brazil more diffuse than U.S.
- Achievement vs. ascription: Legitimation of power and status



Managing Cultural Differences

- What are cultural differences in management?
- Examples
- Calori, R. And Dafour, B. “Management European Style”

Problems with Culture

- Bocconi
- GDSS in Singapore
- EU projects
- Hong Kong Projects
- Norway, USA
- Japan, USA



Group Discussion

- What cultural differences have you experienced in the processes in your organization?
- How can we use this knowledge to “fine tune” our interaction with work counterparts elsewhere?

Expectation Satisfaction: Context Sharing

- Training in Context Sharing
- Reasoning



Distributed or Non-collocated work Environments: Types of Context Sharing

- Extreme cases
- Simpler and more prevalent cases

Ingrained Methods of Communication

- People have developed ways of communicating
 - verbal and non-verbal messages
- Much of this behavior is automatic
 - “We don’t know what we know”
- Difficulties arise when in non-FTF
 - “We don’t know what we don’t know”

How Do People Compensate?

- Some people develop ways of overcoming but usually through trial and error - inefficient
- Others do not realize and fail.
- Even those who find ways to overcome non-FTF problems may not transfer this learning to new situation.

Situation Analysis Summary

- Society has always been FTF and collaborative behaviors are ingrained
- However, fundamental assumptions ARE being changed
- Corresponding changes in non-located collaborative behavior are learned but do not “stick” because of (still) prevalence of located work.
- Therefore, people tend to engage in “re-learning” with associated losses.
- Moreover, people tend to fall back into their FTF behavior even during non-located work. This happens partly because of their lack of awareness of which protocols they learn when engaging in non-located work



Is Technology the Answer?

Not Necessarily.....

- *"It's not uncommon for me to get 50 to 100 emails per day. Most of it is information not really looking for response or action. I get, as you would expect when you have six or seven associates working for you, they like to copy you on lots of things. I am not sure if they want you to know what they are doing or if it is truly to keep you in the loop."*
[Watson-Manheim & Belanger 2002]

Rethinking The Technology

- We assume that most people would have at least a working knowledge of how to operate them (email, videoconferencing). This knowledge has not solved the problem.
- Therefore, the solution needs to be different.
- How to break the cycle

Intuitive Solutions

- Examples
 - Time zones, changes in geography and or summer time
- How do we systematize such solutions?



Training on how to share context


- The objective is to help people develop an understanding of what context is and which parts of the context as it relates to the task at hand are relevant to them and to their distributed partners.

Training

- How to share context?
 - Understand what context is
 - Develop an understanding of context as it applies to you in your specific task.
 - Consider what the context of your distributed collaborators may be as it relates to this specific task (e.g., November 15 is a holiday in Brazil, May 1 in Finland)
 - What can you do in order to accomplish this task?

How do you share context?

- Surfacing assumptions (both yours as well as the other side's)
- Think of which pieces of information seem obvious to you but are unlikely to be known by the other person (ie. Holidays, time restrictions, time zone differences, expectations of task completion, your web access restrictions in time and other resources).
- It pays to be upfront and explicit about such details: you are adding ***your context*** to the distributed effort.

- 
-
- Similarly, think about how this applies to the other side. How can you help them to understand the importance of sharing context and convince them to share their context with you? Keep in mind that there are things that you do not know about them, and therefore it is very difficult for you to ask about such things.
 - “Give a man a fish and you feed him for a day; teach a man how to fish and you feed him for a lifetime”



Group Discussion

- How do you provide context in your current assignments? Is the need for it something recognized?

Expectation Satisfaction: Communication Protocols

- Social Presence Theory
- Media Richness Theory

- Group discussion: “gaffes” and other problems with electronic media.



Group Discussion

- What are the communication protocols currently in place in your organization?



Group Discussion

- Is the governance and processes of your distributed teams spelled out ? How would you make it more explicit?

Enabler: Knowledge Management

- What is Knowledge?
 - Nonaka, I. “A Dynamic Theory of Organizational Knowledge Creation”
- Why is it important in Distributed Projects?
- Tools for KM
- Group Discussion: What kinds of knowledge are relevant at your organization, why and what is being done to manage it?

Distributed Knowledge

- Local versus Global Knowledge
- Management Approaches
 - DeSouza, K. and Evaristo, J.R. “Global Knowledge Management Strategies”
 - DeSouza, K. and Evaristo, J. R. “Managing Knowledge in Distributed Projects”
- Group Discussion: Current practices and tools in managing distributed knowledge.



KM in Distributed Organizing

- Enacting a Collective Capability in Distributed Organizing
- Final thoughts: other approaches to KM

Group Discussion

- What are the approaches your organization use for KM?
- Does your organization provide separate approaches to distributed versus collocated KM? How?
- What are the processes to improve reuse?



Enabler: Project Management

- Suleiman, J., Evaristo, J. R. and Kelly, G. “Facilitating and Coordinating Distributed Joint Applications Development”
- Hansen, M. “Knowledge Networks: Explaining Effective Knowledge Sharing in Multiunit Companies”

Group Discussion

- Are there specific PM approaches developed for distributed projects? Please describe.
- How successful has your organization been in regards to project management in distributed situations?



Enabler: Objective Alignment



Group Discussion

- Have you engaged in explicit objective alignment?

Lesson: What works and what does not

- Can you train people to achieve higher trust?
- Beranek, P. “The Impacts of Relational and Trust Development Training in Virtual Teams: An Exploratory Investigation”
 - Their training consisted of discussion of group dynamics, process losses, rules of netiquette and other similar issues; common misunderstanding due to lack of cues
- Group Discussion: How can we take advantage of trust training?

Best Practices in GSD

Best Practices in Software Development

- Develop Long Term strategy for the applications by analyzing their profiles and a structured approach for functions that will be distributed (and functions that will not) and plan for the transition
- Employ a clearly defined, repeatable, consistent and common development process
- Implement a solution for sharing Data and Domain knowledge that is continuously enriched
- Common and robust Infrastructure for collaborative application development
- Establish Integrated, automatic reporting capabilities that provide real-time metrics for analysis and decision making

Best Practices in Staff Management

- Develop a comprehensive strategy for skill and career development based on function distribution

Best Practices in Process Management

- Develop a deliberate strategy for building and sustaining trust and teaming
- Project Governance structure that clearly defines roles, responsibilities, expectations and drives consistency
- Communication plan that addresses all aspects from knowledge share/ project communication/ team communication etc.

Source: Adapted from a document by Dell, Inc.

Best Practices in GSD

- Recognizing different types of communication and associated strategies:
 - Problem solving
 - Informing
 - Monitoring progress and providing transparency
 - Giving feedback
 - Relationship building

Source: Paasivaara, 2005

Distributed Development: Sources of Failure

- Resistance within the organization
- Hidden transition costs and unexpected migration challenges
- Difficulty managing offshore contracts / relationships
- Understanding the role of contracts
- Lack of transparency in objectives and assumptions
- Inability to understand, differentiate and address sources of risk that are magnified in distributed development
- Inability to learn from past events (role of postmortems)
- Local vs. global optimization issues
- NO OBJECTIVE ALIGNMENT

Source: Adapted from a document by Dell, Inc.



Conclusion
