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Successfully Building a Virtual Community: What Are We Learning as We Create the Future of the IP Community?

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SUCCESSFULLY BUILDING A VIRTUAL COMMUNITY:

WHAT ARE WE LEARNING AS WE CREATE THE FUTURE OF THE IP COMMUNITY?

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Overview

This paper provides a brief summary of the activities, successes and challenges faced within the IP Community after the September 2002 community-wide Appreciative Inquiry Summit. The Summit produced several successes and represented a major step forward in the evolution of the community. Post-summit activity generated and provided clarity regarding many issues the community currently faces. A framework for assessing these issues is presented.

"I feel empowered by you. I hope that you feel empowered by this Summit. I think that we have the birth of a new community."

Vice Admiral Dick Mayo
September 2002 IP Community AI Summit

Introduction: What Have We Learned in the Past Year?

The 2002 Appreciative Inquiry Summit, held in September of last year, marked an important milestone in the development of the IP Community. As one of the newest communities in the Navy, the AI Summit provided an opportunity for the IP Community to come together in a unique way. Coming from deployments across the globe, IP Officers forged new relationships, often meeting one another for the first time. External stakeholders provided much needed input from an "outsider" perspective. Collectively, all who attended contributed to create a bright vision of the future where the IP Community participates as a full partner in maintaining the Navy´s warfighting capability.

The focus for the 2002 Summit centered on three community objectives: forging information dominance, lead the evolution of the warfighter, and open portals for innovation. Under the facilitation of Dr. Frank Barrett and Dr. Ron Fry, members of the IP Community worked for nearly four days, moving through the Appreciative Inquiry process of Discover, Dream, Design, and Destiny. During the **DISCOVERY** phase, members of the community were invited to reflect on best moments to identify the "positive core" of the community—the best things about the community that should be kept while moving forward. In the **DREAM** phase, the community created a vision of the future through collectively generated statements of aspiration. The **DESIGN** phase prompted members of the community to take at this vision seriously by creating bold action plans and proposals for pilot projects. The **DESTINY** phase moved the community toward implementation of the project ideas, and provided a plan for post-summit action, learning, and improvisation. The entire process maximized the potential to involve and engage every participant; thus, this was a collectively owned effort.

By the conclusion of the AI Summit, members self-selected into thirteen pilot groups, organized for continued work. Topics for action covered a variety of issues; for example, creating an IP Community mission statement, marketing the IP Community, partnering with warfighting communities, creating and developing the IP career path, and refining the IPC virtual workplace were just a few of the proposed initiatives. The thirteen pilot groups each appointed a senior and junior facilitator to help shepherd post-summit progress. Many participants left the Summit feeling energized about the possibilities and work that lay ahead.

Several post-summit meetings provided an opportunity for taking inventory of post-summit activity. In December 2002, Vice Admiral Mayo hosted a Virtual Teleconference with representatives from each of the 13 pilot groups. The Vice Admiral convened an additional face-to-face meeting in February 2003 in Norfolk to follow-up and regroup.

Several initial successes were noted at these meetings. In February, Vice Admiral Mayo noted that the number of sea billets had increased over 300%. Many of these new positions were in key billets, where commanders specifically request IP officers. This suggests that the reputation of the IP Community is growing, where other communities are expressing respect for IP officers and what they can bring to the table.

Challenges

Every pilot group achieved at least some measure of progress, even if their way forward included the discovery of potential roadblocks. Indeed, several challenges were noted:

- *Dropping Participation.* The level of active participation in group communication—in emails, live conversations, discussion threads, and online chats—had dropped to 25% to 50%. Most of the groups have a small core of individuals who actively participated, additional members who were less involved, and remaining members who were not active contributors. This was a source of concern, even when considering many legitimate obstacles: officers in transition to new posts, deployment at sea, or limited access to the technology.

- *Feedback from the Community.* Often, when pilot groups posted a call for input on a web-site, they received little if any response from members of the community. This made the groups feel isolated from the perspectives of others.

- *Geographic Distance.* All of the groups acknowledged the challenge of distance to keeping members of the group interconnected. Multiple time-zones were particularly difficult when members of a group wish to meet for a chat or video teleconference.

- *Technology.* Deployed members of the community often have poor connection speeds or other technological limitations and are frequently out of the loop. The quality of online sites was also an issue. For example, the AI collaboration site had several significant limitations. In addition, some individuals need to keep up on as many ten portals, each with different passwords and protocols. Combined these challenges meant that technology often prevented adequate communication.

- *Collateral Duty.* One of the biggest concerns was about finding time for work on the pilot task. Many were concerned that they couldn't dedicate more time to work on pilot initiatives. Lack of time was particularly noted in groups with less defined task lists. Common statements included, "I could spend a full time job just on this one project," or "It doesn't cut into my day job too much, but it does cut into my night job." Limitations of time seem to make it even more important for a group to define its tasks in terms of specific, actionable items.

- *The "Perfect Solution" Syndrome.* Many groups hesitated in the desire to implement a new solution because of an innate desire to first reach a 100% solution. However, with several of the pilot group activities a "70% solution" represents significant progress. A 70% solution is better than no solution.

Success Factors

Several themes of success were also noted and discussed. Groups made significant progress in spite of the limitations, particularly when the following factors were at play:

- *Support from Senior Leadership.* All successful groups indicated that they have had strong involvement from senior officer leadership, even if this involvement is brief.

- *Frequent Communication.* All the successful groups have devised ways to work around the inherent limitations of geographical and technological distance. For many groups, this has meant falling back on more traditional modes of communication, including emails or phone conversations. They also seek and plan opportunities for regular communication.

- *Synergy with Command Responsibilities.* Several facilitators suggested that their ability to contribute was aided when their regular duties already related to the pilot project. It is helpful when at least one or two members of a group can dedicate a significant amount of time to the group's effort.

- *Unambiguous Task Lists.* Successful groups have defined milestones as clear actions rather than as more elusive steps such as "defining what needs to be done." Clear successes tended to focus on actionable tasks. However, it is important to remember that the most important challenges are often ambiguous and complex in nature, suggesting the need for more intense collaboration.
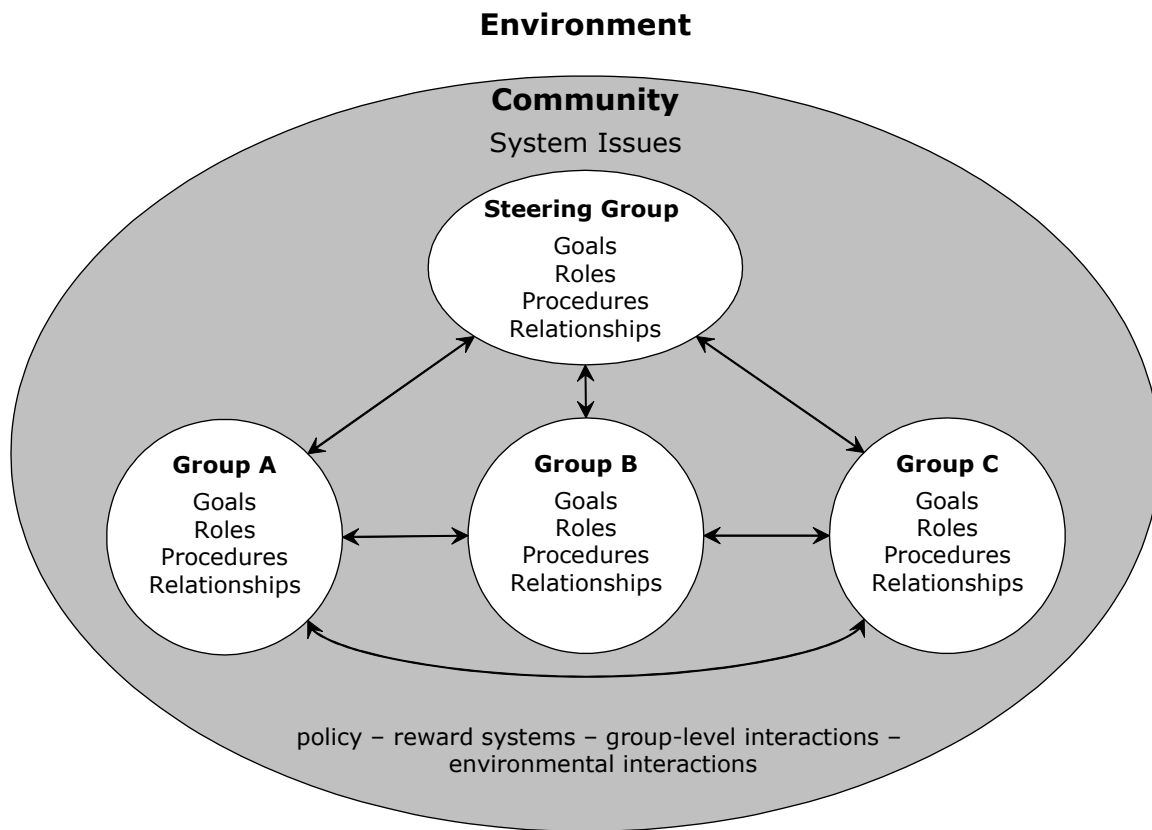
Purpose: Maximize Success Factors

