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SEVEN CHALLENGES TO VIRTUAL
TEAM PERFORMANCE:
LESSONS FROM SABRE, INC.

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SEVEN CHALLENGES TO VIRTUAL TEAM PERFORMANCE:
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EXECUTIVE SUMMARY

Advances in communications and information technology create new opportunities for organizations to build and manage virtual teams. Virtual teams are composed of employees with unique skills, situated in distant locations, who must collaborate to accomplish important organizational tasks. Based on a comprehensive study of 65 virtual teams at Sabre, Inc.—an innovative organization in the travel industry—we identify seven challenges organizations can expect to encounter in establishing, maintaining and supporting virtual teams. For example, significant challenges encountered by virtual teams include building trust, cohesion and team identity and overcoming isolation among virtual team members. Both leaders and members of virtual teams face particular difficulties in selecting team members who have the necessary balance of technical and interpersonal skills and abilities required to work virtually, and evaluating the performance of individuals and teams working in virtual space. Also critical are coaching, counseling and supporting virtual team members and providing the appropriate level of technology to facilitate team interaction. Examination of Sabre's strategies for coping with each challenge is instructive to organizations anticipating the use of, or currently using, virtual teams.

Off the coast of Mexico, a group of people struggles to stay afloat on a raft they have recently assembled on shore. Waves crash around them, part of their raft begins to break apart, and two members fall into the sea. A third member helps the two submerged members back to the makeshift raft. All three work together to refasten the rope used to hold together the pieces of their raft. With a little effort, the raft is righted and the entire team continues to paddle furiously. While you might think this is a scene from one of the latest reality TV shows, the events described above are part of a teambuilding program at Sabre, Inc. for its virtual teams. The crashing waves are a symbol for unanticipated and rapid change, the construction of the raft from everyday materials represents resourcefulness, and the entire exercise is designed to reinforce to team members that you either sink – or swim – as a team. Just one year earlier, virtual team members at Sabre, Inc. had spent three days immersed in face-to-face team-building activities designed to launch a division-wide virtual teams initiative. This water raft exercise helped to reinforce the knowledge and skills learned in the earlier teambuilding. Based on the Sabre experience, we examine the challenges encountered in building and managing virtual teams and seven important lessons learned along the way.

VIRTUAL TEAMS: ORIGINS AND TRENDS

The use of work teams to accomplish important organizational tasks continues to evolve. In the 1980s, we saw the arrival of quality circles and project teams associated with Total Quality Management in response to global competition. In the late 1980s and early 1990s, companies implemented self-managing or autonomous work teams with increased frequency. These teams empowered line-level employees to take on decision-making and problem-solving responsibilities traditionally reserved for management in order to cut bureaucracy, reduce cycle time, and improve service. By the mid-1990s, increasing numbers of companies such as

Goodyear, Motorola, Texas Instruments, and General Electric began exporting the team concept to their foreign affiliates in Asia, Europe, and Latin America to streamline and integrate global human resource practices.[1]

Now, as a direct result of communication technology improvements and the continued globalization of business, the last few years have seen the arrival of virtual teams. Virtual teams are defined as groups of people who work interdependently with a shared purpose across space, time, and organization boundaries using technology.[2] Rather than working face-to-face, virtual team members may be located across the country or across the world, rarely meet face-to-face, and may include members from different cultures. Many virtual teams are cross-functional and emphasize solving customer problems or generating new ways of working or delivering customer service.[3] Working virtually allows organizations to combine the best expertise regardless of geographic location.[4]

Due to corporate restrictions on employee travel resulting from the recession of 2001-2002 and the events of September 11th, 2001, virtual teaming is likely to increase exponentially. The increase in virtual teaming parallels that of telecommuters, or workers who do their jobs from remote locations and communicate electronically.[5] Two out of every three Fortune 500 companies currently employ telecommuters.[6] The United States Labor Department reports that there were approximately 19 million people working online from their homes or some other location in 2001[7], and the GartnerGroup estimates that by 2002, there will be over 100 million people worldwide working regularly outside the traditional office.[8] Whether telecommuting or working from an offsite location, many workers are involved in collaborative efforts that involve virtual teaming. While many organizations have embraced the concept of virtual working, not much is known about what makes virtual teams work or, more importantly, how they differ from

face-to-face teams.

