
An Inductively Derived Model of Leader-Initiated Relationship Building with Virtual Team Members

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ABSTRACT: This paper seeks to add to the nascent research literature on virtual teams and virtual team leadership by investigating the issues facing virtual team leaders as they implement and lead virtual teams. In particular, the way in which leaders develop relationships with their virtual team members is explored. A research framework involving action learning was instituted, with data collection and analysis based on grounded theory approaches. In all, seven virtual team leaders from a variety of New Zealand organizations took part in the study. The data showed very clearly that the leaders considered it essential to build some level of personal relationship with their virtual team members before commencing a virtual working relationship. A unifying framework of three interrelated theoretical steps, which illustrates how a virtual leader builds relationships with virtual team members, is introduced. These three steps are *assessing conditions*, *targeting level of relationship*, and *creating strategies*. This study is the first to identify the steps a virtual team leader undertakes when building relationships with virtual team members. The implications for virtual team practice and research are discussed.

KEY WORDS AND PHRASES: action learning, grounded theory, information technology in team building, leadership, relationship building, trust, virtual teams.

ORGANIZATIONS ARE CHANGING TO MEET THE DEMANDS of the fast-paced, dynamic global economy, and many organizations are moving toward a collaborative, networked organizational model through the introduction of information and communication technologies (ICT). ICT has the potential to profoundly alter organizational

structure by acting as the glue that cements relationships across functions, divisions, and organizations, as well as across distance, time, and culture. ICT supports the use of virtual teams in organizations by providing the links and information needed for distributed individuals to work together [43].

Virtual teams are a relatively new phenomenon, and are defined as "groups of geographically and organizationally dispersed coworkers that are assembled using a combination of telecommunications and information technologies to accomplish an organizational task" [67, p. 18]. Virtual teams communicate and work synchronously or asynchronously through such technologies as telephones, electronic mail, bulletin boards, audio/video/data conferencing, automated work flow, electronic voting, and collaborative writing [11, 59]. Face-to-face communication may also be an important factor [47].

Virtual teams play an increasingly important role in organizational life and offer organizations the flexibility to remain competitive [49]. Maznevski and Chudoba [47] point out that global virtual teams are often assigned the most important tasks in an organization, such as multinational product launches, negotiating mergers and acquisitions, and managing strategic alliances. Virtual teams are projected to form the nuclei of twenty-first-century organizations [28]. However, the use of virtual teams has outpaced our understanding of their dynamics and unique characteristics [16, 52]. Leadership is one of the most fundamental of these virtual team dynamics.

Virtual Team Leadership

THERE HAS BEEN LONG AND EXTENSIVE RESEARCH on leadership in collocated teams and groups. A 1985 study counted over 300 definitions of leadership [6]. Typically, leadership can be viewed in a number of ways; for example, as a structured authoritative role [31], or as the ability of individuals to intrinsically or extrinsically motivate followers [4]. Barge [2] proposes leadership as mediation in order to overcome the variety of task and relational problems that may be encountered by a group. One of the key skills in Barge's concept of leadership is that of relational management, which refers to the ability of leaders to develop interpersonal relations that foster a workable balance of cohesion, unity, and task motivation in the group.

According to Fjermestad and Hiltz [22], leadership in the group support systems process is an important variable influencing the effectiveness of small group decision-making. Other studies [29, 30, 51] also suggest the critical role leadership plays in groups working via ICT. In virtual teams, leaders are often the nexus of the team, facilitating communications, establishing team processes, and taking responsibility for task completion [20]. Technology becomes the crucial and ever-present link between virtual team members [43], one that team leaders must manage skillfully. Although recent research [15, 38] has begun to look at leadership issues in virtual teams, Kayworth and Leidner state, "that little empirical work exists that examines leadership in virtual team settings" [38, p. 8].

But clearly, to some extent, the role of virtual team leaders necessitates a different level of skills than those of traditional collocated team leaders. Leaders can no longer

control the work processes of virtual teams with traditional means, and need to develop a different set of coordination and control mechanisms [55]. Virtual team leaders must be able to “read” all the personal and contextual nuances in a world of electronic communications [53]. They must be able to understand the possible causes of silence, misunderstandings, and slights [14], without any of the usual signs to guide them. Leaders must be sensitive to the “flow” of team processes, paying attention to the smallest matters to head off potential troubles that could derail the team’s task. Virtual team leaders, therefore, must not only manage the project tasks and occasional personality conflicts normally associated with a collocated team, but must also be able to guide a team of geographically distributed, and often organizationally and culturally different individuals, in creating a common purpose. They may also be the person interfacing with stakeholders and extended team members, such as direct and indirect managers, customers, and suppliers.

Whereas the global, organizational, and technological pieces are in place for a revolutionary change in the way people work together, it is imperative that virtual team members and leaders have the cognitive models they need to operate effectively in this new environment. The importance of relationship building in a virtual environment and methods to build relationships are significant factors when practitioners engage in virtual work.

Relationships in Virtual Teams

ALL TEAMS PRESENT LEADERSHIP CHALLENGES. These are magnified in a virtual environment, where leaders must work across time, space, and organizational and cultural boundaries, through the intensive, and often exclusive, use of ICT, and have implications for a number of important team processes, including communication, collaboration, and socialization, as well as overall team effectiveness [32, 33, 41]. Relationship building is a critical and fundamental component of these team processes.

The study of relationship building in traditional teams is extensive. Collins and Guetzkow [12] argue that a task group or team faces two problems—task and interpersonal obstacles. Relationships cannot be separated from communication, and the nature of the relationship is defined by the communication between its members [5, 7, 9].

The link between team effectiveness and team member relationships has also been an important area of study in virtual teams. Stronger relational links have been associated with higher task performance [73] and the effectiveness of information exchange [74]. Effective communication is a key to successful virtual teams, and one of the keys to effective communication is how well team members are able to build and maintain their personal relationships [41]. Building relationships with virtual team members is clearly of fundamental importance to a virtual team leader, as people generally rely on personal relationships to resolve problems and deal with unusual situations [39]. Personal relationships also serve as a valuable governance mechanism; for example, trust developed between parties involved in an economic exchange reduces the likelihood of opportunistic behavior [27, 67].

Walther and Burgoon [72] found that strong relational links are associated with enhanced creativity, motivation, increased morale, better decisions, and fewer process losses. Research shows it is easier to complete relationship-building activities in a face-to-face context than in a strictly virtual one [74]. This may, in part, be explained by media richness theory, which explains that the lack of contextual cues and timeliness of feedback inherent in computer-mediated communication can negatively affect the building of relationship links [17].

