Virtual Work Model and Global Virtual Teams: Innovation Network Roadmap

Track: Information Technology Management

Keywords: Innovation Network, Virtual Work Framework and Global Virtual Teams

Virtual Work Model and Global Virtual Teams: Innovation Network Roadmap

Abstract

The innovation network today is searching for new work schemes to sense and respond to market and customer needs, mobilizing knowledge and articulating value through business model innovation, and at the same time, improve employee quality of life through effective collaboration and coordination. This new work model implies new human resources' mindset, competences and capabilities. The main trigger behind network organization is globalization. The goal of the paper is to identify communication protocols and technology tools to improve collaboration in global virtual teams, in order to achieve value creation for individuals, organization and society.

Keywords: Innovation Network, Virtual Work Framework and Global Virtual Teams

Introduction

This paper aims to build an empirical innovation networks' GVT framework, identifying and defining the key GVT domains to create economic, pragmatic and sustainable value for the participant and for the organization. As part of the findings the paper integrates protocols, best practices, challenges, barriers and facilitators which have proven to foster effective performance in global virtual teams.

The drivers of the globalization include a significant transfer of technology among countries, a liberalization of trade regulations as well as increased global mobility of capital and people, a promotion of regional integrated trading blocks stimulating global trading and cooperation, declining ITC and transportation cost globally, rapid growth of knowledge-intensive economies and firms and the resulting advent of global e-commerce through the use of Internet, and the growing importance of emerging and transition economies as the consumer and business markets of the future. One of the outcomes of globalization is the accelerated rate of competition in the global marketplace and the increased importance of delivering value to customers (Keen and Williams, 2012).

Organizations face the challenge to keep up with change, expanding their operations globally through partnerships to integrate new capabilities, to access new markets and intellectual resources in order to sense and respond with innovation to their customers of today and tomorrow, and to achieve their organizational objectives and strategies. Under this new landscape, people in organizations work virtually, regardless of geographical and physical location in global virtual teams (GVTs) (Kayworth and Leidner, 2002).

GVTs require different management approach to build a sense of identity and community, to recognize and appreciate diversity, taking advantage of cultural differences, to build trust, and to define team's goals, objectives and performance standards. The ability to manage and conduct business without walls or boundaries allows organizations the possibility to undertake projects without geography, time and physical location constraints, enabling organizational, individual and task flexibility; optimizing resource utilization; accessing knowledge and expertise without relocation, increasing intellectual and capital capabilities (Corrales, 2011).

Team Shared Distinctions for Innovation Networks working in Global Virtual Teams

Intention

The paper intention is to build a GVT framework and to provide insights on how do innovation networks' global virtual teams (GVTs) make sure that the recipient gets the right protocols, best practices and tools for GVT's success in developing a clear idea of the goal sought by the message or interaction? The aim is to minimize differences in interpretations of why the communication is taking place.

Emotion

The research emphasizes on how do GVTs best practices may bridge the emotional gap that distance can create? The goal is to be able to transmit emotional content more easily without relying on physical presence.

Focus

The paper provides insights on how do GVTs best practices may keep other parties focused on the perspective from which the team is presenting the topics?

Urgency

Based on the goal of the paper and major findings, the author outlines goals, challenges and practices on how do GVTs convey the appropriate sense of urgency so that the recipient can prioritize adequately? It is relevant to recognize that not all of our communications have the same urgency or validity date, and that not everybody will treat them with the same urgency they present to us, and act accordingly.

GVTs also need to have a common understanding of the availability each person has in different media, as well as a guideline of when to prefer one tool instead of the others, depending on the situation. These topics will be explored for each tool in the following sections of this document, which will constitute a base guideline that each team can use to develop their own communication protocol.

Theoretical Framework

Flexibility to act locally while maintaining the coherence of global strategic continuity requires the global organization's management to work asset smart, reducing their path dependency and using a strategic innovation network perspective to enhance coordination and effectiveness of the new choice space for their customers of today and tomorrow.

Innovation networks capable of integrating teams of talented people wherever they are located, and who can deliver innovative solutions to their markets or customers are key for global companies, leading in business innovation, in a competitive and global economy, facing forces of change such as deregulation, liberalization, technology, and modularity. Innovation networks are searching for new working schemes that increase process efficiency levels and at the same time improve employee quality of life, through effective collaboration with a common communication protocol and the intended technology infrastructure and tools. This new working model implies also new human resources' competences (Keen and Williams, 2012).

Innovation networks and GVTs have a strong relationship. Globalization, technology, deregulation and modularity are driving forces of change behind the implementation of collaboration platforms, virtual work models, business strategic alliances and networks (Keen and Williams, 2012). In innovation networks, business innovation is the result of partnerships and purposeful collaboration, where network refers to a set of nodes and relationships that connect them (Keeny and Patton, 2005). Innovation networks' competence is important for achieving innovation success in business networks (Mankin, 2007).

According to Keen and Williams (2012) innovation is to deliver new sources of sustainable wealth for society. Innovation implies to transform an idea (creativity and networking) in new knowledge (research trends, markets, processes, materials, technologies), a new knowledge into a new solution (product, service, process) for an unmet need for a specific market, creating economic and social value.

Innovation network competence involves communication, collaboration, coordination, task management and leadership (Kayworth and Leidner, 2002). An organization can facilitate and create synergies in networks by connecting the dots among needs, resources and capabilities. According to Keen and Williams (2012), developing a network strategy includes trust among the partners, competence, leadership, intention (goals), focus, sense of urgency, emotion, a communication protocol, technology and a collaboration agenda.

A global virtual team (GVT) is a group of people geographically disperse, working on a common task for the duration of the project. It is an example of a cross-cultural, boundaryless network organization form where a temporary team is assembled on an as-needed basis for the duration of a project and staffed by members from different countries and different capabilities (Corrales, 2011).