In an earlier issue of *The Academy of Management Executive* (August 1998), Anthony Townsend and his colleagues introduced the concept of virtual teams to *AME* readers.[9] The authors defined virtual teams, specified the reasons why virtual teams have become popular, discussed communication technologies, and provided preliminary guidelines for building virtual teams. More recently in *AME* (August 2000), Wayne Cascio examined the virtual workplace more generally, discussing the potential disadvantages of virtual teaming and methods for training members and leaders of virtual teams.[10] Building on and extending these earlier reports, the purpose of our paper is to examine in depth many of the specific challenges encountered by leaders and members of virtual teams. Much of what has been written in the past about virtual teams has come from anecdotal evidence or case studies of a handful of virtual teams.[11] Our purpose is to comprehensively study a large number of cross-functional, virtual teams in a high technology company to attempt to confirm or disconfirm previous findings from smaller studies and to move beyond previous research to challenge the current thinking on virtual teams. To extract important lessons learned about the creation and maintenance of virtual teams, we draw on our firsthand experiences with 65 cross-functional, virtual teams at Sabre, Inc.

Sabre is the leading provider of technology, distribution and marketing services for the travel industry. Headquartered in Dallas/Fort Worth, Texas, the company has approximately 6,000 employees in 45 countries. We administered surveys to the 600 executives, vice presidents, virtual team leaders, and virtual team members making up Sabre's North American Sales and Service, Operations, and Financial Services Division, and conducted interviews with over 70 of these individuals, to gain a better understanding of virtual team functioning in a high technology company. Our work with Sabre generated some surprising themes that we believe

represent seven key challenges for virtual teaming. Before we turn to the seven challenges, we briefly describe Sabre, Inc. and the structure of its virtual teams.

SABRE, INC: BUSINESS AT INTERNET-SPEED

Sabre began in 1960 as the computerized reservation system of American Airlines and is generally known as the inventor of electronic commerce for the travel industry. In 1964, Sabre's telecommunications network stretched coast-to-coast and was the second largest computer system behind only the U.S. government. In March 2000, Sabre was spun off from AMR (the parent company of American Airlines) and became a 100 percent publicly traded company. Today, Sabre processes over 400 million travel bookings annually (40 percent of the total travel reservations made worldwide) and is used by over 60,000 travel agents in 114 countries. Sabre also maintains an ownership interest of approximately 70 percent in Travelocity.com, the world's leading online business to customer (B2C) travel site; and it owns GetThere, the world's leading supplier of Web-based business to business (B2B) travel reservation systems. Sabre's major competitors include: Gallileo (owned by the Cendant Corporation), Worldspan (owned by Delta, Northwest, and TWA), and Amadeus (majority owned by Air France, Iberia, and Lufthansa). Major competitors to Sabre's Travelocity.com include Expedia.com and Orbitz.com.

While some virtual teams are within the same function but composed of members from many countries,[12] Sabre's virtual team members are cross-functional, based in North America, and often span several states or regions. Specifically, the teams are composed of members located in the United States and Canada with over 500 members in 65 teams averaging about eight members per team. Virtual team members are located in field offices in the U.S. and Canada, in the company's Dallas/Fort Worth headquarters, and in home offices. Several functions are represented on each team. Account executives are responsible for the actual sale of

computer-based travel reservation systems, field service technicians install the systems in travel agencies all over North America, training representatives assist customers in learning how to use the systems, installation operations coordinators set up installation appointments, account management specialists handle customer billing and collection, and customer service representatives field inquiries from customers throughout the process. In short, virtual team members at Sabre work in a highly interdependent fashion from the very beginning of the process (i.e., the selling of a reservation system) to the end (i.e., the maintenance and service of a system). In some teams, several team members are actually face-to-face, while others are geographically dispersed. Similarly, external team leaders, referred to at Sabre as general managers, are situated at distant locations. To coordinate team activities, team members communicate using a variety of technologies, including e-mail, telephone, video conferencing, and Web-based conferencing (i.e., net meetings). Sabre was also installing a comprehensive enterprise software package during the time of our interviews.