Two studies on virtual teams posited that increased team relationship building and social integration could reduce attribution bias and increase knowledge sharing among team members [14, 16]. The authors of these studies called for further investigation of potential moderators of relationships. In this context, leaders could be considered "relationship moderators."

The second step in one well-known team performance model ([19] adapted by [73]) is *trustbuilding*, which asks the question "Who are you?" This is essentially what a leader is asking and answering when building relationships with team members. In his TIP theory (time, interaction, performance), McGrath [48] suggests that the development of relational links in groups involves performing activities related to member support and group well-being functions. In this theory, groups make contributions at three different levels: (1) production function, (2) member-support function, and (3) group well-being function. Warkentin and Beranek [73] comment that in a team with no past history, working on complex problems with much technological and environmental uncertainty, that is, a virtual team, members will have to engage in all three functions to avoid negative effects on performance.

Whereas face-to-face meetings are the preferred way to build relationships and, in general, deal with sensitive and complex situations, it is possible, with the skillful and thoughtful application of virtual communication channels, to successfully lead a completely virtual team. Research has found that computer-mediated teams do share relational information and are likely to develop relational links over time [71, 74]. Since many virtual teams are project- or deadline-driven, however, there may not be the opportunity to allow relationships to develop over time. The idea of "swift trust" was put forth by Jarvenpaa et al. [33] to describe how virtual team members may be able to accomplish tasks without first having developed relationships. This rational perspective centers on the view of "calculus of self interest," which weighs the costs and benefits of certain courses of action between team members. If a team member feels confident there will be a "payoff" for cooperating with and trusting virtual team members, then he or she will do so. Such trust, however, appears to be fragile and temporary.

The role of a team leader is to move the team toward its objectives by increasing team member motivation and more fully engaging members in the work process [4]. This is done through a sustained process of relationship building, idea generation, prioritization, and selection. The particular challenge to virtual team leaders is to manage this process through electronically mediated interactions across spatial, temporal, organizational, and cultural boundaries.

The literature clearly demonstrates that relationship building is a key factor in team success, and of significant concern to team leaders. There is also recognition in the

literature that virtual team leadership is likely to be an inherently more complex process than traditional, collocated team leadership. What is currently lacking is research into the connection between virtual team leadership and relationship-building processes in virtual teams.

Research Methodology

THE RESEARCH QUESTION GUIDING THIS STUDY IS: "What are the issues facing virtual team leaders and how do they manage them?" The unit of analysis is the team leader. The issues facing the team leader in the virtual team environment are many and varied. The most obvious include team members, team tasks, organizational contexts, and the use of ICT. In this study, these issues are examined from the perspective of the team leader. To gather data of sufficient depth to measure leader perceptions, an inductive qualitative methodology was used. Action learning, a form of action research, allowed this exploratory research to focus on the emerging leadership issues and challenges inherent in virtual team settings [37], whereas grounded theory methods were used for data analysis.

To ensure the study's participants (Table 1) had experiences to talk about, a specially designed, action learning-based, virtual team program was developed to provide participants with the knowledge and skills to both lead a virtual team and to have the opportunity to talk about them. This allowed for structured, yet flexible, training, semi-structured interviewing, and freewheeling discussions for participants and the researcher. No particular hypothesis was being tested in this research design, but the inductive approach was expected to produce a set of theoretical constructs and a description of their relationships relevant to the experiences of the participants.

The Virtual Team Action Learning Program and Data Collection

Action learning is closely linked to action research, and is cited as one of the "several streams" of action research [40]. Action learning is described as the process by which groups of people work on organizational issues and come up with solutions that may require changes to be made in the organization [61]. In action learning, the learning group, known as the action learning "set," meets regularly and provides a supportive and challenging environment in which members are encouraged to learn from experience and share that experience with others [44, 46]. Following an action learning model developed by Yoong [75], the action learning (AL) program developed for this study had participants working in "learning groups" to explore their own virtual team leadership experiences, and to reflect and improve on their practice. This interlinking of action and reflection, in cooperation with others, resulted in learning for the research participants and data for the researcher.

In addition to generating data, the AL program was a way to entice busy professionals to take part in a research project on virtual teams. When this research began in 1997, published material on virtual teams was limited to practitioner literature or

Table 1. Summary of Participants, Their Organizations, and Virtual Teams

Participant/position	Organization	Project	Team
DW, managing director	NZ (New Zealand) advertising company—part of an international partnership.	Initiate a project within the international partnership.	Global, volunteer, CEO membership, four to eight members.
BC, senior policy analyst	NZ government department.	Long-term (> 2 years) treaty negotiation between government and indigenous group.	Representatives from government departments and claimant group; up to 20 core and extended members plus stakeholders.
SC, independent contractor	NZ educational consulting company.	Construct Web page, followed by management of Web-based assessment center.	Local, Wellington (NZ)-based, independent contractors; fluid membership three to five members.
RB, general manager	NZ software and business development consulting company.	Initiate virtual communication channels with branch office.	Members in NZ and Australia; five members.
RW, managing director	NZ-based political consultancy operating worldwide as a virtual organization.	Manage a political campaign in California.	Members in NZ and California; three to four members.
AR, project manager	NZ office of international consulting company.	Develop and write a strategic plan for Southeast Asian government ministry.	Members in Southeast Asia, Australia and New Zealand; 12 core members plus stakeholders.
JJ, project analyst	Austral-Asian trading company.	Open and organize a branch office in Vietnam.	Members in Vietnam, NZ, and Australia; three to four core members.

Table 2. Outline of Virtual Team Action Learning Program

Session (two hours)	Content of Session
1	Virtual team implementation and project planning.
2	Developing virtual team purpose, communication strategies, and protocols and technology.
3	Developing team identity, building relationships, and intercultural communication issues.
4	Preparing for, and facilitating, virtual meetings.
5	Concluding a virtual team and other training issues. Virtual teams in the organization.

research literature based on student subjects. The understanding and use of virtual teams in the wider business environment was still in its infancy. The AL program allowed the researcher to gather together research participants, who were either leading virtual teams or planning to use them in organizational settings, and their experiences and perceptions on virtual team leadership.

Two ten-week AL programs were held. The content, similar for both programs,¹ covered virtual team issues and processes of concern to a leader (Table 2). During the AL programs, each participant planned for, evaluated the use of, or actually initiated and led a virtual team within their own organizational context. The three leaders and the trainer/researcher in each program met every two weeks for two hours. In order to give a clearer picture of what actually occurred in the AL program, each session is described in more detail.