Due to the rapid pace of globalization, many multinationals in their business innovation process require that designs, prototypes, and their entire value chain throughout the world need to be coordinated or consistent. To effectively accomplish this goal of consistency and compliance, organizations and their networks form global virtual teams (GVTs) to enhance global virtual team success (Corrales, 2011).

Research Questions:

- What are the key domains innovation networks must take into account when implementing a virtual work model
- What are the barriers and challenges innovation networks face when working in virtual environments and what business practices would leverage business value creation
- What metrics innovation networks use for innovation performance when conducting virtual work to assess the business case in terms of: economic, pragmatic and sustainable value for the organization

Research Framework

The framework provides a model within the innovation network to build constructive collaboration based on effective communication and matching technology (see Figure 1):
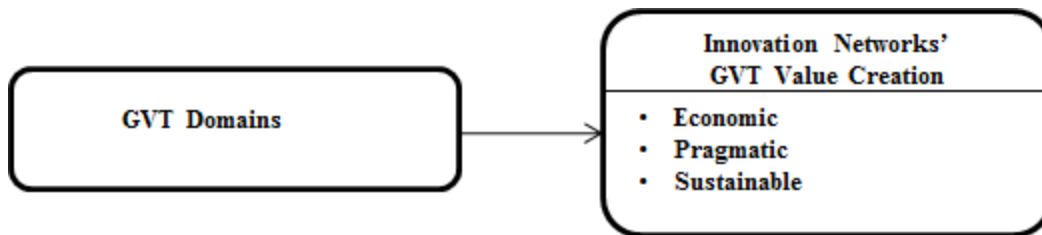
Figure 1: Value Creation for Innovation Networks' Global Virtual Teams

PROPOSITION: The Global Virtual Team (GVT) Domains are positively related to Innovation networks' GVTs value creation in economic, pragmatic and sustainable terms

Research Methodology

The aim of this paper was to test the validity of a theoretical framework of value creation for innovation networks' global virtual teams. The following research questions were used to operationalize the aim:

- To what extent do GVT participants agree that the concepts and variables in the proposed model represent appropriate domains, best practices, barriers and facilitators for innovation networks working in virtual teams?
- To what extent do GVT participants agree that the proposed relationships among the GVT domains that predict economic, pragmatic and sustainable value for your organization?
- To what extent do GVT participants agree that the proposed empirical indicators for each concept represent appropriate measurements for the concepts?
- To what degree is the proposed model evaluated by GVT participants is useful to the further study of economic, pragmatic and sustainable value for your organization?

The descriptive design used a modified e-Delphi method to estimate the content validity of the value creation for innovation networks' GVTs and preliminary instrument by seeking consensus from a panel of GVTs participants about its constructs and usefulness. The Delphi method was first developed in the 1950¢s by the Rand Corporation and uses surveys to collect qualitative and/or quantitative data from experts (Dalkey and Helmer, 1963).

This method assumes that human experience and agreement are the basis for truth (Mitroff and Turoff, 1975). The Delphi is unique because of its ability to establish anonymity and provide virtual group interaction with controlled feedback, while seeking expert opinion on a particular topic. A Delphi is most appropriate when the problem does not lend itself to precise analytical techniques, when individuals with diverse backgrounds are needed to contribute to the examination of a complex problem, and when wide geographical distribution of experts limits face-to-face meetings. Internet technologies give the means to collect and collate timely responses and opinions of people in large numbers and in various geographical settings.

In this study, participants began by building and validating the framework of value creation for innovation networks' global virtual teams with its proposed concepts and corresponding indicators.

The innovation networks' GVT framework was validated with a case study from 2008 to 2012, as a collection of structured interviews after a workshop was offered and a global project was completed in six companies from six different sectors: Oil, Cement, Steel, Automotive, Beverages and Telecommunications. The case organizations were multinational companies with headquarters in Mexico.

The case study was based on structured questionnaires during interviews, workshops, and the follow-up of the project outcomes in their collaboration platforms.

First, the collaboration platform follow-up was a referent in terms of the level of communication, the technologies used and the outcomes. The collaboration platforms used for the six companies analyzed in this paper were Shift, SharePoint, Alfresco, Elluminate, Collabtive, OpenKM.

The communication media (intranet, videoconferences, teleconferences, memos, agendas, project management diagrams, emails, VoIP, and newsletters) of each company and the documents related to three strategic international projects and their development were analyzed based on the Innovation Network Global Virtual Team (GVT) Framework. The objective was to validate the framework, define the components of the GVT domains and integrate an inventory of best practices to deliver value to the organizations involved.

Second, the project leaders were separately interviewed by the researcher in order to deepen the understanding of the work model. The interviews lasted from one to two hours. The interviews were based on semi-structured questions. The purpose was to identify the important components related with an international project (common goal, cultural diversity, different time zones, and interdisciplinary competences) to define the existing collaboration practices.

Third, the author conducted a workshop with each one of the six companies, before the VW project was launched. In all the companies, the top management team approved the projects based on their strategic relevance and their international participation. In all cases the workshop was part of the companies' executive training programs and included business process and IT people. The workshop lasted from ten months to eighteen months. The workshops allowed a common ground for all the participants in terms of virtual work distinctions, based on the GVT domains, tools and the collaboration platforms.

- Oil Company with Latin-American (LA) scope (Venezuela, Colombia, Peru, Panama, Argentina, Chile and Mexico) with 234 participants and 39 teams.

- Automotive Company with international scope (US, Canada, Germany, Czech Republic and Mexico) with 42 participants and 7 teams.

- Beverage Company with international scope (Mexico, Argentina, Colombia, Venezuela, Brazil) with 28 participants and 7 teams.

- Telecommunication Company with international scope (Argentina, Brazil, Chile, Colombia, Mexico, Peru, Uruguay and US) with 74 participants and 12 teams.