Sabre's North America Sales and Service, Operations, and Financial Services Division began the switch from functionally-based work teams to market-based, cross-functional virtual teams in 1999. The driving force behind the switch was to integrate all of the different functions to improve customer service and responsiveness. There were some telling signs that the existing functional silo approach was limiting the ability of these departments to meet customer needs. For instance, from 1996 to 1998, North American customer ratings of overall satisfaction with service and support fell from a 79 percent satisfaction rate to 68 percent, while the customer satisfaction rate for the competition remained essentially the same. Cross-functional virtual teams were implemented with the expectation that they would strengthen customer focus, leading to greater productivity and improved service, and subsequently greater market share and

higher profitability. As a Sabre virtual team member commented, "We have every aspect of the company represented on the team, so we can bounce ideas back and forth, and we can learn how to make the goals come to life and grow our business."

Sabre's use of cross-functional virtual teams represents a specific (albeit common) type of virtual team in industry. Indeed, there are many types of virtual teams, each presenting unique management challenges. For example, global virtual teams must overcome cultural and communication barriers.[13] Virtual teams assigned to accomplish specific projects often have high start-up costs. Research on cross-functional teams has repeatedly shown that as the level of cross-functionality increases, positive team processes (e.g., information sharing, intra-team task and strategy agreement, and flexibility) and outcomes such as unit performance decrease.[14] The challenge for Sabre was to recognize and prepare for the specific obstacles that confront teams that are both cross-functional and virtual. Lessons learned from Sabre's experience should apply to cross-functional virtual teams and to many other types of virtual teams in which creating synergies based on the special expertise of each member is important for team performance.

In addition, it should be noted that Sabre's virtual teams are moderately virtual. A virtual relationship is one that is primarily conducted using technology, but teams range on the degree to which this is the case.[15] In fact, degree of virtuality is a complex multidimensional construct.[16] One dimension of virtuality is the proportion of time team members spend working face-to-face compared to virtually. A second dimension of virtuality is the proportion of team members at any one location. Along this dimension, the highest degree of virtuality would be teams in which all members work at distant locations. At the other end of the continuum, it is not uncommon for one or two small clusters of virtual team members to work face-to-face with other clusters of workers at distant sites. A third dimension of virtuality is the proportion of time any member

devotes to a virtual team compared to time worked face-to-face on other duties and activities. In

some circumstances, individuals may work only a few hours a month on a virtual team project,

while devoting most of their efforts to a variety of activities unrelated to virtual work. Sabre's

virtual teams met face-to-face once a year. While a few members worked at the same location,

the majority of teammates worked at distant locations. Virtual team activity was the primary

focus of each member. Accordingly, findings from our study should have a reasonably high

level of generality to many other cross-functional virtual teams. Using our interview and survey

data from Sabre, we now turn to a discussion of the seven challenges of virtual teams and the

lessons learned from the Sabre experience.

<div style="text-align: center">THE SEVEN CHALLENGES OF VIRTUAL TEAMS</div>

From our interviews and surveys with almost 600 executives, team leaders, and team

members, we uncovered some surprising insights about the challenges of managing and working

in virtual teams. A summary of our research methodology can be found in Appendix 1. We

discuss each of the seven challenges next, in turn. We consider how Sabre responded to each

challenge, and we extract the lessons learned that should prove helpful to other organizations

using virtual teams. A summary of the challenges and lessons learned can be found in Table 1.