Each two-hour session was divided into three sections. Section 1 began with a report by each of the three participants on the virtual team issues they had encountered during the prior two weeks. This was followed by an open discussion in Section 2, involving the researcher and all the participants, on how a leader might handle these issues. In Section 3, the researcher gave an informal presentation on key issues related to the implementation and leadership of virtual teams. Table 3 illustrates the format of the first two sessions, which are representative of all five sessions. As can be seen, the issues covered in Section 3, one week became the basis of Sections 1 and 2 the following week. For example, Session 1 looked at virtual team implementation and project planning. After this session, it was expected that the trainees would return to their offices to work on the implementation of their virtual team and develop a project plan. By doing so, they would be engaging in "action" within the context of their organizations. At the next session, they would bring back their experiences to share, discuss, and critique with their learning set. This cycle of doing, reflection, and sharing is fundamental to the action learning paradigm.

Data was collected during semi-structured, face-to-face interviews held with each participant at each session. Phone interviews were conducted with each participant between training sessions. Informal discussions among participants at training sessions

Table 3. Detailed Program of Typical Training Sessions

Virtual team action learning program	
The VT pioneers	
Session 1	
1. Preprogram interview with each participant.	50 minutes
2. Open discussion on training needs.	30 minutes
3. Training on virtual training implementation and project planning.	40 minutes
Virtual training—contact VT pioneers using two to three different media; note and evaluate your experiences.	
Office—create project plan, initiate your virtual team (or continue if in one); keep notes of what is working and what is not.	
Session 2	
1. Progress report/issue review with each participant.	50 minutes
2. Open discussion on implementation issues.	30 minutes
3. Training on developing VT purpose, communication strategies and protocols.	40 minutes
Virtual training—exchange ideas with VT pioneers regarding communication strategies; note and evaluate your experiences.	
Office—with your virtual team develop team goals and communication protocols; keep notes of what is working and what is not.	

were also recorded. A follow-up review and evaluation session, which included a final interview, was held for all the leaders twelve months after the AL programs were completed. Additional data came from the researcher's journal and participant notes, organizational documentation, and copies of electronic conversations, such as e-mail.

One possible methodological weakness with the AL program needs to be addressed. This concerns the possible influence of program content on the nature of the data collected. It is reasonable to expect that the AL program, with the presentation of set topics, had some influence on the participants' experiences, and hence on the data collected from them. Certainly, there was participant discussion centered on the training topics. It must be pointed out, however, that the importance of relationship building, which was the key finding in this study, concerned all participants from the very first training session, as well as the participant in the pilot project who was not in any formal learning program. In fact, discussion about building relationships in a virtual environment and its effect on team effectiveness was a feature of most sessions, and was clearly based on a "visceral" concern on the part of the participants to reconcile virtual work with experiences garnered in traditional collocated teams with which they were so familiar. It may be fairly argued that the impact of the AL program content on the data collection was not overt, and that the real concerns of the participants in this study did, in fact, emerge from the data.

Indeed, in evaluating the overall rigor, credibility, and validity of these research findings, the usefulness of the emergent theory in grounded theory [25] is judged primarily by the fit and relevance to the research participants' local situation [1]. The usefulness of action learning also tends to be guided by the effectiveness of the intervention at the local level. In this study, the emergent theory was "member"-tested for local fit and relevance. Moreover, the "trustworthiness" of the whole research framework and the results were tested against criteria suitable for a qualitative study, specifically credibility, transferability, dependability, and confirmability [66].

Grounded Theory Approach to Data Analysis

Traditional grounded theory is a methodology for developing theory that is grounded in data systematically gathered and analyzed, in which theory emerges during actual research, through the continuous interplay between analysis and data collection [65]. Central features of this analytic approach include the general method of (constant) comparative analysis, theoretical sampling, theoretical sensitivity, and theoretical saturation [25]. Strauss and Corbin later introduced a paradigmatic framework to assist in structuring data in meaningful ways [65]. Recently, there have been a number of studies in information systems (IS) that have made selective use of grounded theory techniques, usually in data analysis ([e.g., 26, 47, 68]). The most commonly borrowed elements from traditional grounded theory are the coding techniques (open, axial, and selective) used to analyze data. These techniques were used in this study.

In all, over 250 pages of interviews and discussions were transcribed from the pilot project and the two AL programs. Open coding techniques, a process of labeling events and ideas represented in the data [1, 3], were used. Using NVIVO, a computer software program, the transcript was perused, and one or more conceptual codes (called free nodes in NVIVO) were assigned to each line, sentence, or paragraph, most often in terms of properties and dimensions. Data collection and analysis continued simultaneously (constant comparative method). During and after the second AL program, axial coding was used to put data together in new ways, by seeking to identify causal relationships between categories. Codes were merged, changed, and occasionally eliminated. Based on similarities or differences, as well as emerging relationships, codes were grouped into clusters of conceptual codes, called conceptual categories, representing a higher level of abstraction (e.g., Figure 1).

Nine conceptual categories were eventually developed (Table 4). Extensive writing and modeling around these categories were done. By analyzing the data from a variety of perspectives—transcripts, coding, case studies, and integrative memos—it became apparent that newer and higher levels of abstractions and relationships were forming.

After further analysis and reflection, and extensive literature review, it became clear that a core category, *relationship building*, which could account for most of the variation being observed, had emerged from the data [24]. The core category is often the same as the basic social process, which can be understood as theoretical reflections and summarizations of the patterned and systematic flow of social life [24]. *Relationship*

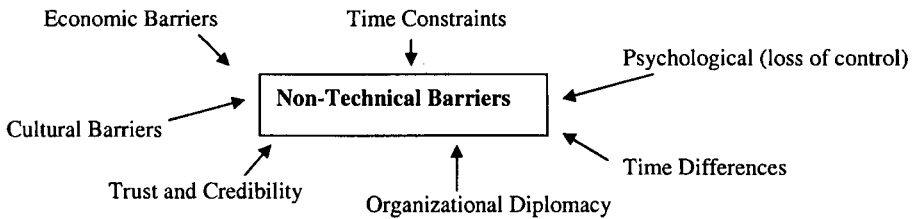


Figure 1. Grouping Conceptual Codes into Conceptual Categories

Table 4. Key Conceptual Categories

Conceptual categories

Communication channels
 Communication strategies
 Communication protocols
 Virtual team, leadership, and related issues
 Culture
 Human interaction
 Organizational issues
 Nontechnical barriers
 Technology

building was the key basic social process [24] that concerned team leaders as they initiated their virtual teams; it incorporated and explained the relationships between all the conceptual categories. At this point, coding was delimited to only those variables that related to the core category in sufficiently significant ways [24]. The core category, along with the other significant theoretical categories and the relationships between them, eventually became the leader-facilitated relationship-building model introduced in this paper.