This report expands and clarifies lessons gleaned from IP Community experiences of the past year. First, this document draws from academic research to describe the basic elements for successfully building a community or organization. Next, because much of the IP Community's work is done online, the report outlines several special issues to consider when functioning in a virtual environment. Finally, the paper concludes with several "practical" recommendations for working in post-summit AI groups. Throughout, the document integrates relevant examples from the IP Community. If used, this analysis provides useful information that can help the IP Community tap the energy and vision of its members to forge ahead and create a bright, promising future.

Issues to Consider for Successful Community Building

Several factors help to create a successful community, as illustrated in figure 1[i]. First, within every community are sub-groups of relatively few members who can interact directly with one another. Effective groups incorporate procedures and activities that help them reach their goals, clarify roles and team responsibilities, and develop strong interpersonal working relations. **Goal issues** center on establishing a clear sense of what the group is trying to accomplish, **role issues** focus on identifying the place of each player on the team, **procedural issues** refer to how a team does its work and makes decisions, and **relationship issues** deal with how team members treat one another and develop in their ability to work with each other over time. Each of these four areas is critical to the success of the group.

Figure 1: Model of Issues to Consider for Successful Community Building

Environment

Community
System Issues

Steering Group
Goals
Roles
Procedures
Relationships

Group A
Goals
Roles
Procedures
Relationships

Group B
Goals
Roles
Procedures
Relationships

Group C
Goals
Roles
Procedures
Relationships

policy – reward systems – group-level interactions –
environmental interactions

Yet no group works in isolation. Teams always function within the constraints of a system. In fact, one way to think about organizations is to picture them as "a series of interlocking groups." **Systems** factors include issues such as structures, reward and promotion systems, training and other policies, group-level interactions, and interactions between groups and the external environment. *Structures* refer to the arrangement of organization roles and practices according to key functions. Training and other *Policy* decisions define basic competencies and appropriate behavior for participation within the organizational environment. *Reward and promotion systems* create a sense of organizational order by reinforcing appropriate behaviors and practices. *Group-level interactions* occur when representatives from two or more groups engage with each other outside of normal functional boundaries. *Environmental interactions* take place when organizational members represent the community to external organizations or systems.

It is important to note that groups interconnect hierarchically as well as horizontally. For example, an administrative group interacts with subordinate groups to establish system-level policies and structures that shape the community environment. In figure 1, this is represented by the steering group, thought the actual title might differ between organizations.

Figure 1 also represents how every group establishes and uses its own goals, roles, procedures and relationships. However, subordinate groups often look like *mirror images* of the leadership group. That is, the standard operating goals, roles, procedures and relationships that exist in the

administrative group are replicated to an uncanny degree by subordinate groups. Thus, the form and function of the administrative group is particularly important in the establishment of common practices across a community, as it sets a model for appropriate interaction within all other groups.

Likewise, subordinate groups need to simultaneously manage system issues with goal, role, procedure and relationship issues. The five factors are all integrally linked. For example, relational conflicts are often a mirror of discrepancies in the system, and cannot be fully resolved at the interpersonal or group level until they are resolved at the system level. Similarly, goal differences can produce disagreements over roles or task procedures. The building blocks of community include issues related to all five areas. Addressing one area at the expense of the others often yields inadequate solutions.

A "Trustworthy" System

From the standpoint of a community member, system issues determine the degree of trust one can invest in the organization[ii]. In high trust systems, community members participate with greater flexibility, agility, playfulness and creativity. They know the way the system works, and have reasonable confidence that the system will function in a predictable pattern. This reduces their perceived level of complexity, and allows people to "take for granted" the underlying assumptions about the way the community conducts its business. The system becomes a reliable means of accomplishing the functions of the community. As a result, community members conduct their interactions with relative ease and efficiency.

In contrast, participants in low trust systems feel a sense of skepticism and uncertainty and the community, often as demonstrated by rigid, defensive patterns of interaction. Members may have big questions about the way the system functions and about basic organizational expectations. The more unpredictable the system, the less its members can take anything for granted and more complex they perceive the system to be. As a result, it becomes necessary to focus time and attention on seemingly mundane task or issues, which reduces not only the ease and efficiency of community interaction, but also the sense of confidence, identity and camaraderie they feel toward others in the system. Thus, institutional trust creates an environment in which participants feel like they can "buy-in" to the organization.

The conventional wisdom suggests that face-to-face time is needed the more virtual a group becomes. But this is not completely true. Performance-based trust is built upon a foundation of "reliability, consistency, and responsiveness.[iii]" The more the system-level issues are resolved and understood, the more members of the community know that they can trust and predict that their expectations for the community will be met. This kind of trust only builds with time and experience, and while face-to-face time is not always necessary, it certainly helps the process along.

It is common for its participants to feel uneasy about investing trust in a new system when an organization is initially formed. For example, in the past year some members of the IP Community have expressed hesitation about staying involved because of uncertainty that their

efforts will be integrated, recognized, and appreciated.[iv] Though this sentiment does **not** necessarily imply strong *dis*trust, it does suggest that the community can build, clarify, and strengthen its processes.

One of the great advantages of Appreciative Inquiry is that it creates a forum where the whole system is in the room together. This achieves several things to build trust. First, it allows community members to gain a sense of the whole community. Every participant develops greater understanding of all the parts, and for how the parts work together to make up the whole. In addition, AI maximizes shared participation. It allows for every voice to be heard. Moreover, AI allows the whole community to develop a shared agenda, and to parse out the responsibilities such that there is very little "stovepiping." Finally, for success every member of the community has to make a personal, emotional commitment to contribute. This engenders the community with a spirit of excitement and ownership that dramatically increases the likelihood for success. In fact, the community has already taken several steps to address system-level issues, as illustrated in the sections that follow.

Decision-making and Coordinating Mechanisms

Collaborative communities need a process for legitimately making decisions and coordinating efforts. Key questions are as follows:
- How can we be sure that our plans and actions are blessed by the community at large?
- What is the procedure for gaining legitimacy within the community?
- How does the community go about acknowledging and energizing such efforts?
- How do we channel the efforts of each contributor so as to maximize contribution while minimizing the amount of time and energy required for success?

Essentially, these issues deal with the direction and authority for sub-group activity. Without legitimacy, sub-group actions do not gain the traction they need to move forward. Without coordination between subgroups there is the constant risk of stovepiping, where various groups work independently and concurrently on similar ideas. Simultaneously, a healthy coordination mechanism taps the energy of individual contributors while giving them sufficient autonomy to work with creativity and innovation.