- Cement company with international scope (Canada, US, Mexico, Venezuela, Dominican Republic, Philippines, Egypt, Switzerland, Spain, Mexico, France, UK and Thailand) with 276 participants and 46 teams.

- Steel Company with LA scope (Mexico, Brazil, Colombia and Argentina) with 28 participants and 5 teams.

The objective to conduct interviews in different sectors in global companies was both to define the existing innovation networks' collaboration practices and to recognize future challenges, barriers and practices related to communication protocols and technology tools in innovation networks' global virtual teams.

The author acted as facilitator during project development. This research design can be characterized as an action research, where the researcher participates in the organization's activities and examines a situation while it is occurring. The action research produced results that are relevant to practitioners, that are applicable to unstructured or integrative issues and that contribute to theory. Action research was chosen as a method of examination in this paper because it was considered to provide good insight into the role of innovation networks' GVT in value creation.

Empirical Findings

Delphi Rounds to Identify GVT Domains:

Based on the Delphi rounds, the key GVT Domains were identified and defined: technology, communication, collaboration, coordination, work description and work management. These six domains were considered to be strong predictors for the project success and GVT value creation (see Figure 2).
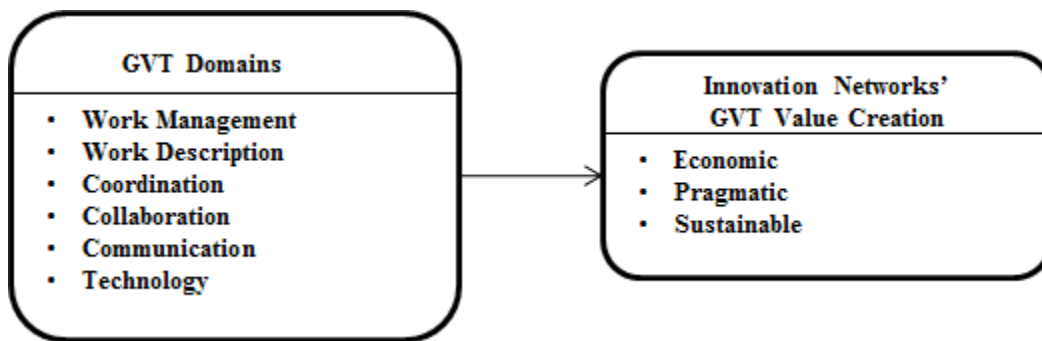
Figure 2: Value Creation for Innovation Networks' Global Virtual Teams Framework

P1: Technology was positively related to Innovation networks' GVTs value creation in terms of connectivity to reduce commuting, office and parking space, face-to-face meetings, relocations, and traveling expenses

P2: Communication was positively related to Innovation networks' GVTs value creation in terms of shared protocols, work practices, decision making, knowledge documentation and business continuity to compete in the future business landscape

P3: Collaboration was positively related to Innovation networks' GVTs value creation in terms of common purpose, sense of direction, interdependency and accountability of roles, talents, resources, expertise and knowledge to deliver specific goals and objectives for business innovation success

P4: Coordination was positively related to Innovation networks' GVTs value creation in terms of mechanism of action and pace between resources (people, tools, time) and actions to reach the team's purpose, management and commitments.

P5: Work Description was positively related to Innovation networks' GVT value creation in terms of assuring that roles and responsibilities are prone to be implemented into a virtual team, finding balance between virtual and role requirements.

P6: Work Management was positively related to Innovation networks' GVT value creation in terms of leadership and style of management and type of control exercised over duties, to keep focus on results, including goal setting negotiation, approach and methods to achieve expected results.

Delphi Rounds to Define GVT Domains:

Technology for innovation networks refers to the electronic medium and practices that virtual workers use to communicate, collaborate, share information and keep them updated about the projects. Technology is not the determining factor for success of virtual teams (Watson-Manheim, 2002). Well-motivated and focused teams will deliver above the limitations of the technology available to them. However, the effectiveness of a team can certainly be enhanced by usage of appropriate technology, collaboration platforms for document sharing with participants. Watson-Manheim (2002); and Henttonen and Blomqvist (2005) studied also Technology as a GVT enabler.

Communication domain refers to the timely dissemination of assessed relevant information and network knowledge so that it reaches the point where it is needed, when it is needed. Communication requires individuals to proactively search for the required information for the network, instead of waiting for it, therefore establishing bilateral relationships. Virtual communication skills and practices should strive to provide the three components regular communication or conversations involve. Kayworth and Leidner (2002); and Anderson et al. (2007) studied also Communication as a GVT enabler.

Collaboration is the process of working together toward a common purpose or goal in which the participants are emotionally and intellectually bound to the joint success of their efforts. In a network collaborative relationship,

participants are aware that the team's success depends on the sum of the individual performances and success; therefore, they give the same priority to their own interests, as well as to their team members' interests. Effective collaboration is built on communication and technology. Huang et al. (2010) studied also Collaboration as a GVT enabler.

Coordination is the mechanism of action that gives the pace between resources (people, tools, time) and actions to reach the team's purpose. It includes the management of the virtual team as well as the work done by the team, commitments. Goals, expectations and interactions provide congruency on requests and decision making. Corrales (2011) studied also Coordination as a GVT enabler.

Work Management domain in virtual work, refers to leadership and style of management and type of control exercised over duties focus on results, including goal setting negotiation between coach and employee, ways and methods to achieve them. At the personal level, work management includes control of our activities and results, focus on control of resources to get objectives done, work and social activities priorization on an efficient way, ensure goals accomplishment to avoid management's need of control and practices to achieve goals. Anderson et al. (2007) studied also Coordination as a GVT enabler.