The Research Findings

PERHAPS BECAUSE OF GEOGRAPHIC DISPERSION and the potential for team member isolation as a result of cultural and language differences or functional speciality, the team leader usually feels as if he or she is the “glue” that holds the team together. [20, p. 74]

The Need for Relationship Building

Although this study was local in the sense that the team leaders were taking part in collocated AL programs, their team projects, organizational contexts, and team members' location, all differed in substantial ways (see Table 1). In spite of these differences, the data revealed a common concern—the need for leaders to build personal

relationships with their team members before proceeding to the team task. This study, and the literature, clearly demonstrates that the benefits of building relationships with team members are manifold, manifest at the personal, team, and organizational level, and are both immediate and long term.

For a team leader, having a personal relationship with a team member resulted in several advantages that would lead to better working relationships. These are reflected in the participants' following comments:

Understanding

I talked about my need to get inside people's heads and to discover what they are really about, what they are after, how they work, and how best to communicate with them. (AR)

Familiarity

I think an important element of any virtual team is starting off knowing people well enough. Meeting people first can make such a difference to a virtual relationship. (RB)

Trust

One of the issues, which is certainly in the forefront of my mind, is the issue of virtual relationships, building the trust and building the relationship between people at a distance. (AR)

Motivation

Yes, but also by getting to know them I can find out what their motivations are . . . by finding out their goals . . . as individuals and about their backgrounds. It just makes things easier to get some kind of grasp on who you are working with. (RB)

Another important reason for relationship building is the need to maintain and strengthen professional relationships. While many teams come together to fulfill the requirements of a particular project and are then disbanded [32], others may be reconstituted, or continue in loose affiliations known as communities of practice, maintaining professional and social relationships [35]. Having made the investment to develop trust relationships, organizations may want to hold onto them. According to Jackson, "It may be one or two projects down the line before such teams start to reap the benefits of these investments" [32, p. 331]. Accordingly, virtual team leaders may find it advantageous to continually strengthen and maintain relationships with people they are likely to work with in future personal, team, or organizational context. RW, who is both a team leader and managing director of a virtual organization, said:

I am constantly striving for a higher level of communication (relationship) with these people, because I will have to work with them again. I need the people coming out of the team feeling good because they are the people who go prospecting for the next jobs that we are going to do. (RW)

Table 5. The Advantages of Building Relationships for a Virtual Leader

 Potential advantages for a virtual team leader

Understand team members:

- Personalities
- Communication styles
- Relevant experiences
- Motivators
- Backgrounds
- Skills
- Cultural differences
- Organizational situations

Better working relationships based on:

- Greater familiarity
- Higher levels of trust

 Benefits of developing and maintaining long-term social and professional relationships

Table 5 lists the reasons the leaders in this study mentioned why they thought it was critical to build relationships with team members at the start of a virtual team. The leaders thought there were obvious immediate and long-term advantages in developing relationships with virtual team members, and it was up to them to choose an appropriate level of relationship to develop with each team member.

A Three-Step Model for Developing Virtual Relationships

Developing virtual relationships (Figure 2) is a three-step process for leaders when building virtual relationships. The model emerged from the experiences and reflections of the research participants as they led their individual virtual teams. Although developed in a local context with a limited number of participants, the process represents a cognitive model of how relationship building with virtual team members can be approached—through the steps of *assessing conditions*, *targeting levels of relationship*, and *creating strategies*. The main features of the model are introduced below.²

Step One—Assessing Conditions

In *assessing conditions*, the leader considers all the factors present when a virtual project or task is undertaken. Any number of factors, based on a variety of circumstances, may be present. These factors have been classified as *team issues*, *boundary crossing*, *organizational policies and resources*, and *technology*; Table 6 breaks them down into the specific subcategories that emerged in this study, as well as how they might impact the relationship-building process through steps two and three. It is important that the leader carefully assesses the likely impact of the factors present at the initiation of the virtual team in order to have enough information to successfully complete steps two and three.

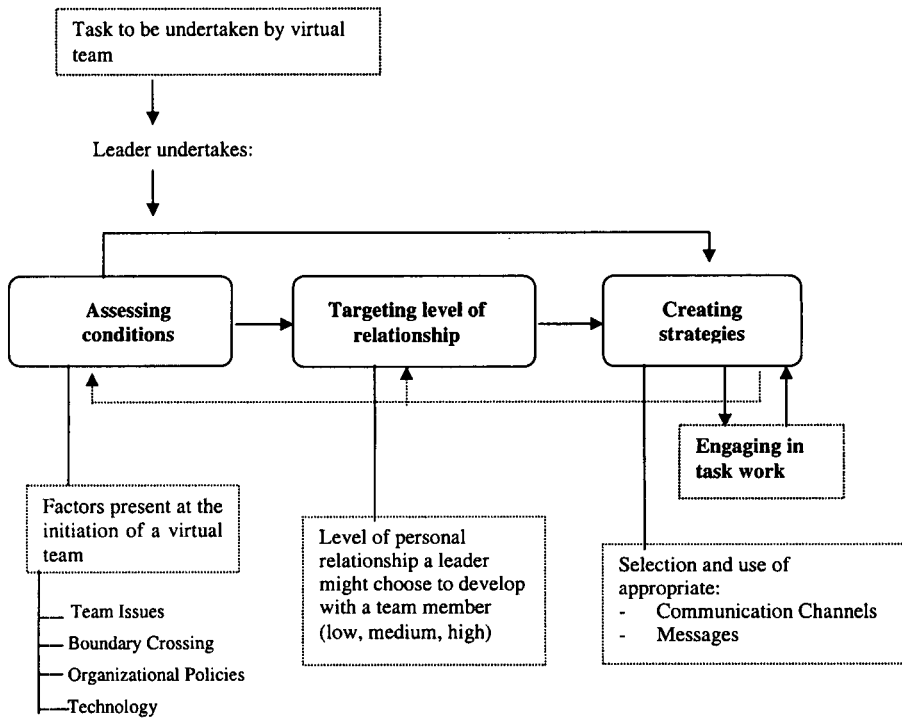


Figure 2. The Three Steps in Developing Virtual Relationships (in organizational context)

Team Issues

An important consideration for the leader is to understand the nature of the virtual team's project goal or team task and its complexity, as well as the time frame for completion [21]. For example, simple tasks and short time frames are unlikely to require the same level of relationship building as complicated tasks and long time frames [32]. Furthermore, as this comment by AR indicates, tight time frames do not even allow for the possibility of significant relationship building to occur:

The team selection was extremely ad hoc. The job was chronically behind. . . .