In the command-and-control structure, legitimacy is most often delegated; the commander authorizes action by subordinates, or endorses a subordinate's proposals. The structure also serves as a coordinating mechanism, delegating out the various pieces of a mission to complementary teams and contributors.

However, Appreciative Inquiry tends to be more democratic in nature. The great advantage of AI is that it allows each community participant to have and express a "full voice," where contributions are solicited from every participant and solutions are created at the grass-roots level of organizing. However, because the center of action in the AI process is in self-managed groups, the question of legitimacy is important. When can self-managed work teams move from mere recommendations to implementation? How do groups go about the process of validating their plans and ideas? These are key questions that must be resolved in order for the community to make significant progress, yet as these issues are resolved it is important to remember to involve community members so that they feel a sense of ownership and buy-in. When every person's

voice is heard and acknowledged, each person sees that his or her contribution can make and is making a difference.

Ongoing Efforts to Address[v]:
One major outcome of the February 2003 face-to-face facilitator meeting was the organization of a permanent steering group. This group includes members from every major constituency within the community, and flag-level representation from external stakeholders. In addition, there is representation from all grades of officers and enlisted personnel. The group meets approximately every six weeks. Its purpose is to provide a forum where sub-groups can report on progress, gain direction, and when appropriate, receive endorsement for key decisions about further action.

The February meeting also provided community leaders with an opportunity to discuss ongoing efforts and to coordinate an action plan for future action. Together, this group discovered that the 13 Summit groups were essentially working on three distinct efforts, as reflected by the following reconfiguration of the sub-group organization:

- **Information Dominance Group** - comprised of the previous Expeditionary Strike Group, Innovation, Knowledge Management, and Operations Relevance - Partnering with other warriors sub-groups.

- **Marketing** - comprised of the previous IPCVW, Marketing, and Mission sub-groups.

- **IP 5 Vector Model Working Group** - comprised of the previous Career Path, Billet Specific Credentialing, New Accessions Professional Development and Credentialing, and Professional Development and Learning for Existing IP's subgroups.

Through these efforts to reorganize, these leaders hoped to forge ahead with greater focus and a stronger sense of direction. A report on these efforts will likely occur in the July 2003 AI Summit, and it is possible that additional modifications may be merited, as based upon the emerging lessons from this experiment.

Technology: Facilitation of Community Relationship Building

A virtual, collaborative community is "a group of people bonded together by a common purpose and who enthusiastically *extend their relationships through technology* to achieve personal and collective goals.[vi]" Technology should build, facilitate and extend relationships among community members. An outstanding facilitation resource provides seamless, reliable, user-friendly tools that enhance communication. When technology distracts from relationship and community building, then it needs modification.

Many organizations and researchers have provided suggestions for using technology to facilitate relationships.[vii] On a personal level, online community development should promote a hunger for new ideas and collaboration. The best events often involve the "thinking together," where all members, including senior leadership, put out burning questions, revolutionary ideas, or calls for input on "impossible challenges."

The technical quest is to create a space that makes it possible for community participants to think collectively. This means that it is important to integrate processes for maximizing relationship building, where it is easy for people to connect. It also helps if any software is integrated within systems that members use during their daily work routines. Online technology should be accessible to every member and easy-to-use. Of course, participation is maximized when it is part of one's job.

In addition, a highly regarded coordinator who manages and monitors collaboration is invaluable. A good manager can constantly alert the community of new, value-added ideas or activity that will draw in greater participation. Also, senior members or newcomers may need training in the use of some tools so that they know how to access them and understand their potential benefit.

The bottom line for any technical solution is that it must generate real value for the community. Perceived value comes when the forum includes regular participation from "thought leaders," creates a repository of best practices, tips, or other great ideas, and facilitates the person-to-person touch between people.

Ongoing Efforts to Address[viii]:
One of the key discussion items in the six months following the September IPC AI Summit was the use of the AI Collaboration site. One major objective of the AI site was to provide access to information for ALL attendees of the IP Summit, including external stakeholders. Thus, its use was heavily emphasized over the IPCVW. The general sentiment among most users was that the AI site had redundant functions that could be found at other, more refined, sites, such as Navy Knowledge Online (NKO). At the February meeting, the group decided to discontinue use of the AI Collaboration site and to migrate all AI activity to NKO. LT Mark Preissler and CMR Chris Vance facilitated this transition, and they have provided excellent facilitation over all online collaboration efforts during the past year.

Building Effective Virtual Teams

As noted in the introduction, IP Community members are scattered across the globe, and variations in technology often make it difficult to stay connected. These are challenges unique to the emerging world of virtual work environments. Recent research provides several useful tips for managing goal, role, procedure and relationship issues across time and distance. A comparison between co-located (face-to-face) and virtual teams illustrates how the virtual team must adjust to compensate for the lack of resources that are almost transparent in the co-located setting.

Co-Located Team Advantages
Co-located teams have several inherent advantages over virtual teams. First, the co-located team has broad flexibility to adjust when facing emergent conditions. One team might meet regularly for two-hours in a face-to-face format. It might start with loosely-defined goals, but because of regular, frequent interaction, team members gradually clarify these objectives. Even when the team has clear goals it may run into contingencies, but the co-located team can easily call an

emergency meeting to deal with unanticipated challenges. As needed, the co-located team quickly adapts to clarify roles and responsibilities.

Co-located teams also have several options for building strong member relationships. For example, when a co-located team regularly meets other in person, its members quickly learn about stylistic and personality differences. One member might typically be quiet and reflective, but his infrequent comments are potent and insightful. Another member may be outgoing and energetic, helping others around her to feel a sense of excitement about any project. The leader's custom might be to address a vague question to the group—not to any particular person—expecting that someone on the team will quickly respond in a way that engages others. Over time, these patterns become an intuitive part of the team's work-flow, and the group matures into a seamless flow of interaction and communication. Each person knows what needs to be done, his or her role, and how to pitch in to work with or help others. High-performing relationships do not come easily and require consistent effort.

Co-located teams have many implicit advantages that many of its members may not even recognize. Frequent, spontaneous, interaction helps to build relationships, clarify goals and roles, and establish self-generated procedures for effectively accomplishing work.