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Challenge 1: *Building trust within virtual teams.* Since virtual team members rarely see

each other, increasing trust among teams is a major challenge. As Charles Handy, author of the

article, "Trust and the Virtual Organization," stated, "It is unwise to trust people whom you do

not know well, whom you have not observed in action over time…"[17] Indeed, most consultants

and researchers agree that the issue of trust is probably the greatest challenge to overcome in

building successful virtual teams and running virtual organizations.[18] For this reason trust has

been called the glue of the global workplace.[19] Building trust may be even more problematic at

Sabre due to the cross-functionality of its teams. Team members will likely speak different

technical languages, interpret things differently, and experience more misinterpretations.[20] Yet

the need for trust is more pressing in a cross-functional team because members will likely need

to negotiate, compromise, and make trade-offs on an ongoing basis and with more limited

knowledge and familiarity with the functional requirements of teammates than in teams

represented by a single function.[21]

While trust is difficult to establish in any new group, team members typically begin to

trust their teammates after spending time with them, sharing meals together, talking about

personal matters, or spending time outside the workplace socially. People trust others when

important information that is shared remains confidential and personal. This type of trust has

been referred to as benevolent or interpersonal trust.[22]   However, in virtual teams, identification

of team member similarities, the creation of social bonds, and the emergence of group norms

take much longer. Accordingly, the establishment of trust among virtual team members often

takes a different path.

Our interviews with virtual team members at Sabre revealed that trust in virtual teams

may often be established based on such factors as team member reliability, consistency, and

responsiveness in dealing with teammates and customers. Sabre team members frequently

referred to what has been called ability- or task-based trust.[23] Trust was rooted far more in the

work-related actions employees took at Sabre rather than the personal bonds often found in face-

to-face teams. Here is what Sabre virtual team members said about trust:

“When you are working with people you never see, you can develop trust, but you must

respond to that person. Follow through. If you tell them you are going to get back to a customer, get back to them." (Dallas/Forth Worth virtual team member)

"I know if I send something to someone, I can trust they are going to get back to me that same day or first thing the next morning. I don't have to chase them down." (Boston virtual team member).

"I think trusting someone in a virtual team is linked directly to their work ethic. It is task first. The trust has been built through the task-based relationship that has evolved." (Account executive)

"For me, trust is follow-through. If you say you are going to do it and you follow through and it's done, then I can start trusting you. There are some people who are nice and we get along face-to-face but when it comes to the work, you just can't trust them because they say they will do something and then they don't." (Dallas/Forth Worth virtual team member)

"You gain the trust in people when they deliver what they promise, when all are contributing to the same idea and goal. I think that on a virtual team you start trusting each other when you start meeting those results and everybody has their role within the team and knows what their responsibility is and takes ownership to achieves results." (Canadian virtual team member).

The lesson generated from these insights is that a critical mechanism for building trust among virtual team members involves observations of rapid responses to electronic communications, reliable performance, and consistent follow-through. Unlike face-to-face teams, where trust often develops based on social bonds from informal chats around the water cooler, impromptu meetings, or after work gatherings, virtual team members often establish trust based on predictable performance.[24] Accordingly, it is important for team leaders to coach

virtual team members on engaging in behaviors that evoke attributions of trust and avoiding long lags in responding, shifting priorities unilaterally, or failing to follow-up on commitments – all behaviors that reduce trust in virtual teams.[25] Encouraging a new virtual team to develop a team charter that explicitly identifies the importance of these types of team member behaviors (e.g., responding to all e-mails from team members within 24 hours) and builds member commitment for them is another complementary strategy leaders may use to better enable the development of trust among virtual team members. These actions will build strong team norms around the types of behaviors that foster trust.[26]

Challenge 2: *Maximizing group process gains and minimizing group process losses on virtual teams.*