A relatively directive style had to be adopted in order to meet the client's deadline. It was just a case of "you do this." (AR)

Another important *team issue* involves how team members are selected for the virtual team; for example, did they volunteer or were they appointed. This may influence their overall willingness to be on the team, and so may require different levels of relationship building by the leader. The same holds true for the experience team members have of virtual teams. Those with little or no experience, for example, may require a greater degree of relationship building. This comment by RW is very telling:

It's been interesting that my level of comfort with the technology has been deluding me about how other people feel about it. (RW)

Table 6. Specific Subcategories of Factors Present at the Initiation of a Virtual Team and Possible Effects on Relationship-Building Process

Step one	Factors	Subcategories	Possible effects on relationship-building process
Assessing conditions	Team issues	Project goals/team Tasks/time frame Team membership/virtual Team experience/training opportunities	Required level of relationship. Selection and use of communication channels and message content.
	Boundary crossing	Organizational (including functional) Cultural/language Time and distance	Required level of relationship. Selection and use of communication channels and message content. Selection and use of communication channels.
	Organizational policies and resources	Nature of the organization Human resource policies Information technology policies Security policies Knowledge management policies Financial barriers (re: use of virtual teams)	Can support or hinder overall relationship-building process. Selection and use of communication channels and message content.
	Technology	Availability Compatibility Competence	Selection and use of communication channels.

Finally, the availability of virtual team training prior to the initiation of the team could influence the degree of relationship building necessary [73]. Those with a greater understanding of the dynamics and processes of virtual teams may be more flexible in their need for relationship building.

Boundary Crossing

By definition, virtual teams work across time and distance. The practical effect of working across distance means that teams can effectively comprise members from different departments, offices (e.g., head and branch offices), and organizations, as well as different countries and cultures.³ Indeed, access to different organizational, functional, and cultural perspectives is one of the key reasons for using virtual teams [53]. These "differences" can present enormous challenges to team members, team processes, and ultimately team outcomes, and represent an important set of conditions that a leader will most likely have to assess before choosing an appropriate level of relationship and creating strategies to build relationships with team members (see Table 1 for the extent of boundary crossing in this study).

Organizational Policies and Resources

The use of virtual teams in the participants' organizations reflects trends in the wider world as organizations grapple with competitive, new, global realities and the introduction of new ICT. Virtual teams may be an ad hoc response to a current task that does not require formal change to the organization [70] or, as in RW's case, may be the functional core of the organization. With the exception of RW's virtual consultancy, the other participants' organizations are in various stages of virtual team use—some intentional, some ad hoc.

Organizational policies and resources can have a major influence on how a leader might build relationships with team members. According to the participants, none of their organizations had a cohesive and coherent policy regarding the use of virtual teams. These findings support the results of a 1998 survey on New Zealand organizations where only 17 percent of respondents had organizational policies on virtual teams [56]. This comment on BC's organizational policy illustrates this point:

In terms of policies, in terms of working virtually, there is no . . . strict policy that you should do this or do that. (BC)

Some of the key subcategories in *organizational policies and resources*, such as financial resources or security, will determine which communication channels might be available to the leader, whereas others, such as compensation for virtual team members or training and support, might influence team member enthusiasm or competence. AR's case is illustrative.

According to AR, compensation can be a powerful motivator to virtual team members and leaders. Billable hours in AR's organization equal performance pay. In AR's virtual team, members in Australia and New Zealand did not receive billable hours or

performance pay although the work they did for the project was in addition to their regular work.

People working offshore receive substantial allowances over and above normal packages. These encourage people to go offshore, where most of our clients are. In this task we had many people working offshore and receiving high allowances, while those in New Zealand and Australia received their normal packages. Furthermore, the people in Thailand built up their time contributing to their billable hours and performance bonuses, while those in New Zealand and Australia who helped out could not bill their hours even though much of the document was written here. These things can cause resentment. (AR)

There was a definite economic disparity in this virtual team that the human resource (HR) policy was not addressing. According to AR, these disparities in economic incentives could negatively impact on a leader's efforts to recruit and lead the team, and to build relationships with team members. Such policies can create a two-tier team, reducing the incentive for some virtual team members to perform. Organizations will need to face this important issue, as such situations are likely to increase in frequency [16].

Larger companies can normally afford the ICT needed to support virtual teams, as well as HR practices, such as recruitment and training, which can provide skilled virtual team members. For example, it was a relatively easy process for RB to get his organization to look at the introduction of new technology—in this case desktop conferencing—to support virtual teams. For smaller organizations with limited financial resources, however, financial limitations often play a significant part in the resources leaders have at their disposal [8]. This was particularly true for RW, who could not afford to hire technical or administrative assistance.

Another thing is the company structure. We are at that growth phase where we need to take the risk of some permanent administrative employees, but there isn't quite the guaranteed level of income to justify that, but if we don't take that step then I won't be freed up enough to make sure that does happen. We are in a Catch 22 situation. (RW)

Due to limited resources, he initiated and led a global virtual team for three months, almost exclusively by e-mail and Internet-based text chat. RW discussed this problem:

But again the business is so small that international phone calls to have "water cooler" type of discussions are a bit out of the question. I tend to call them [team members] to initiate projects and to discuss all the fine detail, which would take me too long to do by e-mail. But they tend to be very focused discussions and I still don't get a very real sense of the person at the other end. It's all very businesslike. (RW)

These comments, supported by other participants, clearly show that for smaller organizations, especially those operating global virtual teams, financial limitations play a

large role in the communication channels a leader has available when creating relationship-building strategies.

Technology

The availability and compatibility of ICT being used by members of the virtual team, as well as their competence in using the technology, influences the process of facilitating virtual relationships. This is particularly the case when the virtual team is crossing organizational and national boundaries. Organizational preferences for certain communications systems and issues with national communication infrastructure are just two areas that can influence how a leader goes about creating strategies for building relationships with team members.

Within an organization, policy can determine which communications software will be used. This conformity can often be extended to international offices. Problems can arise, however, when the virtual team consists of members from outside any single organization. RW faces this issue in working with independent consultants. When he attempted to initiate communication channels other than e-mail, such as synchronous text chat or desktop videoconferencing, he had problems getting team members to agree on a common platform.