Challenges for Virtual Teams
Whereas co-located teams have a wide range of options for confronting tasks of differing complexity, virtual teams are more limited. However, the great benefit of virtual teams is that they bring people together in ways that were not previously possible. Successful virtual teams learn to work within the limitations of technology and distance.
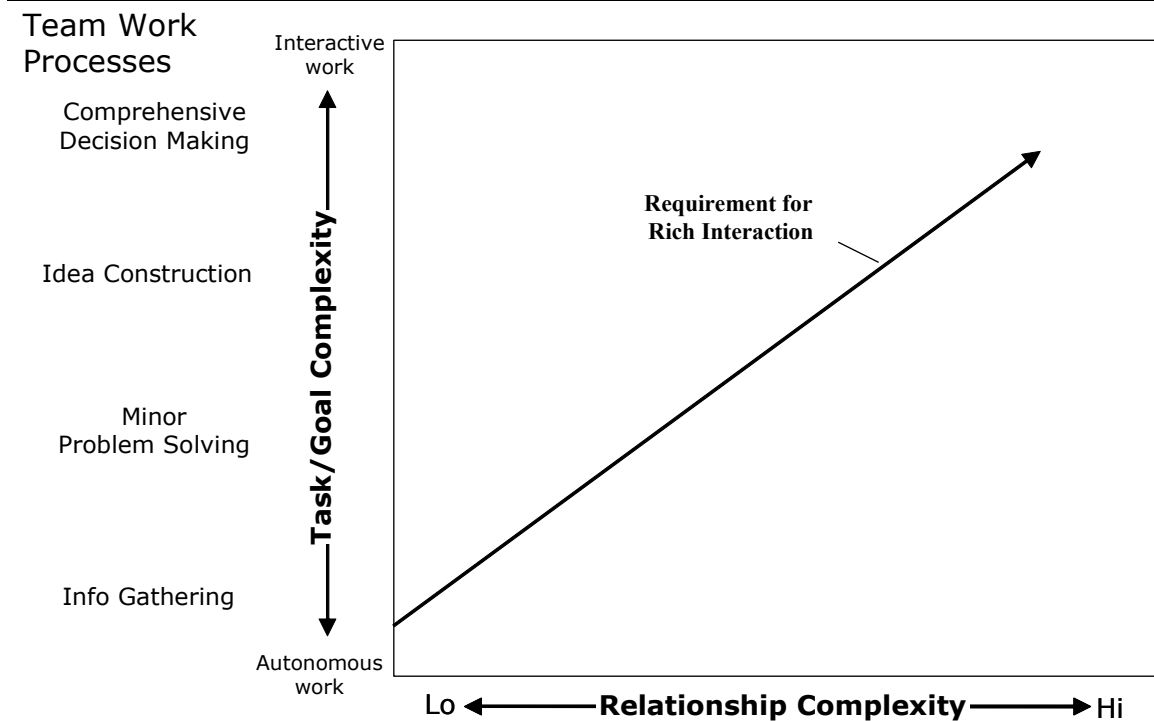
Members of the virtual team rarely see each other in person, and the most frequent forms of communication are usually quite "cold." Most virtual interactions (e.g. email, discussion threads) allow for only limited transmission of anything more than the written word. For example, in a discussion thread it is often difficult to know if others have read postings, and there is no way to see others' non-verbal signals. This ambiguity can leave the sender with many unanswered questions: Who is comfortable with an idea? Who is shaking his or her head? Who is excited? The virtual team cannot hear the excitement or anger in another person's voice, or benefit from the quiet observer—that is, unless it creates, discovers and normalizes procedures to make normally unconscious processes more transparent. Translating these non-verbal reactions into text is the only way for this information to filter out to the team, a task made more difficult by the fact that people are often unconscious of their own reactions.

The loss of interpersonal context increases the effect of complexity on a team's working procedures. With less frequent, more technical interaction, any contingencies or complexities with respect to goal, role, or relationship issues become more difficult to resolve. Calling an emergency meeting to resolve impasses—even on the phone—is difficult because of the challenge to connecting people across time zones and work schedules. Whereas the co-located team more easily makes quick course adjustments that circumvent major barriers, the virtual team often bumps into seemingly simple challenges that get in the way of serious progress. Any degree of complexity (e.g. loosely framed goals, interpersonal conflicts, mismatched expectations) serves to increase the challenge, and can cause virtual teams to merely tread water.

Complexities of Team Life

Research findings provide several ideas and best practices for working effectively in a virtual environment[ix]. Figure 2 depicts the dimensions that shape the requirement for intense communication when working in a virtual team environment. **Task and goal complexity** is represented on the vertical dimension. Examples of **work processes** that differ in level of task complexity are also illustrated. Some team tasks, like *information gathering*, can be achieved by team members who work autonomously. Other tasks require interactive work. For instance, *comprehensive decision making* requires coordinated and cooperative action, increasing the need for intense communication.

Figure 2: Factors for Assessing the Requirement for Rich Communication

Team Work Processes

Interactive work

Comprehensive Decision Making

Idea Construction

Minor Problem Solving

Info Gathering

Autonomous work

Task/Goal Complexity

Requirement for Rich Interaction

Lo ← **Relationship Complexity** → Hi

Role and relationship complexities, represented on the horizontal dimension, rest on the degree of team development and team member differences. Typically, roles and relationships are poorly developed early in a team's process and become more established with time and experience. Team relationship issues are almost always more complex at the beginning than at the end of a team's life. As team members become more familiar with each other, they gain greater awareness about how to interact with one another to accomplish work. Still, personality and working style differences can create high relationship complexity throughout the team's life cycle.

Either or both of the task or relationship dimensions is fluid—they increase or decrease from moment-to-moment and day-to-day. As either dimension increases, so increases the required

richness of interaction required for team success, as represented by the figure's upward-pointing curve. The capacity to assess factors associated with each dimension is important for planning team interaction activities to create an atmosphere for maximum success.

Task Complexity

By definition, a team is a group of people whose collective success requires interdependent action. However, this interdependence usually refers to success over an extended period of time. Actual, day-to-day interactions are often carried out with relative independence. On any given day, a team may be in one of various modes of operation. Figure 1 illustrates one way to classify these modes as activities of differing interdependence: Information Gathering, Minor Problem Solving, Idea Construction, or Comprehensive Decision-Making.

Information Gathering refers to any task whose primary objective is to do research, observe a situation or gather information. Most of this work is done by individuals working autonomously, who then report back to the team. This might include any of the following activities:
- Searching the internet for information.
- Reading books or other publications that may be relevant to the team's task.
- Making contacts with other organizations, groups, or individuals who may have key information.
- Observing and gathering data about ongoing implementation efforts.
- Listing or brainstorming ideas for possible development.
- Defining what is known and unknown about the team's goal or objective.

Minor Problem Solving encompasses processes that require a minimal level of interaction with other team members, and are typically related to the resolution of minor issues related to the task. This mode of operation may occur between major team meetings, when members are working to carry out team sub-tasks. Example activities relate to any of the following:
- Making decisions that have clear-cut, obvious answers and do not require the team's full voice.
- Pitching in to help another member who encounters an unforeseen obstacle.
- Adjusting team actions to carry out an easily-identified assignment.
- Communicating to trouble-shoot and diagnose a problem or challenge in the team's tasks.

Idea Construction relates to a higher degree of team interdependence, where the nature of the team's task requires multiple voices. Members of the team build upon one another's views to generate a group owned and generated idea. Success in this mode is far greater when several players pitch in to create unique solutions or to generate a rich picture of possibilities.
- Brainstorming and building ideas with others about future goals, objectives, or actions.
- Identifying alternatives.
- Exploring potential consequences of various alternatives.
- Assigning the role of devil's advocate to a member to promote thinking outside-of-the-box.

Comprehensive Decision-Making concerns moments of decision that merit rich conversation. This mode is appropriate at times of tension, or when real progress is difficult without strong engagement. Success in this mode requires strong participation from multiple members of the team. Examples include the following activities:
- Making critical decisions about crucial aspects of a task
- Resolving conflicting viewpoints among team members
- Building commitment and buy-in among members of the team.
- Improving team relationships at a deeper level

Working with Task Complexity

One measure of current task complexity is the degree of clarity in the team about its current position and progress. The previous framework provides a template for labeling a team's immediate work status. At any point in a team's life, each member has a sense of key goals, objectives, tasks and needed action steps. Questions a team member might ask to assess team progress include the following:
- To what degree do **you** feel like current goals, objectives and tasks are articulated clearly? Are the team's current tasks concrete, actionable, and measurable? Could you explain your team's current course in one paragraph or in just a few bullet points?
- To what degree do you feel like **others** on the team think that the team's work is articulated clearly?

The answers to these questions provide important clues about the team's true status. If you, as a team member, feel that the team's goals and objectives are unclear, then it is likely that other members of the team feel similarly. Moreover, if *any* team member senses ambiguity around current tasks and goals, then it is likely that the team needs to engage in the more complex team processes of idea construction and complex decision making.

Effective virtual teams take the time to check member assumptions regarding the task. Teams in any environment often experience discrepancies in perspective among team members. One team player may feel that an issue is clear and straightforward, but as she interacts with others it becomes apparent that others do not see the task similarly. In a virtual environment where there is less opportunity for informal checks, isolated team members are constantly in danger of work their way down divergent paths. Thus a regular check-in is critical to allow for minor course corrections.