Drawing from a basketball team analogy, we often hear coaches emphasize the importance of teams having the opportunity to bond or gel before engaging in competition with other teams.[27] For example, the Los Angeles Lakers coach Phil Jackson's ability to take two larger-than-life National Basketball Association stars like Shaquille O'Neal and Kobe Bryant and forge a healthy team atmosphere is a good sports example. Getting these two super stars and their teammates to think about putting aside big egos, assisting fellow team members, and creating results that are far greater than the sum of the individual contributions is, in large part, responsible for the Lakers' back-to-back national championships in 2000 and 2001. As Bryant stated, "I've always had a different mindset. I would try to destroy whomever I was playing against in practice. But I realize for the team's sake it's about how many people you elevate."[28]

The obvious difference, however, between an NBA team and a virtual team is that close physical proximity of face-to-face teams provides many more opportunities for creating synergies. NBA players practice countless hours in preparation for each game. Virtual teams

must find similar opportunities to practice working as a team, including agreeing upon their goals, learning to cooperate, and utilizing the skills and talents of each team member effectively.

To build synergies within virtual teams, Sabre invested heavily in teambuilding exercises as part of the virtual team launch. Pre-launch classroom activities included the development of a team mission statement and discussion of team values. The goals of these activities are to help members set objectives, clarify roles, build personal relationships, develop team norms, and establish a group identity. Sabre also encouraged virtual teams to get together at a common site once or twice a year to further strengthen team norms. While pre-launch teambuilding and scheduled face-to-face meetings cannot fully compensate for daily informal interaction among team members, these interventions do help team members establish a common set of goals, expectations, and operating principles.

To further instill a sense of shared purpose and goals, each team must complete a business plan outlining its goals and objectives for the coming year. Sabre uses a variety of improvement programs to keep dispersed team members focused on their team goals. One team member commented, "Virtual teams need to understand much more so than co-located teams what goal they are working towards because you are working in such different areas and, in our case, in different countries. It plays a much stronger role if you know what your ultimate target is going to be. Everyone is working toward the same thing."

Increasing cohesiveness and mutually agreeing upon team goals is only part of the challenge of working with virtual teams; virtual teams must also establish processes for solving problems, making decisions, and ensuring follow-through.[29] With no opportunities for informal face-to-face meetings, virtual teams need to anticipate the kinds of issues that they are likely to encounter and prepare themselves for responding quickly and decisively. To help virtual teams

run effective virtual meetings, brainstorm solutions, resolve conflicts, and take action, Sabre has invested heavily in on-going virtual team training.

Each virtual team works its way through a series of CD-ROM based team-training modules developed by the Hillsboro, Oregon consulting firm, The Belgard Group. Nicknamed Tour de Teams by Sabre, completing the 15 training modules involves exercises and scenarios on concepts such as developing a team charter, managing a team meeting, resolving conflicts and selecting new team members. If all team members complete the training on time each quarter, the teams receive an award. Working through these training exercises as a team is one way Sabre prepares virtual teams to work at full speed. One team member commented, "When we complete the team training modules, we have a conference call and go over all of the points. We take them very seriously. So when we have virtual meetings, we now have tools to help us stay on track and communicate effectively."

Sabre provides extensive training to help virtual teams maximize their process gains and use their team resources to their full potential. Our interviews with Sabre executives and virtual team members also revealed that working virtually often reduces team process losses associated with stereotyping, personality conflicts, power, politics, and cliques commonly experienced by face-to-face teams. Diversity research has shown that visual cues such as race/ethnicity and gender can decrease team integration and performance in highly diverse teams.[30] Virtual teams report that it is easier to overlook potentially divisive demographic differences when there is a minimal amount of face-to-face contact. And, while the research is fairly new and still mixed, some researchers have found that electronic collaboration allows for more minority participation, which might increase the overall integration and level of attachment of minority members.[31] Other studies have shown that teams using electronic group decision support systems make

higher quality decisions than face-to-face teams.[32]