I did say let's try to get something like this going, and then of course an immediate debate started about which kind of technology. Some people said I prefer this or that. At one point, if you count Netmeeting, I had four various sorts of software sitting on my machine. Everybody was trying to convince everybody else about the superiority of his or her preferred method. So the debate started to focus on the technology rather than the contents of the discussion. (RW)

The debate seemed to revolve primarily around individuals' familiarity with their preferred software, and could fit with theories that appropriate media choice is more a function of preference, convenience, and cost than of task media fit [34]. However, it is possible that power relationships were being played out that RW, in his capacity as a small business owner and "coordinator of consultants," could not easily overcome. He needed to rely on persuasion based on relationship building, rather than coercion based on power.

Team member competence or preference in using various technologies may be an organizational training issue, but in some cases it may be a member-selection issue, as some people may have a psychological dislike for certain communication channels. The leader's technical competence may also be an issue.

One of the things I am conscious of, is that for example, when I get Graham involved in this he's going to have some expectations about my competence with this technology, and is going to expect me to deliver. If I am unable to deliver, or hit snags, there is a credibility problem. (RB)

It is clear from this brief discussion that there are many conditions at the start-up of a virtual team that can affect relationship building. Leaders need to assess these con-

ditions and their likely impact, and work with or around these conditions as they move to steps two and three.

Step Two—Targeting Level of Relationship

The next step in the process of *developing virtual relationships* for the leader is *targeting level of relationship*. *Level of relationship* can be defined as the “level” of personal relationship that the leader thinks is appropriate to develop with a team member to accomplish the project goal or task. The leaders in this study described at great length the kinds of relationships they felt were necessary to develop with their virtual team members, given the conditions present at the start of the team.

Based on these descriptions, three different levels of relationship—*low*, *medium*, and *high*—were defined. Table 7 provides definitions of these. Targeting a level of relationship is an important cognitive element in the relationship-building process. Not only does it reflect the conditions present at the start-up of the team, but also the leader’s understanding, based on personal experience, of how “close” he or she needs to be with team members in order to improve the chances of the team’s accomplishing its goals. Successfully targeting the appropriate level of relationship requires experience and consideration.

This study showed that leaders believe a low level of trust might include the basic level of goodwill available at the start of a virtual team similar to the concept of “swift trust” [33]. “Swift trust” explains how virtual team members may be able to accomplish tasks without first having developed personal relationships, and how this might be enough in certain conditions. Such trust appears to be fragile and temporary, however, and this study showed that the leaders tended to believe they needed to develop higher levels of relationship given the conditions present at the start of the team. One notable exception was when AR used a “hub” structure, making use of sub-teams. In this case, the leader was able to maintain a low level of relationship with sub-team members by building a higher level with sub-team leaders.

But I had to extend out a little bit and there were at least three people in Canberra. I had them working pretty much as a self-contained group. I dealt mainly with just one person over there. I had him look after the other two. It made my life a bit easier. So, although not everyone knew each other and the people in Asia did not know any of the people in New Zealand or Australia, because we were operating . . . a couple of different virtual teams, working through hubs, trust was maintained. (AR)

A medium level of personal relationship is defined as enough familiarity to build effective two-way communication resulting in project or task completion. Effective two-way communication is mutual communication based on shared co-orientation [63] or mutual understanding [42]. Communication is an essential element in virtual teams. Empirical studies support the important role communication plays in virtual teams [62]. Many studies have emphasized the importance of communication in accomplishing team requirements, and for coordination and efficient task execution

Table 7. Levels of Personal Relationships Defined

Step two	Level of personal relationship	Definition
Targeting level of relationship	Low	Just enough to get the project or task completed, such as name, position, company, and so on.
	Medium	A level appropriate for building effective two-way communication resulting in project or task completion; for example, varying amounts of personal information based on the individual needs of the leader and team members.
	High	An appropriate level of trust resulting in project or task completion; for example, a much more intense level of personal and professional involvement may need to evolve over time.

[18]. The leaders in this study believed the medium level of relationship was important because the communication achieved allowed them to gain an effective understanding of their team members. This resulted in many of the benefits discussed earlier, such as less attribution bias, increased morale, better decisions, and ultimately a successful team outcome. It is likely that leaders will find this level of relationship the most commonly required in virtual teams, since good communication is fundamental to effective virtual team processes and outcomes [41].

High-level trust relationships were found to be an essential element in virtual teams involved in complex tasks that crossed significant boundaries. Generally, people need time to develop high-level relationships. Since many virtual teams are project- or deadline-driven, however, adequate time may not be available. This presents a significant challenge to virtual team leaders. Several leaders in this study could see no practical way to get around the time and effort needed to build effective virtual relationships, particularly genuine trust-based relationships, and especially when significant boundary crossing was involved. "Time famine" [13] is endemic in organizations, and it is paradoxical that, although virtual teams are often formed to quickly address situations, time may be needed to develop the high-level relationships necessary for them to work effectively.

There are, however, possible preexisting factors that might support high-level relationships; for example, leaders saw the benefits of "referred" trust, trust by reputation, and strong organizational cultures that engender trust, as helpful in building relationships with team members. As a group, the leaders saw they could, in the long term, capitalize on these kinds of trust at personal, team, and organizational levels by making efforts to build and manage relationships in the short term during the life of their virtual teams [32, 69].

After evaluating their various experiences working in face-to-face and virtual contexts, the participants concluded that having some level of personal relationship with their team members was almost a prerequisite for a successful virtual team. RW realized this after his virtual management of a political campaign on the other side of the world was completed, and he reflected on several serious miscommunications he had had with his team member/client.

One thing I learned in the last couple of weeks on the facilitation side of things is now that the campaign in California is over both the client and consultant are talking about what we did right and what we did wrong. A lot of issues are coming up, as I said before, that hadn't come out before because we did not know each other well enough. (RW)

Leaders in this study, such as RW, who made incorrect assumptions about the level of relationship needed, or who allowed difficult conditions to override efforts at relationship building, often suffered the kinds of miscommunications and misunderstandings with team members that could potentially derail a team.