Relationship Complexity

Volumes have been written about the intricacies, challenges and development of interpersonal relationships in work teams. This review specifically focuses on group development theory, which studies the evolution of group relations and dynamics over the course of a group's life. Bruce Tuckman[x] created the most famous of these models in the 1960s. Its four phases include Forming, Storming, Norming, and Performing. Issues related to relationship complexity vary with each stage of the model.

Forming

The first phase is a time for testing the waters of the new group. The group's members become orientated to the group's makeup and begin learning basic information about one another. Typically, people are very polite during this stage, primarily because they don't feel entirely safe. Conversations often have a tenuous feeling and team players often "hide and watch" waiting to see what happens. A few people, often including the designated leader, will dominate the conversation while others are silent. When they do talk, they make safe statements, usually within the bounds of what they think is expected or acceptable.

The key questions for the group center on issues of identity. Do I belong here—in *this* group? What is expected of me? What is our purpose? Who is the leader or who *should* be the leader? How will I fit in with others to make a contribution? Do I *want* to continue as a member in this group?

At this point, team members typically want to depend on a leader to tell them what to do, but this is not always the best approach. Left to its own devices, the team will self-organize. Teams progress when they allow time for members to share something about themselves. What are the passions and interests that brought them to the group? What does each member bring to the group in terms of skills, experience, or personal attributes? The team also benefits as members discuss their aspirations, goals, and objectives, linking these to the passions of each person. A team has successfully formed when each person feels an initial sense of commitment to the team and to its continued existence.

In terms of relationship complexity, the degree of ambiguity at this stage is very high. This is a period where an opportunity for highly personalized relationship building is essential. A team can only build cohesion through opportunity for high-level engagement.

Implications for Team Facilitation
Relationship complexity in this phase is **moderate** to **high**.
Members of the team need an opportunity to become acquainted. It is difficult to do this in a totally virtual environment. Groups should build time into their agendas for the sharing of backgrounds, preferences and images of the group.

Storming

After the initial stage of forming, members of the group begin to be more proactive. Almost naturally, members of the team gravitate together in clusters of individuals with similar interests or shared passion. Often people team up with others who share similar values and assumptions, thought these are rarely discussed. Simultaneously, individuals identify and adopt roles and responsibilities. Some people assume responsibility for activities linked to the task such as seeking information, clarifying objectives, identifying resources, or coordinating work processes. Others are concerned with the maintenance of working relations and focus on the resolution of conflicts, building interpersonal awareness, and establishing team commitment. These informal roles are important because they become the building blocks for long-term team stability.

Still, there is a reason why this stage is called "storming." Every team member has an evolving image—based in his or her own passions, assumptions and values—of what it means to be a part of the team. As team members put these images into practice, they quickly discover differences. Often, teams initially react to this reality by limiting themselves to "polite" conversations. The longer this state continues, the more concerned, anxious, and frustrated members become. Eventually, the tension bursts and group members wrestle with their differences.

Engaging in discussion about cores issues is an important step in a team's development. In healthy storming, members of the team give full voice to differing perspectives and others on the team honor divergent opinions and points-of-view. This requires honest conversation about basic expectations and values. In general, the clearer the issues, the quicker disputes are resolved. Dysfunctional storming occurs when people explode and emotions run so high that team members are not capable of hearing and respecting others. In its worst form, dysfunction leads to the loss of members or to the team's dissolution.

When a team successfully moves through this phase, its members sense renewed purpose, cohesiveness, and commitment to each other and the mission. Storming helps the team to refine its mission and goals, to clarify roles and expectations, and to create norms for appropriate interaction.

Implications for Team Facilitation
Relationship complexity ranges from **moderate** to **high**.
Usually, at the beginning of this phase, the group is not mature enough to fully engage in healthy storming as members of the group are solidifying their initial acquaintance with each other. As the group begins the process of moving out on its goals, objectives and tasks, relationship complexity increases as the tension over unresolved discrepancies increases. Good conflict management skills are helpful in this phase.

Norming

When a team enters the norming phase, members feel connected with one another as they work toward a common end. Team members hold similar ideas and images about the correct function of the team. They work together through seemingly refined procedures to carry out self-defined task responsibilities. These rules of conduct, sometimes unspoken, provide a structure for interacting efficiently. The team may demonstrate cohesiveness, and feel some euphoria that they "have finally figured things out." This feeling produces a sense of accomplishment and self-satisfaction. Members team may develop attachment to others on the team, creating strong camaraderie and pride in the team's accomplishments.

But strong norming also seeds the potential for complacency. Standard operating rules and procedures can undermine group effectiveness. Sometimes group members feel pressured to conform when they feel internal conflict. "Groupthink" may set in if the team's norms become so strong that they no longer allow space for diverse voices or opinions. Another bubble can form, that if not confronted, leads to the suppression of individuality. Signs of that this shift is coming include a sense that group members are losing interest or energy, that old differences are resurfacing, or the blaming of others for apparent failures. Individuals on the team may feel like

"someone else" will eventually take responsibility for the team's shortcomings. The phase culminates as mounting tension causes an event that produces another major shift the team's consciousness. When this transition occurs, it may feel like the team revisits the storming phase, only this time, there is a mature sense that individuals cannot simply bury their differences.

Implications for Team Facilitation
Relationship complexity usually ranges from **low** to **moderate**.
Typically, at the beginning of this phase the group has settled into a routine where it can operate comfortably for some time. Signs of a sea shift will generate a moderate escalation in tensions among team players, which signals the need for more focus on team relationships.

Performing

One mark of performing is a willingness to acknowledge both benefits of the team and the importance of individuality within the team. The team enters this state when it works out unresolved challenges and issues through healthy dialogue. Norms still exist, but these are balanced by respect for the diversity of opinions and perspectives that may exist among each member. People in the team come to know one another very well and no longer see others as a threat. Each member feels a sense of "safety" that allows for the sharing of previously undisclosed aspects of personal life. Individuals also feel that they can share any thought or idea, even contradictory ideas, with team members. This becomes an important check against the danger of Groupthink, as the team realizes that differences can be a resource for new and important ideas.

The deeper level of understanding that emerges in this stage gives the team more flexibility for carrying out its tasks and objectives. Individuals coordinate their work with greater ease. When members feel greater trust and safety, their capacity for innovation also increases; thus, the team increases its capacity to make deep improvements in its processes and procedures. Conflicts still surface from time-to-time, but are resolved more quickly and often without the pain experienced in other phases. The performing stage is characterized both by mature relationships and a greater capacity to move with efficiency toward goals and objectives.

Implications for Team Facilitation
The need to address relationship complexity is typically **low**.
By this point, the team has matured to the point where people know one another quite well. Meeting times can focus more on performance, but it is still wise to check in with each person about their "sense of the team."