Work Description domain refers to the degree that roles and its responsibilities are prone to virtualization, to be implemented into a virtual team. Not all roles are equally subject to virtuality (degree), physical work is less prone to virtualization, work based on information and knowledge is very prone to virtualization. As members of an organization we play several roles, each with its own characteristics and virtual potential so we need to find balance between virtual work and role requirements. Anderson et al. (2007) studied also Coordination as a GVT enabler.

Case Study to Integrate Innovation Networks' Best Practices

The case study for the Innovation Networks' VWM Protocol was conducted in six multinational companies with headquarters in Mexico from six different sectors: steel, oil, telecommunications, cement, automotive and beverage, all from industries being consolidated by mergers and acquisitions and working in business innovation projects worldwide with global virtual teams or in continuous communication with colleagues and partners around the world to integrate an inventory of best practices, goals and challenges for each GVT Domain (see Table 1).

The workshops were designed for each company in advance to identify and clarify: scope, objectives and roles.

- Scope: employees within each organization, different geographic locations, time zones and cultures, at least one direct report relationship, and staged integration of technology elements, practices, culture, and behaviors.

- Objectives: (1) Assess and strength framework with information from pragmatic business innovations, (2) Gain insight for change management effort required and (3) Confirm and establish value sources.

- Roles: the project sponsor (framework and project approval), the external contributors (validate domains and provide feedback), the facilitators (design space to monitor and track progress) and the innovation networks' participants (carry out the project following the GVT Framework, feedback on workshop and project process and results)

Table 1.
Best Practices, Goals and Challenges for Innovation Networks' GVT Domains:
Technology, Communication, Collaboration, Coordination, Work Description and Work Management

TECHNOLOGY	
GOALS AND CHALLENGES	**BEST PRACTICES**
GOALS: • To facilitate communication and collaboration process in same or different time and space. (Practices a, b, c, e, h) • To promote Information sharing and distribution. (Practices a, b, d, f, h) • To avoid Information lost and increase security. (Practices a, b, d, f, g, h) • To encourage use of experience globally generated. (Practices d, f, h) CHALLENGES /BARRIERS • Not trust on Technology for sensitive innovation projects. • Diversity and low use of different media to communicate. • Slow communications. • No tech support service available at the moment of troubleshooting. • No standard knowledge about tools available for the different tasks.	***Practice a: Know all functionalities by tool.*** • Know all functionalities by tool and when to use it. • Identify proper tool for each situation. ***Practice b: Keep updated about Technology*** • Know all the services, equipment, devices and tools required to develop en effective network and virtual environment leveraging innovation work. • Technology has new functionalities day by day, so it is very important to keep updated. ***Practice c: Match the medium to Time and Place*** • For success meetings and approaches an important factor is selection of medium for each task, taking into account place and time. ***Practice d: Use information repositories*** • Allow to backup the information and be online. Information on laptops is fragile because computer can get lost or damaged (cloud). • Allow your information be available for other team members (dropbox). • Allow setting of security access at different levels, like role, user, document or folder. • Allow setting of approval routes before document reach the public. • Assure your data on information repositories are updated constantly; this will avoid team members with different versions (google docs, dropbox). ***Practice e: Encourage practice of Innovation Networks' Knowledge Management*** • Knowledge assets are the knowledge regarding markets, products, technologies and organizations, that an innovation network owns or needs to own and which enable its business innovation project to succeed, or a business processes to generate profits, add value, etc. • To share and re-use knowledge among differing applications for various types of users; this implies being able to share existing knowledge sources and future ones. • To create a culture that encourages knowledge sharing. • Choose APPs and Software (interoperability) that permit to take advantage of the knowledge management practice. ***Practice f: Innovation Networks' KM allows taking advantages:*** • To be certain that standards and regulations referred to, in all the documents, models/prototypes produced follow compliance and are currently in force. • Permit to empower collaboration network by receiving feedback from all experts scattered globally (absorptive capacity). • Permit to relate documents with same concepts, by different data like author, process, topic, region, language, etc.

	Practice g: Employ a Method to Track Changes
	• Avoid confusion on changes applied for every collaborator.
	• Establish time of changes.
	• Permit follow up on pending changes.
	• Permit to identify suggested changes by author.
	Practice h: Review Technology Kit Document for any detail about Technologies available for your work
	• Review detailed presentation with information on practices and technology options on different situations

<p style="text-align:center">COMMUNICATION</p>

GOALS: • Encourage open communication. (Practices a, b, c) • Use a communication standard language. (Practices c, e) • Develop ability to listen to and express concerns. (Practices c, d, e) • Establish a way to simulate casual conversations. (Practices b, d, f) • Develop a communication environment with complete messages. (Practices a, e) CHALLENGES/BARRIERS • Team leaders should not depend on software applications and connectivity alone to ensure adequate team connections. • Software and network connectivity may provide the basic links among team members, but staying connected goes far beyond technology. • Employee feelings of isolation and disconnection • Fear of technology security/privacy • Fear of change, adapting to the roles and responsibilities of communicating in a virtual environment. • Fear of unknown communicants and their competences • Virtual members who do not share same language	***Practice a: Send messages including all the information*** Electronic messages must include all that is needed for the recipient to respond or take action. Include: • Who (status, role) is the sender? • Why was this message written? • Who e/es in my organization knows about this or needs to know about it? • What information, consensus or permission do/need from others in order to respond? ***Practice b: Setting the appropriate communication depending on the group*** • One- to-one communication • One-to-many communication • Small group to small group communication • Large group communication ***Practice c: Follow explicit communication protocols*** • Team members must identify when they are available to receive and respond to communication; these schedules must be respected by team members. • Team members must be explicit in their communications regarding intent, relevance, situation and purpose. • Team members should strive to meet regularly on a synchronous basis to maintain rapport and continuity. • Senders must take responsibility for prioritizing communications as urgent, important, routine or informational-only. ***Practice d: Match communication styles with individual preferences*** • People differ on their needs for feeling connected ***Practice e: Effective distant communication rules*** • Distant communication poses distinct challenges compared to face-to-face interaction • Team members must identify when they are available to receive and respond to communication; these schedules must be respected by team members. • Team members must be explicit in their communications regarding intent, relevance, situation and purpose. • Team members should strive to meet regularly on a synchronous basis to maintain rapport and continuity. • Senders must take responsibility for prioritizing communications as urgent, important, routine or informational-only. ***Practice f: Use communities of practice and interact to exchange ideas*** • Use communities of practice and interact to promote an ideal environment for communities to form, and for remote workers to exchange ideas and create an informal sense of community. • Community participants may be people, enterprises or agents. Each derives its power from mutuality of goals, ongoing interaction and communication, and the permanence of the relationships among the participants. • In any community, three characteristics are present:

encounters difficulties when attempting to communicate. ● Not detailed or explicit messages. ● Team members	● Vision-focused interaction ● Mutuality of goals ● Endurance of community values

COLLABORATION	
GOALS: To create and sustain team dynamics that encourage and increase collaboration through networking, information sharing, proactiveness and flexibility. • Generate sense of belonging, support, growth and help of team and for its members (Practices a, b, d) • Set an environment with complete information sharing (Practices d, e, f, g) • Expand Knowledge of the network (Practices b, c, e, f) • Adding value to the team (Practices e, g) • Optimize team results by mixing individual skills and expectations (Practices e, g) CHALLENGES/BARRIERS • Insufficient social spaces for group interaction, collaboration and socialization • Insufficient resources as collaboration platforms or videoconference rooms	BEST PRACTICES FOR CHALLENGE1: *Practice a: Knowing the Pillars of Collaboration* • Participants have embraced a common purpose • Participants are committed to achieve specific goals and objectives supporting the common purpose *Practice b: Understanding the Collaboration process* • Planning stage; Information gathering stage; Analytical stage; Execution and Evaluation *Practice c: Knowing every part of the team* When a team is virtual, it has a more difficult time seeing itself as a whole that is moving together toward a common goal. The communication infrastructure and ground rules help, but it's also important to help each member know every part of this "whole" team so that everyone sees how individual actions contribute to forward movement, sees how individuals impact the collective. *Practice d: Building relationships as well as schedule meetings* • Building relationships is the corner stone of collaboration; employees need to invest time communicating, networking and building relationships in order to develop trust. • Teamwork is fundamentally social. • Virtual team members need trust *Practice e: Knowing the benefits of Networking process* • Networking is a dynamic process often resulting in outcomes that far exceed what you as an individual communicator could generate. You can come up with novel and unusual ideas and techniques by brainstorming and partnering with professionals outside your institution or agency. • This is frequently conducted using virtual tools. *Practice f: Style of action for better collaboration* • Be highly proactive, not reactive • Be volunteering for tasks, not asking for volunteers • Commitments met, not lots of excuses • Decisive action on free riders, not free riders ignored • Prior notices of absences, not at the moment *Practice g: Tips to execute successful Virtual Meetings* • It is imperative to schedule virtual meetings • Effective planning, facilitation, meeting goals, recording and reporting
WORK DESCRIPTION	
GOALS • Identify roles that are prone to virtualize and its degree (Practices a) • Find a balance between virtual and role requirements, defining responsibilities and activities on a virtual role (Practices b) CHALLENGES/BARRIERS • People which role is not prone to virtualize could be feel out of the change • People which work is prone to virtualize could feel treat for its career development	*Practice a: Identify Roles prone to virtual work* • Virtual roles apply in a wide range of fields, but mainly those that do not involve physical production, expensive specialized equipment, or extensive face to face customer contact. • Typical virtual workers usually prepare reports, analyze figures, develop long-term plans, compose letters and memos, enter data into computers, and perform research for Organizations. *Practice b: Make a program of how could it be your virtual job* • Making a list and schedule of your activities (including domains, work, family and social) and how it could be virtual will help you to visualize your role on a virtual environment. If you find that all you do now could be virtual, means your role is highly prone to virtualize.

COORDINATION	
GOALS: General goal for Coordination domain is to give cohesion to virtual work: • Establish a scheme with high rigor in commitment management (Practices a, g) • Planting concerns and make complete requests to the right audiences (Practices e, f) • Handle detailed expectations and plans (Practices b, e, g, h, i) • Establish a decision making process with limits and rules of escalation (Practices b, e, h, i) • Effective and productive use of coordination windows (time and space) to strengthen collaboration (Practices c, g, h) • Ensure only one interpretation of goals and expectations (Practices b, f, i) • Establish a process to form teams (Practices j) CHALLENGES/BARRIERS • A cardinal rule of virtual teaming is to bring the team together face to face at the outset. • One of the more disruptive aspects of virtual teaming is differences in time zones.	***Practice a: Establish high rigor in commitment management*** • Clarity and depth in setting expectations and satisfaction conditions • Constant checking of a shared interpretation of the commitment and its components • A culture of impeccability in the commitments, not tied to hierarchy • Being open to declination and renegotiation ***Practice b: Devote enough time to ensure only one interpretation of goals and expectations*** • Pay careful attention to disjointed working processes, misunderstandings that surface, failed expectations and above all, loss of trust. • Address upfront differences in the understanding of what is a team, who belongs to it and how it functions. • Get a functional understanding about how teams may differ and can disrupt cooperation. ***Practice c: It is necessary to devote enough time to ensure goals are understood*** • Pay careful attention to disjointed working processes, misunderstandings that surface, failed expectations and above all, loss of trust. • Address upfront differences in the understanding of what is a team, who belongs to it and how it functions. Get a functional understanding about how teams may differ and can disrupt cooperation. ***Practice d: Focus face-to-face interactions, mainly on the important issues*** • Vision, planning and above all, motivation and teambuilding rather than lower level data sharing and technical discussion that can be done by virtual means prior to and as a follow-up to the face-to face sessions. ***Practice e: Provide congruency on requests and decision making*** • Planting concerns to the right audiences to receive offers • Make clear requests to the adequate people • Detailed handling of expectations and plans ***Practice f: Keep communication moving*** • Make a commitment to honoring agreements, modifying agreements and protocols as needed based on experience or changing need. ***Practice g: Tips to Organize meetings for tracking*** • What is appropriate to ask for, offer, or leave alone? And by whom? • What will the group use to verify shared agreement and understanding? • Have a team home page that has a virtual availability board. Who is at work, off line, on vacation, working but not available, contact information • Have each team member to maintain a personal web page that contains full contact information; professional expertise, qualifications, and experience; primary project roles and responsibilities; and technical limitations ***Practice h: Set Documentation and Storage Protocols*** • Create and work from pre-defined templates for plans, reporting mechanisms, status updates, and delineation of customer requirements, change orders, cost estimates, and any other relevant documents. • Put page numbers, version numbers, and dates on all documents. Create a tracking mechanism for document revisions, availability and usage by whom, and authoring and authority guidelines for recommended revisions and accepted revisions. • Decide acceptable applications and software versions. • Decide the work storage space(s) for complete and current documents, information that is no longer useful, and deliverables. Develop security protocols. ***Practice i: Establish a virtual team operating agreement*** • Resource Allocation; Confidentiality; Conflict Resolution