Step Three—Creating Strategies

The next step in the process of *developing virtual relationships* is *creating strategies*. The aim of *creating strategies* is to achieve the targeted level of relationship. *Creating strategies* takes into account the virtual context and involves the selection and use of appropriate communication channels and message content, followed by the implementation and management of relationship-building strategies. The selection of appropriate communication channels is based on the conditions discussed in step one, that is, availability and compatibility of channels, cultural or organizational preferences, team member training and skills, and so on (Table 8). The selection of appropriate messages (Table 9) is based primarily on the level of personal relationship chosen in step two, but may also take into account conditions from step one (Table 6); for example, a team member's cultural preference for formality.

Most of the leaders in this study believed it was preferable to build relationships with team members in face-to-face settings, a view that tends to support earlier research [74]. This may be explained by various media choice theories, which seek to explain why individuals use certain channels in certain situations and the outcomes of such use [36, 50]. For example, media richness theory explains that the lack of contextual cues and timeliness of feedback inherent in computer-mediated communication can negatively affect the building of relationship links [17], whereas social presence theory refers to the ability of a medium to allow receivers to feel the actual presence of the communicator [64] through the transmission of verbal, nonverbal, and other visual cues. Both these theories tend to support the selection of the face-to-face channel whenever possible when building relationships, particularly if the people involved have little or no experience with ICT.

However, at least one leader in this study, AR, showed it was possible to develop relationships in a completely virtual team by skillfully and thoughtfully selecting and

Table 8. Factors Influencing Selection and Use of Available Communication Channels When Building Relationships

Step three— creating strategies	Communication channels and reasons for selection and use
Selecting communication channel	<ul style="list-style-type: none"> Face-to-face <ul style="list-style-type: none"> Project complexity and time frames Distance Culture Security Financial resources/availability Letter <ul style="list-style-type: none"> Project time frames Culture Telephone <ul style="list-style-type: none"> Project time frames Distance Financial resources E-mail <ul style="list-style-type: none"> Project time frames Distance Financial resources Knowledge management Availability Internet-based channels (desktop videoconferencing, intranets, and text chat) <ul style="list-style-type: none"> Project time frames Distance Financial resources Training Knowledge management Availability and compatibility

using virtual communication channels. Most leaders and team members are comfortable using the telephone when getting to know people, although it may not always be a sufficient relationship-building channel in and of itself. With use of the phone being second nature, the leaders feel they can pick up paralinguistic clues, such as tension or uncertainty in a team member's voice, which can assist in relationship building [60]. Phone calls are often used at the formation of a virtual team in order to get to know someone quickly. AR found these initial phone calls useful for "groundbreaking types of conversations," explaining, with a phone call, she and her team members could get a feeling for each other.

Because AR's project worked under such a tight time frame, the telephone was the best channel for her to use to build relationships, as it offered availability, compatibility, and enough richness to be able to get to know team members. She recalls what she said in these telephone conversations:

Table 9. Targeting a Level of Relationship and Selection and Use of Appropriate Message Content

Step three— creating strategies	Level of relationship	Appropriate message content	Other factors
Selecting message content	Low	Basic personal and organizational information.	
	Medium	Degrees of personal and organizational information as required.	
	High	To build necessary level of trust.	Higher degrees of personal and organizational information as required.

I'm probably going to pester you, but initially it's really important for me to understand how you work as individuals so I can . . . think inside your head. (AR)

Picking up the phone may seem the obvious solution in getting to know team members when working virtually, but for RW it was problematic. Because of his organization's financial situation, he found international telephone calls a major expense and resisted using them as a means to build relationships with clients and consultants. Although he generally uses phone calls to initiate business relationships, he believes the time and expense of using them to build relationships is not practical. He also feels awkward calling people he is involved with professionally to "chat about life, the universe, and everything."

These are busy people, and when you use virtual communication it is expected that you will "get down to business." (RW)

In this study, e-mail was the most commonly used virtual communication channel. In some cases, due to financial limitations, it was the only channel available. As Fulk and DeSanctis [23] suggest, the use of e-mail can have both positive and negative results, and, in this study, a number of its advantages and disadvantages in building online relationships emerged. According to the leaders, it was a universal platform, cost-effective, generally accessible, and easily learned and used by most team members. Essentially, e-mail accessibility and use has reached functional critical mass [45]. Its advantages include fast, succinct messaging with the added benefit of being able to send attachments quickly and efficiently.

Those leaders working with geographically distributed team members saw e-mail as the basis of their virtual teams, effectively linking their team members. In most cases, however, they believed e-mail was more suitable for communicating information and coordinating projects than for building relationships. Without first building relationships, relying strictly on e-mail could have serious consequences and, according to the leaders, many of the apparent benefits often carried a downside. For example, RW did not make any special effort to build a personal relationship with his team members before commencing a work relationship. Because he is very comfortable using e-mail, he relied almost totally on it in his communications with team members. This tends to support Carlson and Zmud's [10] findings that knowledge and experience with e-mail affects perceptions about its effectiveness. Unfortunately, RW did not consider his team members' knowledge of, and experience with, e-mail, and this led to some serious miscommunications. After reflection and discussion, RW concluded that his experience with e-mail had "deluded" him about how others feel about the technology.

Research has found that computer-mediated teams do share relational information and are likely to develop relational links over time [71, 74]. In cases where insufficient time is available to build strong relational links, it may still be possible to develop strategies to build a high enough level of relationship to begin the task, and then to manage and "grow" the relationship while moving the task forward.

Implementing and managing the strategies the leader has created is the final part of the relationship-building process, and this is ongoing. It begins with the implementation of the leader's chosen strategy. If the strategy the leader has created is the correct one, and the targeted level of relationship is developed, then the relationship-building process has been successfully completed and the project or task may begin, with the leader continuing to manage and maintain the relationship as necessary. In a complex, long-term project, where a higher level of personal relationship is desirable, the strategy created may include continuous relationship building, taking place concurrently with project or task implementation. However, should the relationship-building strategy fail in its desired outcome, or should conditions change or new conditions come to light, then the relationship-building process may need to be revisited. Should new members join the team, the leader will need to repeat the process with each new member.

Conclusions and Implications

THE OUTCOME OF THIS STUDY is an inductively derived model of virtual team leader-developed relationship building. The model represents the experiences and insights of a group of virtual team leaders and explains how they built (or in some cases failed to build) relationships with their virtual team members. As a group, these practitioners believed that building relationships with their team members was an important team process that would lead to better team task outcomes. In at least one team leader's (RW) view, not building relationships with team members contributed to less than satisfactory team outcomes. Although this study does not prove a causative link between relationship building and team outcomes, significant circumstantial evidence tends to at least support this notion.