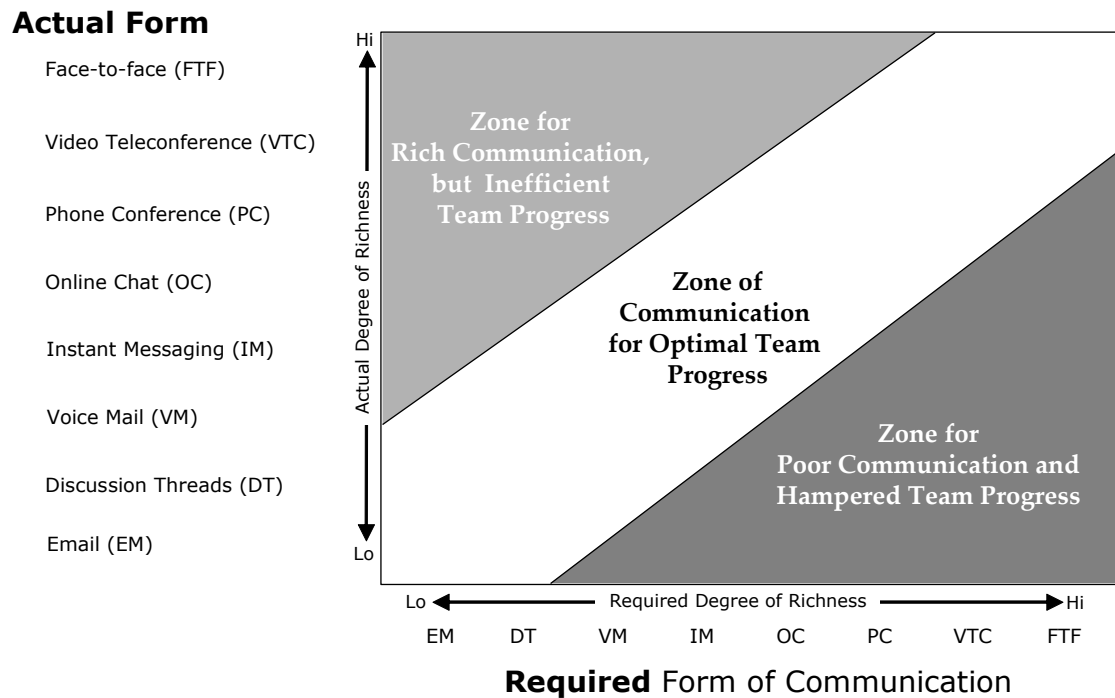## *Managing Team Interaction Choices*

The preceding analyses suggest several implications for the management of virtual teams. These include matching team interaction complexity to an appropriate form, planning regular "peak moment" interactions, managing emergent complexities and equivocalities, and personalizing electronic communication.

Tip #1: Match Task and Relationship Complexities with Form of Message

Choosing the right form of communication at the appropriate time is one of the most important decisions for working in the virtual environment. "One hour of face-to-face is worth four hours of VTC," declared one IP Officer in a recent interview[xi]. Research described in this section not only provides support for this claim, but it also suggests guidelines for determining when this may NOT be true.

Communication forms differ greatly in their ability to transmit information. A medium's "richness" is the amount and array of information conveyed through the form of interaction. Some writers have compared this capacity to the properties of a pipeline: "Just as the physical characteristics of a pipeline limit the kind and amount of liquid that can be pumped through, the physical characteristics of a medium limit the kind and amount of information that can be conveyed.[xii]"

Figure 3[xiii]: Comparing Required and Actual Interaction Forms to find the Zone of Communication for Optimal Team Progress

Actual Form

Face-to-face (FTF)

Video Teleconference (VTC)

Phone Conference (PC)

Online Chat (OC)

Instant Messaging (IM)

Voice Mail (VM)

Discussion Threads (DT)

Email (EM)

Actual Degree of Richness (Hi → Lo)

Zone for Rich Communication, but Inefficient Team Progress

Zone of Communication for Optimal Team Progress

Zone for Poor Communication and Hampered Team Progress

Lo ← Required Degree of Richness → Hi

EM   DT   VM   IM   OC   PC   VTC   FTF

Required Form of Communication

Source: Based on Lengel R.H. & Daft, R.L. (1988) "The selection of communication media as an executive skill," Academy of Management Executive, 2 (3), p.226

Differences in richness vary according to the medium's capacity to (1) convey simultaneous information cues, (2) foster rapid feedback, and (3) express personalization. Information cues include the numerous forms of non-verbal information in an interaction (e.g. head nodding, facial expressions, voice inflection, etc.). Immediate feedback is possible only in synchronous

communications, where interaction partners can instantly respond to emerging conversation. Personalization is the capacity to focus on and convey emotion in the interaction (e.g. a sense of urgency, passion for a certain action step, concern about a personal situation). As a general rule of thumb, the greater a medium's capability for carrying information, the greater the medium's richness.

Figure 3 illustrates the range of available choices for team interaction, as ordered by level of richness. At the richest extreme (e.g. face-to-face), communication transactions permit instantaneous feedback via multiple channels that makes it easier for participants to reach common interpretations. At the leanest extreme (e.g. fax), communication interactions tend to be very impersonal, they convey limited channels of information, restrict feedback, and are often rule or procedural-based. Lean mediums can be very useful for conveying information that is relatively standard or broadly understood.

Face-to-face communication is by far the richest of mediums. When people are talking in the same space they can immediately see and feel the ebb and flow of interaction. Nonverbal cues convey a sense of the conversation, and feedback is instantaneous. Members of a team can quickly check their assumptions and interpretations, and they are more capable of reaching a common vision that will compel them forward. This quick, free-flowing of information fosters an atmosphere where the exchange of information is customized. Team interaction is a direct experience and is more personal; thus, each player has better opportunity to express his or her own style. The richness of face-to-face communication comes from the potential for simultaneous intellectual and emotional engagement in the group.

Electronic conversation technologies are leaner forms where participants directly communicate, but in a more limited format. For example, telephone conversations or virtual teleconferences provide a forum for direct conversation, but other cues are missing. The participant can hear the message and inflections of voice, but other non-verbals are difficult to catch. These forms provide quick feedback, but the richness of the message is limited when participants cannot make eye contact, see a head nod, observe someone blush, or capture their posture in the room. Voice technologies are highly interactive, but still don't quite approach the richness of face-to-face interaction.

Next in the hierarchy are less direct forms of interaction, where one element of richness (multiple cues, feedback, or personalization) is severely limited or entirely blocked. For example, in the online chat feedback is fairly rapid and participants have the capacity to address messages in a fairly personalized way, but their capacity for taking in information is limited to streams of text. Interaction members have very limited capability for hearing and perceiving the emotions of others, and the number of participants is limited to just a few players at a time. Similarly, voice messaging conveys a strong sense of emotion and a high degree of personalization, but it is severely limited in its capacity for rapid feedback. Less direct forms of interaction are especially useful for interacting in team environments where players already have familiarity with one another, or where the team players are reasonably clear about major underlying assumptions and tasks.

Finally, the leanest forms of interaction in a virtual team environment are those that severely limit the capability for personalization and feedback, and rely almost solely on text for conveying the message. Discussion threads present an opportunity for building upon a central theme or idea over a long period of time. Feedback can be painfully slow, and interactions require patience and time. Threads are also poor for personalization. Though they are often read by numerous others, the reader typically doesn't feel compelled to add to the thread unless he or she feels intellectual attachment to the discussion theme. Email is more personal, but it is still limited in its capability for inciting rapid feedback. In either form, the degree of personalization rests on the users' capability for translating non-verbal cues into text, as in the recent advent of emoticons, (e.g. the "smiles" using punctuation). As with other less direct forms, these methods are most useful in a routine environment where assumptions are broadly shared among team players.

High performing teams match communication medium to the requirements for effective team progress. Figure 3 illustrates how the *required* and *actual* forms of communication interact to form zones of differing team effectiveness. The team's progress will be limited during moments it needs rich communication (e.g. face-to-face or phone conference), but chooses instead to rely on lean communication (e.g. email). Conversely, the team will operate with an overabundance of capacity when it chooses rich communication where lean communication will suffice, though this situation is preferable to a hampered condition. Optimal performance comes when the team learns to work with ebbs and flows between moments of rich and lean interaction that match the team's evolving needs.

A final consideration in the choice of medium is the level of experience among players in the interaction. Those who know the medium will be more adept at moving multiple dimensions of information through the channel. Speaking through a new medium, in many respects, is like learning a new language. To speak with fluency, each participant must learn and practice the protocols and rules. Newcomers are not likely to understand these nuances, and they will be less adept at working in the medium. Most effective teams develop and become fluent in their own norms of communication over time.