	• Communication Protocols; Reimbursements; Accountabilities; and Methodologies ***Practice j: Follow a formal Team Startup Process*** Establish a clear team purpose, recruit with diversity and competence in mind, establish team methodologies and protocols, and bring the team members together in an initial, face-to face meeting.

WORKMANAGEMENT	
GOALS	**Practice a: Leadership Profile for Virtual Teams**
• Encourage managing evolution from boss to coach, from control to trust and from time management to results management (Practices a, b, c)	• Being willing to shift leadership control, when advantageous, to other team members during the team life cycle
	• Buffering the inevitable conflicts between the team and other enterprise organizations.
	• Nurturing team relationships, particularly with the team's executive sponsor.
• Encourage division of work to be more productive (Practices a, b, d)	**Practice b: Leadership Style for Virtual Teams**
	• Members of virtual teams need to trust their enterprise leaders and each other.
• Modify management of our work at the personal level to release detailed control of activities and focus on control of results (Practices b, e, f)	• Leaders need to give the enterprise a clear, coherent and compelling idea of the way forward vision + purpose.
	• Measuring outputs not inputs
	• Building relationships: Intra-team and external relationships need to be robust and effective.
	• Leading by example
• Strengthen integral priorization of all domains, Family, Work and Society (Practices g, h, i)	**Practice c: Leadership Considerations on Virtual Teams**
	Leadership Management on Virtual Teams must follow characteristics of Theory Y not Theory X
• Ensure commitments and practices to reduce Management's need for control (Practices b, c, d, e, t, h)	• Theory X: Management by control Perspective that is very directive, command-driven and control oriented. People are self-centered, childish, lazy, not very intelligent, not creative, and not very willing to accept responsibility

	• Theory Y: Management by objectives
	  Essence lies in helping work teams develop clear goals and then supporting team members in their attempts to achieve goals. Control, coercion, and manipulation generally interfere with such behaviors.
	  Average people are intelligent, creative, willing to work for goals which relate to their own welfare, and eager to accept responsibility for things that matter to them.

• To permit negotiate goal setting including methods and ways to achieve them (Practices b, c, e, f)	
	Practice d: Define a clear purpose and divide responsibilities and tasks
	• Define a clear and compelling purpose for the team's mission. Gain team consensus on, and commitment to, this purpose, and link it to enterprise goals and to individual roles, responsibilities and tasks.
CHALLENGES/BARRIERS	**Practice e: Foster trust to reduce control**
• Leadership must evolve in more than one sense: From boss to coach, being a facilitator and manager of competences and tea m dynamics.	A strong environment of trust grounded in principles of fairness, consistency, honesty, reliability and matching words with deeds. In addition to purpose and trust, two other threads must be followed into the team culture:
	• Empowerment
	• Accountability
• Availability and being reachable in crucial moments are one root cause management's need for control.	**Practice f: Focus on what is being done instead of how work is being done**
	• When employees focus on results, they become more innovative, efficient and better able to deliver quality work.
	• During goal setting negotiate not only the goals but also the methods and ways to achieve them.
• Fail to achieve expectations and goals due to leadership failures, insufficient processes, mismatched tools and cultural barriers (organizational and geographical).	• As a virtual team member release detailed control of activities and focus on control of results.
	Practice g: Strengthen work priorization practices
	• Acknowledge the needs of the other life domains
	• Integral priorization of all domains
	• Minimize stress in these decisions
• Focus on building sound methodologies and strong relationships within the virtual team, recruit team members wisely and avoid complexity in the selection of	**Practice h: Establishing boundaries on being reachable**
	• Availability and being reachable in crucial moments are one root cause management's need for control. Physical presence minimizes this risk, commitments and practices to ensure them may reduce resistance.
	Practice i: Maintain a virtual workplace free of noise and disruptions

tools. ● Redundant approval chains	● Employees must establish a strong and viable corporate identity in their virtual workplace. Because they must interact with customers and clients, their work space must reflect a distinct separation from their living space and normal disruptions.