The value of this model is that it serves to bridge the gap that currently exists between virtual team research and practice. Although derived in a local setting from a limited number of leaders, the model provides practitioners (virtual team leaders) with a cognitive model of how relationship building with virtual team members can be approached. The model suggests lessons that may also apply to virtual team members and organizations using virtual teams.

The link between team effectiveness and team member relationships is an important area of research in virtual teams, and the implications for practitioners are significant. The single most important process to emerge in this study is the need for leaders to first build personal relationships with their team members before proceeding to the team task. This study and the supporting literature discussed in this paper indicate that the benefits of building relationships with team members are manifold, and that they manifest at the personal, team, and organizational level, and are both immediate and long term.

At the team level, these benefits can include higher task performance, increased team effectiveness, and better information and knowledge exchange. Strong relational links are also associated with enhanced creativity and motivation, increased morale, better decisions, and fewer process losses. At the personal level, relationship

building may lead to more empathy and less negative attribution bias, greater understanding of cultural differences, and increased personal trust, and has the potential to lead to stronger future associations and increased organizational trust.

Given the numerous interpersonal and team benefits that may accrue through intentional and appropriate relationship building, particularly at the medium or higher levels, it is clearly in the interests of leaders and team members to actively engage in relationship-building strategies as part of a virtual team life cycle. Organizations as a whole would also seem to profit by supporting relationship building in virtual teams. Benefits include better performing teams as well as possible increased organizational trust among employees.

The model presented here is the first to chart how a leader can systematically approach relationship building given the wide variety of factors, internal and external to the team.

Implications for Practitioners

The role of virtual team leaders entails a different level of skill than that of traditional collocated team leaders. Not only must virtual team leaders manage the project tasks and occasional personality conflicts normally associated with a collocated team, but they must also be able to create common cause among geographically distributed, and often organizationally and culturally different, individuals. Because virtual teamwork is a relatively new phenomenon, organizations and team leaders have relatively little experience in this area. Organizations and team leaders, which suddenly find themselves immersed into virtual team scenarios, need models to help them create virtual team strategies and formulate responses if problems arise.

The three-step model is a useful cognitive model. It suggests a number of important outcomes for leaders of virtual teams, as well as organizations using virtual teams. Step one—*assessing conditions*—suggests that virtual team leaders need to systematically review the conditions of the team, team members, and organizations involved in the virtual team task or project. The findings suggest a wide range of conditions that can affect relationship building in virtual teams, some that may be beyond the control of the leader. These findings should alert organizations to the overall effect organizational policies may have on virtual team leaders. Organizations moving into virtual team work with their eyes open are more likely to be supportive of team leaders and members, whereas those working in an ad hoc fashion may be unintentionally but negatively affecting their virtual teams' performance [70]. Many of these factors have been previously studied in isolation, but this study demonstrates the potential complexity and interrelatedness of virtual team processes and structures, and the need for a thoughtful, considered approach to their implementation and use at all levels.

The importance of step two—*targeting levels of relationship*—is in guiding virtual team leaders to carefully consider the "nature of relationships." This includes how relationships are developed and nurtured, and the place they play in team dynamics and the development of trust. Leaders must be aware of the effects of having (or not having) an appropriate relationship with team members on the overall effectiveness

of the team. As mentioned, the development of relationships can have benefits far beyond the virtual team in which they are built, and organizations should seriously consider how relationship building could be supported.

Two outcomes related to step three of the model—*creating strategies*—are also potentially valuable to practitioners. First, step three confirms that the selection and use of communication channels in virtual teams for the purpose of relationship building are likely to be critical factors [54], and that teams adopting ICT to accommodate a variety of communications are more likely to be satisfied with their ability to communicate in their team [37]. Second, that although ICT has enabled the creation and spread of virtual teams, it may not be able to, in all cases, replace face-to-face interaction, particularly in early relationship-building stages. Thus the strategic selection and use of communication channels plays a critical role in the success of virtual teams and the transmission of knowledge.

This has been an exploratory study. Although the participants have validated the model, the results need to be verified in the wider practitioner and research community. This may mean replication studies with wider groups of practitioners or survey-based studies. The model itself can be further developed. The relative impact of individual conditions on the relationship-building process is open to further study, as is the development of relationship-building strategies. More research needs to be done, for example, on the impact of organizational policies on virtual teams. Important areas include the impact of human resource reward and recognition systems on team member and leader motivation, commitment, and performance. The use and effect of virtual training on the acquisition of virtual communication and work skills is another important avenue of research. When a more complete picture has been developed, it may be possible to develop a virtual team “diagnostic” that a team leader or manager can utilize to measure the possible impacts of various factors present at the start of a virtual team, and to choose from a menu of relationship-building strategies.

On a broader scale, this research raises questions about the role of virtual team leaders as technology-use mediators [54], and ultimately as organizational change agents. Researchers have suggested that the role of technology-use mediators, by shaping their technology as they use it in particular contexts can, over time and in a variety of ways, shape other users of the technology and ultimately the organization [54]. This study, although noting that leaders were using technology in new and unique ways, did not pursue this line of inquiry. It is clear, however, that leaders, by assisting the adoption, adaptation, and use of ICT in presumably effective ways in their virtual teams, are in the “frontline” of innovative technology use and are playing a potentially invaluable role as technology-use mediators for the wider organization.

Another area of potentially fruitful extension for this study might be in the application of action learning in the study of virtual teams. According to Robey et al. [62], there is a need for research focusing on the processes whereby members of virtual teams learn as they participate in practice. Learning in virtual teams presents special challenges, as members are separated in time and space, and often involves organizational and cultural/language boundary crossing. Virtual teams must generate local

knowledge and skills in a virtual context. The challenges appear formidable not only for team members but also for designers of support technologies, and managers and other stakeholders who depend on teams to perform effectively. It is particularly now in the early stages of virtual team use in organizations that virtual teams represent potential communities of learning. How leaders and virtual team members mediate all the intervening and contextual elements associated with working virtually is a potentially valuable avenue of research, and such knowledge could add, for example, to the depth and breadth of the three-step relationship-building model developed in this study.

Acknowledgments: The author thanks the reviewers, editor, and associate editor for their assistance in shepherding this paper along to its final, publishable form.

NOTES

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1. Though some changes were made based on participant feedback, these changes are not particularly relevant to this discussion.
 2. Detailed cases from this study highlighting the importance of relationships and relationship building on virtual team effectiveness, and illustrating how leaders have gone about building relationships given different start-up conditions have been published [57, 58].
 3. Gender differences in teams could also be considered a type of boundary crossing, but this issue did not arise in the data. In this study, three of the seven participants were women.

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