Tip #2: Plan a Rhythm for Regular, Rich Communication

Research demonstrates that most effective virtual teams not only match complexity to message, but they also schedule a rhythm of regular coordination meetings that take advantage of rich communication options. Successful teams establish a cyclical pattern of repeating interaction moments that ebb and flow between rich and lean mediums, as illustrated in Figure 4. The graph shows that the essential rhythm is set by peak interaction moments, where members of the team engage in rich dialogue. These meetings provide sufficient capacity for an intense agenda, where the team resolves ambiguity, tackles complex work processes, or builds stronger relationships. The valleys in Figure 4 represent leaner interactions, where team players work on agenda items generated during the previous peak and prepare for the next one. Coordination meetings provide an obvious pace that shapes team member expectations and they "rhythmically pump new life into the team's processes[xiv]."

Benefits of Regular Meetings. Another key finding in recent research suggests that a team must plan the peaks for these patterns rather than let them emerge when it seems appropriate. A number of reasons support this assertion. First, the logistics for scheduling virtual team meetings can be prohibitive, especially if the team wishes to hold a face-to-face meeting or a video teleconference. Bringing together people from all over the world requires coordination and foresight. Even the scheduling for a phone conference can be tricky, especially when team members are scattered across numerous time-zones. It pays to schedule these events well ahead of time.

Figure 4: Healthy Rhythm of Rich and Lean Communication in Successful Virtual Teams
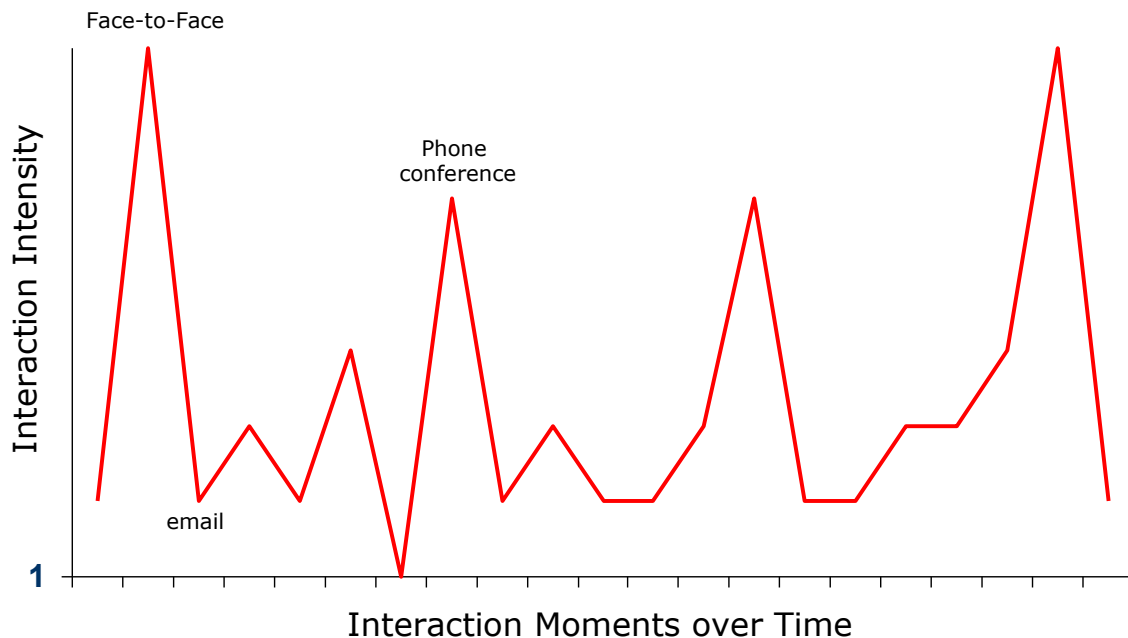
Source: Maznevski, M.L., & Chudoba, K.M. 2000. Bridging space over time: Global virtual team dynamics and effectiveness. *Organization Science*, 11 (5): 473-492.

Second, regular meetings create an incentive for team members to accomplish their individual tasks in pursuit of progress. Less successful teams sometimes assume that the appropriate moment for "re-grouping" will become self evident. In contrast, research demonstrates that peak moments tend to drive the momentum of the group. Deliberate, disciplined attention to the rhythm keeps the team on track.

In addition, the regular meeting provides a regular, unrehearsed opportunity for the development of team member relationships. As noted earlier, high performing teams develop over time, and can only develop through regular interaction. The team cannot develop if it does not reinforce ongoing relationships. Transitions between levels of development do not necessarily coincide with peak meetings, but the successful team recognizes and processes these shifts during regular meetings.

Finally, the pulse of regular coordination meetings reduces task ambiguity and shapes expectations about norms for decision making. Peak moments create stability and a sense of continuity over time. Norms are more easily established and enriched. In such an environment,

team members work with confidence and greater efficiency between coordination meetings, even when individuals work in isolation or in sub-groups.

Frequency and Content of Virtual Team Meetings. The frequency of peak meetings depends on a combination of several factors. As a general rule, the greater the consistent level task complexity or relationship complexity, the closer peak meetings should be spaced. Tasks requiring greater interdependence would increase the need for greater frequency as would difficulty in the ability of team players to connect. The ability for team members to communicate is also a factor: If individuals cannot reach other between meetings because of technological limitations, then the need increases for more frequent planned interactions. Conversely, the need for frequency decreases as the task becomes more clear and relationships become stronger. Both task and relationship complexities tend be greatest during the early portion of a team's life, and they decrease over time; therefore, the need for frequent peak meetings is greatest (e.g. every 2 weeks) when the team is newly formed, but can taper off (e.g. every 4 weeks) as the team becomes more certain about goals, roles, relationships and procedures.

The type of meeting can also vary. A team's strongest rhythm is set through face-to-face interaction, but many successful teams use phone conferences to establish a secondary, more frequent rhythm that helps them establish momentum (citations in Markovsy and Chadora). Phone conferences work very well when the team's tasks are of moderate complexity and group members already have a degree of familiarity with one another. However, in an environment where tasks are extremely interdependent or where team players come from vastly different organizations or cultures, a face-to-face interaction is typically the only way for the team to make significant progress.

The agenda for peak meetings is also important. Activities should center on the most challenging issues and should always include an element of relationship building. Effective teams take full advantage of opportunities for rich communication to work through their most complex and intricate decisions. Planning for high intensity interaction is simply an extension of the principle that the form of interaction should match the message.

Tip #3: Manage Emergent Equivocality

Another suggestion deals with the ebb and flow of team life. Some of the ideas presented in this report imply a large degree of predictability, but the reality of most team life suggests that conditions are constantly in flux. This means that team members must be sensitive to the emergence and effect of changes. Effective teams find ways to successfully work through any challenge.

Equivocality,[xv] the degree of ambiguity at any given moment, is one useful concept for understanding the emerging complexities of team life. Many situations are novel, and they don't present an obvious question to be solved. These situations can be events that are subject to multiple interpretations. At these moments it is difficult to sort out the "known" from the "unknown," and the team may have no past experience from which it can derive a clear roadmap for future action.

Equivocality is more than uncertainty, where questions are clear and merely require more information to resolve them; rather, it presents a situation of maximum complexity, where team players have to define their way to a solution. Team members have to spend time thinking not only about what to do, but about what to ask. They have to invent the questions that help them find and fulfill an objective. They must spend time searching beyond current sources of information and data, relying on the wisdom of experience and judgment.

Several conditions increase the likelihood of equivocality. For example, equivocality often rises when the team's players represent widely divergent organizations or functions. Different functions (e.g. Surface Warfare vs. IP Community) will see an ambiguous problem through different lenses which need to be explored. Predictably, equivocality also increases with greater task and relationship complexities. For example, comprehensive decision-making requires more discussion and work when done in an equivocal environment. Relationship complexities are more intricate when equivocal team dynamics make it more difficult to know where people are coming from during the group development process.