Virtual Work Value Creation: Economic, Pragmatic and Sustainability

Based on the six workshops from 2008 to 2012, 12 interviews and 18 project performance assessments in six companies, the author integrated a business case to assess value creation when working with GVTs in network organizations, in three domains: economic, pragmatic and sustainable, an at two levels of analysis: personal and organizational (See Figure 2):

	Economic	Pragmatic	Sustainability
Business	Infrastructure savings and availability Cost Reductions (F2F meetings reduced, flights, office space, minimum staff)	Human Capital benefits Knowledge management practices Business continuity Organizational competencies	Global Talent and Project Matching Project moving following the sun Image and Prestigious
Personal	Performance appraisals by results Remote office with less time to commute	New practices development Time opportunities to create value in several domains Enables spaces for creativity	Capability to break paradigms Greater life-work balance Better quality of life Capability to build better relationships Feelings of satisfaction and teamwork culture

Figure 2: Business Case: Innovation Networks' Virtual Work Value Creation (author, 2012)

The virtual work and the GVTs showed a direct relationship between personal and organizational benefits, where new metrics were considered to measure performance (see Table 2).

From an economic standpoint, VW practices enabled cost reduction opportunities for the organization represented cost reduction for the individuals as well (i.e. infrastructure (organization) and traveling (individual).

From a pragmatic standpoint, VW practices enabled continuous operation under contingency scenarios with advantages for the organization (project following the sun: 7X24) and for the individual (home or remote office reducing commuting time).

From a sustainable standpoint, VW practices enabled employee satisfaction and organizational image and loyalty, as well as a balance between personal and organizational productivity and quality of life.

Table 2.
GVT's New Performance Metrics.

VALUE CREATION	GVT PERFORMANCE METRICS
ECONOMIC	Productivity metrics: • Increase/Decrease in number of clients serviced • Increase/Decrease in number of projects executed • Increase/Decrease in number of deadlines met Infrastructure related benefits: • Decreases/Increases in fixed cost or overhead cost per m^2 • Office m^2 real % utilization (% of time it is being occupied by employees) • Decrease/Increase in long distance calls payments Cost Reduction metrics: • Travel expenses before and after Virtual Work implementation • Office supplies expenses before/after Virtual Work implementation • Services expenses before/after Virtual Work implementation (water, cafeteria, electricity) Employee retention related benefits: • Personnel turnover before and after VW implementation • New hires induction costs before and after Virtual Work implementation • Recruitment, selection and hire costs before and after Virtual Work implementation
PRAGMATIC	Competencies development metrics: • Increase/Decrease of number of company sponsored courses taken by employees • Employee personal development achievements as monitored by annual performance assessments • Increase/Decrease in number of cross functional/global teams • Track the positioning of selected competencies, such as communication skills, in terms of: ○ Number of employees in Level 1, Level 2, etc. Knowledge Management and Collaboration related metrics: • Number of communities created and accessed • Number of documents shared in Collaboration Platform • Number of blogs, discussion threads/brainstorming sessions created, used and closed in eRooms. Blog Lifecycle. • Number of eMeeting id created per month • Number of people with shared calendars in GVT project agenda
SUSTAINABLE	Sustainable related benefits: • Seniority index (years the employee has been in the company). Compare average area and company index before/ after virtual work implementation. • Employee satisfaction internal surveys • External work environment surveys, such as "Employer of Choice", "Great Place to Work" • Decrease in work related accidents, health issues ("Influenza")

Participants' Comments and Concerns:

The main comment from the innovation networks' participants in all the companies was that before the VW initiative was formalized, people performed virtual work in the best way they understood how, but without any framework, shared vision, common practices, or institutionalize and recognized work model.

Some of the participant's repetitive concerns were: (1) how to get a "virtual work" common understanding with their business clients on the basis of impeccable commitments, reliable response times, and transparent productivity, (2) how to eliminate uncertainty of required physical presence for network and company's deadline deliveries, team and individual performance evaluation, or acceptable working status to foster trust in innovation networks' virtual work, (3) how to avoid misunderstandings inside the workplace by being part of a pilot, but the rest of the organization not being aware of the new innovation networks' work environment — requiring a complete set of work practices, work design, role descriptions, and mobile technologies.

GVT Protocols for Email and Tool-match

This section outlines two particular protocols developed during workshops, one to support the email (see Table 3) communication and one to support technology match between GVT activity and tool (see Table 4).

Examples:

<FYI> Plans for next week

<FYA by 03/04/2013> Business Innovation CANVAS for mobile learning

<URGENT: For Your Action> Business Trip to Houston

<F-UP> Message to Users

Table3. Innovation Networks' Email Protocol and Recommendations

ACRONYM	MEANING	EXPECTED ACTION FROM RECIPIENT (The addressee)
FYI	For your information	None
FYA by	For Your Action by " YY-MM-DD" => This format enable to have a sort option of viewing the actions pending	To take action based on the message. The message should include the time limit to take the action. A reply to the sender with information on the action taken is welcome, but not demanded.
FYR	For Your Reply by " YY-MM-DD" => This format enables you to have a sort option of viewing the actions pending	To reply or answer the sender's message. The message should include the time limit to reply to the message.
FYC	For Your Comments	To send your comments that you may have on the issue presented on the message. The message should include a time limit to take action. If comments are not received within such limit, it will be considered that you have no comments on the issue presented.
F-UP	Follow-up	None – this is a reminder of a commitment, date, etc. It is expected that you act based on the original message.
JTC	Just to Confirm	None – it aims to confirm a decision
URGENT + acronym	Urgent	This implies that the requested action or reply should be done within 24 to 48 hours.