Because it is related to both task and relationship complexity, the degree of equivocality is an important consideration when deciding upon an appropriate approaches to communication at any moment in a team's life. The greater the equivocality of a moment, the greater the team's need to invest in rich communication to clarify assumptions and reach agreement. Usually, team players need to share a significant amount of information in an environment where they can receive immediate feedback to discover discrepancies in perspectives and interpretations. The need for social support is also greatest in an equivocal situation. As illustrated earlier, rich media provide the best support these moments because they minimize the possibility for confusion or misinterpretation.

Tip #4: Address Communication Directly to a Respondent

In the past year, a common observation from pilot group facilitators was that that they could not generate a response from other community members when sending or posting a request for feedback to the community at large. This was often a source of frustration, particularly as they felt like their work was intended for the benefit of the community at large. The sender is often left to wonder about the significance of community inaction on such requests: Does it mean that community members don't care? Does it mean that community members are in full agreement? Does it mean that the issue isn't particularly relevant at the moment. Without additional information, it is impossible to obtain answers to these questions.

At least one of the reasons that people tend to respond less in a virtual environment is the sense of "anonymity" that we feel when interacting online. The earlier discussion about communication richness suggested that leaner forms of interaction convey fewer dimensions of information. We use whatever information is available to assess not only the message itself, but the responses of others.

For example, a strong norm in most face-to-face interaction is that every question deserves a response. A question posed to the group often initiates a number of informal reactions. We may

see an "awkward silence," one or two people may be nodding their heads, others may stare at the floor or seem detached, etc. These nonverbals communicate a lot of important information about the interaction. The "unspoken question" in such a setting is "What will others say?" Often, when an answer is not forthcoming someone will eventually "break the silence." Thus, the social influence of the face-to-face is very powerful in creating a setting where generally stated questions can elicit open-ended responses.

The online environment is quite different. Most obviously, the informal social influences are largely missing. For example, in a discussion thread, we only have the text as a basis for our judgments. We can't see the face of the person who sent the message. We often don't know for sure if he or she is excited or upset. More importantly, we don't see how others are responding. The unspoken question, "What will others say or do?" is left unanswered because we simply do not have enough informal information to make a judgment. Moreover, in the rush of daily life we often read a message, and say to ourselves, "I'll get around to making a response later," or "Someone else will take care of it." The problem is that almost everyone else in the interaction reacts in the same way. The predictable result: few people ever "get around to it" or "take care of it." This norm is reinforced by the anonymity of the situation, where every participant remains completely invisible to others—and therefore less accountable to them—unless he or she responds.

Non-response is not unique to online settings. One infamous case occurred in New York when a woman was beaten and murdered in the streets outside of several high-rise apartment buildings.[xvi] Investigators later discovered that no less than 30 people actually heard her cries through open windows, yet no one called the police to report the crime-in-progress. Why the non-response? Researchers conclude that it was, in large part, due to the anonymity of the situation. "Someone else will take care of it, so I don't need to worry about it." Often "someone" does react, but when they don't, the result can be tragic. In many ways, community "life" depends on the willingness of community members to reach out to one another through the vastness of cyberspace.

One way to increase the likelihood of responses is to decrease the anonymity of the interaction by personalizing messages wherever possible. For example, if you genuinely need to receive feedback from the community, you might try a multi-tiered approach using both a discussion thread and email. In the thread, identify key people you wish to hear from, particularly if it is important for the whole community to see their responses. Then follow up with an email directed by name to specific individuals. Include in your message the specific action you need, with a timeframe for response (e.g. "Please answer by Tuesday."). This example is just one way to achieve the objective of decreased anonymity. As it matures, the community will create its own norms for creating more personalized cyber-communications.

Conclusion

The IP Community has achieved significant progress its two years. Elaborate here… The July 2003 AI Summit will provide an additional opportunity to move forward toward a bright future.

End Notes

[i] See Fry, R., Rubin, I., & Plovnick, M. 1981. Dynamics of groups that execute or manage policy. In R. Payne & C. Cooper, *Groups at work*: 41-57. New York: John Wiley & Sons.

[ii] For a detailed discussion of performance-based trust in work groups see Kirkman, B.L., Benson, R., Gibson, C.B., Tesluk, P.E., & McPherson, S.O. 2002. Five challenges to virtual team success: Lessons from Sabre, Inc. *Academy of Management Executive*, 16 (3): 67-79. An excellent description of organization-level trust is found in Maravelias, C. 2002. Trust-based control. In B. Hedberg, P. Baumard, & A. Yakhlef, (Eds.). *Managing imaginary organizations: A new perspective on business*: 29-56. Boston: Pergamon.

[iii] See Kirkman, B.L., Benson, R., Gibson, C.B., Tesluk, P.E., & McPherson, S.O. 2002. Five challenges to virtual team success: Lessons from Sabre, Inc. *Academy of Management Executive*, 16 (3): 67-79.

[iv] This was one finding from a mini-study involving pilot group facilitators in December 2002, and was again discussed in the February 2003 face-to-face meeting.

[v] For more information about the nature of these decisions, read CMR Chris Vance's regular reports to the community or contact him directly. CMR Vance is currently (2003) posted at the Naval Postgraduate School.

[vi] Italics added. See Kaplan, Soren. 2002. *Models for group and organizational collaboration*. World-Wide Web: www.icohere.com. Access date: July 12, 2003. See also the other resources on the I-Cohere website, which is filled with useful information.

[vii] See Dolezalek, H. 2003. Collaborating IN Cyberspace. *Training*, 40 (4): 32-36, and McDermott, R. 2000. Critical success factors in building communities of practice. *Knowledge Management Review*, 3 (2): 5.

[viii] For more information about the nature of these decisions, read CMR Chris Vance's regular reports to the community or contact him directly. CMR Vance is currently (2003) posted at the Naval Postgraduate School.

[ix] See Maznevski, M.L., & Chudoba, K.M. 2000. Bridging space over time: Global virtual team dynamics and effectiveness. *Organization Science*, 11 (5): 473-492. These authors conducted an extensive study of three virtual teams in which they discovered and describe success factors related to task complexity, message complexity, and rhythm.

[x] Originally published in Tuckman, B.W. 1965. Developmental sequence in small groups. *Psychological Bulletin*, 63 (6): 384-399. Reviewed in McShane, S.L., & Von Glinow, M.A. 2003. Foundations of team dynamics. In S. L. McShane & M. A. Von Glinow, (2nd Ed.). *Organizational behavior: Emerging realities for the workplace*: 224-256. Boston: McGraw-Hill Irwin. In addition, numerous useful references to Tuckman's model are easily found on the World-Wide Web.

[xi] See IP AI Summit Facilitator Interview Report, December 2003.

[xii] See Lengel, R.H., & Daft, R.L. 1988. The selection of communication media as an executive skill. *The Academy of Management Executive*, 11 (3): 225-232. Also, Daft, R.L., & Lengel, R.H. 1986. Organizational information requirements, media richness and structural design. *Management Science*, 32

(5): 554-571, and Daft, R.L., Lengel, R.H., & Trevino, L.K. 1987. Message equivocality, media selection, and manager performance: Implications for information systems. *MIS Quarterly*: 355-356.

[xiii] A similar model is found in McShane, S.L., & Von Glinow, M.A. 2003. Communicating in organizational settings. In S. L. McShane & M. A. Von Glinow, (2nd Ed.). *Organizational behavior: Emerging realities for the workplace*: 320-352. Boston: McGraw-Hill Irwin.

[xiv] See Maznevski, M.L., & Chudoba, K.M. 2000. Bridging space over time: Global virtual team dynamics and effectiveness. *Organization Science*, 11 (5): 473-492.

[xv] See Daft, R.L., Lengel, R.H., & Trevino, L.K. 1987. Message equivocality, media selection, and manager performance: Implications for information systems. *MIS Quarterly*: 355-356.

[xvi] See Cialdini, R.A. 1988. *Influence: Science and practice*(2nd ed.). Glenview, IL: Scott Foresman. This is an excellent reference for research on the ways people influence one another.