Some of the technology tools being identified for the different innovation networks' team activities were:

Table4. Technology Tools matching purpose, audience, time and place

Activity / Task	eDocuments	eMeetings	eRooms	Collaboration Platform	Video or Conference Call	Chats	Face to face interaction	Telecom APPs/tools
Brainstorming		●	●	●	●		●	●
Consult team member's work	●	●	●	●	●		●	
Share documents and discuss ideas	●	●	●	●	●		●	
Have a private chat					●	●	●	
Inform of an activity or issue	●		●	●	●		●	●
Leave a message			●	●		●		●

Conclusions

In network organizations the new work model was moving forward to a virtual environment. Continuous changes in technology and competitive markets presented new opportunity and imperatives to work with virtual teams, communities or colleagues. In the process to implement GVTs during the Case Study, similar concerns were found, regardless of the sector, industry or market: the importance to share a common GVT protocol with similar distinctions; a common team's toolbox based on the team goal; and a GVT best practices to take advantage of the interdisciplinary competences and rotative leadership of the team members, of the project continuous movement with the different time zones, and the importance to convey emotions, communicate agreements or disagreements, keeping at the same time the focus, agenda and virtual team commitments.

The benefits and advantages to use a GVT institutionalized protocol allowed effective collaboration; reduced time wasted in miscommunications, reduced cost and time in face-to-face meetings, reduced commuting time, reduced office space, multidisciplinary teams based on competences worldwide sharing best practices, to build a new paradigm with no boundaries between space and time, exploiting technology and mobility practices, working in a strategic agenda with common outcomes and means, impeccable deadlines, effective use of tools for communication, knowledge management to acquire, analyze, use and exploit information and resources for better business performance.

It was critical to match the tool to the situation, choosing the appropriate communication media. Virtual team members learned how to choose the most appropriate technological media depending on the goals to be achieved, on the size of the audience, on the time and location, on the cost, on the emotional context, on time effectiveness and based on coordination simplicity

Virtual Work and GVTs demanded a better design and planning of the work activities, work division and work assignment. Small deliverables increase the probability to better integrate as final solution

The documentation of GVT practices improved the quality and effectiveness of Knowledge Management

Better possibilities to identify misunderstandings gap during the development of a project.

Since most conferences took place with some amount of previous planning, availability was stated when participants responded to the invitations' request. Being considerate to different time zones when proposing a conference schedule was important, rotating the time zone. However, a certain amount of virtual meetings were spontaneously set, without any previous planning. It was particularly for these cases that "availability" was required to be defined.

Some of the internal triggers for network organizations to implement global virtual teams were (1) growth: multiplicity of geographies and time zones, the company dynamism, speed of change, the need to coordinate and collaborate in increasingly complex human networks, and the need to maintain projects and operations continuously moving; (2) cost reduction strategies: the need to find work interpretations that are more economical and productive; and (3) IT evolution: an impulse; an element of growth and speed

Some of the external triggers for network organizations to implement global virtual teams were (1) mindset of new generations: multiprocessor vs. batch, flexibility, time and space boundaries blurring, different work-life balance; (2) Competitive environment: be permanently prepared for the future, and need to increase flexibility, responsiveness, adaptability, and agility; and (3) IT evolution in the world: becomes part of daily life, opens new possibilities for life and work

Important implications for network organizations implementing global virtual teams were: (1) Successful virtual work requires that the elements that integrate work (trust, coordination, visibility, collaboration) have a solid foundation; (2) virtual works demands managers to adopt different approaches in five key areas: people, information, teams, processes and facilities.; (3) like every major cultural change, virtual work comes at a price: it demands time and resources in order to become an adopted and productive model; and (4) the organizations must redesign control, measurement and evaluation methods, as well as some business processes.

References

Anderson, A.H., McEwan, R., Bal, J. and Carletta, J., 2007, ''Virtual team meetings: an analysis of communication and context,'' Computers in Human Behavior, 23(5), 2558-2580.

Bergiel, B., Bergiel, E, and Balsmeier, P., 2008, "Nature of virtual teams: a summary of their advantages and disadvantages," Management Research Journal, 31(2), 99-110.

Corrales, Martha, 2011, Leadership, Coordination and Collaboration in Global Virtual Teams for Organizations involved in International Business, Davila, Ramirez, Zapata and Blasco, Editors, Macmillan Publishers, India, pp. 195-213.

Dalkey N. and Helmer O., 1963, "An experimental application of the Delphi method to the use of experts." Management Science, 9, 458–467.

Henttonen, K., and Blomqvist, K., 2005, "Managing distance in a global virtual team: the evolution of trust through technology-mediated relational communication," Strategic Change, 14(2), 107-119.

Huang, R., Kahai, S., and Jestice, R., 2010, "The contingent effects of leadership on team collaboration in virtual teams," Computers in Human Behavior, 26(5), 1098-1110.

Kayworth, T. and Leidner, D., 2002, ''Leadership effectiveness in global virtual teams,'' Journal of Management Information Systems, 18(3), 7-40.

Keen, P., and Williams, R., 2012, The Value Path: Making innovation really count in everyday business life, 1st Edition, EGADE Business Publishing, Monterrey. Mexico.

Kenney, M. and Patton, D. (2005). Entrepreneurial geographies: Support networks in three high technology industries. Economic Geography, 81(2), 201-229.

Linder, Jane (2006). Does innovation drive profitable growth? The Journal of Business Strategy. 27 (5), 38.

Mankin, Eric (2007). Measuring Innovation Performance. Research Technology Management. 50 (6).

Mitroff I. and Turoff M., 1975, Philosophical and methodological foundations of Delphi. In The Delphi Method: Techniques and Applications, Linstone H. and Turoff M., Editors, Addison-Wesley, Reading, MA, pp. 17–35.

Townsend, A.M., DeMarie, S.M., and Hendrickson, A.R., 1998, "Virtual teams: Technology and the workplace of the future," The Academy of Management Executive, 12(3), 17-29.

Watson-Manheim, M.B., Chodoba, K.M., and Crowston, K., 2002, "Discontinuities and continuities: a new way to understand virtual work," Information Technology & People, 15(3), 191-209.