Some have argued that physical closeness is not as important as is psychological closeness.[33] In our interviews with virtual team members at Sabre, we did not find that the lack of physical proximity hurt the level of psychological closeness. On the contrary, we heard expressions of relief from some virtual team members who were glad that they did not have to see and work with certain team members on a day-to-day basis. Some team members feel that they have better relationships with their teammates and that their teams are more cohesive because they work virtually, not in spite of it. Here are the views of some virtual team members:

"I think it's better virtually than when you are co-located because you don't have that day-to-day contact with that person. I have walked by and heard gossip about account executives that is very destructive. Of course, I don't hear that kind of thing working from home, and I'd rather not." (Account executive)

"You get into more politics, office politics (in face-to-face teams). Individual personalities clash on the same team and they don't like each other. It just bogs down into this nit picky stuff." (Canadian virtual team member)

A critical priority for virtual team leaders is to help their virtual teams maximize process gains and minimize process losses.[34] Sabre has found that virtual teams, compared to many face-to-face teams, experience much less process loss. Stereotyping is minimized; gossip, politics, and conflict are reduced; and energy is directed toward coordination in their virtual teams. To maximize process gains, Sabre has recognized the importance of training to help launch virtual teams and maintain their effectiveness. Sabre's training initiatives begin with teambuilding and continue with efforts to help virtual teams create charters and mission statements, clarify goals and develop operating norms. Sabre sustains virtual team effectiveness with an on-going virtual

training program to build new skills in meeting management, problem solving, and decision-making. The end results of Sabre's comprehensive training efforts are virtual teams that are able to bridge barriers of time and space and collaborate effectively. The lesson learned from Sabre is that a proactive approach to teambuilding and team training helps build synergies within virtual teams equal to or better than those for face-to-face teams. Sabre's experience has also shown that providing virtual teams with the communications and information technology to interact and make decisions as a team via distance and training team members on how to utilize technology can help make sure that minority opinions are expressed and minimize process losses.

Challenge 3: *Overcoming feelings of isolation and detachment associated with virtual teamwork.* Researchers have long held that people are motivated and satisfied at work, in part, as a result of their interaction with fellow workers.[35] Work provides a social milieu, in which people interact, share stories, show pictures, have lunch or take breaks together, and celebrate promotions, weddings, or the birth of children. In face-to-face teams, these activities occur naturally and frequently and work to build esprit de corps. Team leaders often take this further by using team-building activities such as ropes courses, bowling nights, or barbeques to further solidify team cohesion and spirit. Most of these possibilities are lost in virtual teams, however. In fact, some virtual team members have reported feelings of alienation from their organizations.[36] Virtual team members attending an occasional face-to-face meeting might find themselves confused by a sly comment that makes office-bound members giggle loudly. Consider these comments from virtual team members who experienced isolation at Sabre:

"We get left off a lot of things because there are meetings we can't go to for cost reasons. We miss out on those opportunities to get together and bond as a group and that is tough sometimes. And you do feel like stepchildren sometimes." (Dallas/Forth Worth virtual team

member)

"I find that by working at home, my work is my home and I miss that interaction. I don't have as many people to network with on issues or successes. Sometimes I can't reach anyone by phone and it's frustrating. When you work in an office, you just look over their cube and there they are." (Account executive)

"As much as we want to go and run the world from our bedrooms, in our slippers, we are humans, we have to be touched, seen, and heard." (Account executive)

Sabre takes a variety of approaches to counteract feelings of isolation associated with virtual teams. One strategy is to recognize differences among individuals with respect to needs for social interaction. While an individual with strong social needs may have difficulty with virtual teamwork, other individuals may express preferences to work independently and virtually. In the course of our interviews, several individuals expressed preferences for minimizing the social interaction, gossip, politics, and minor disruptions that are often associated with face-to-face work. In addition, many touted the advantages of working from home, including the reduction in travel time, the opportunity to be close to young children, and the schedule flexibility. Given the range of individual differences in preferences for face-to-face versus virtual work, Sabre includes questions on work preferences in its selection interviews to identify candidates who are well suited for working on virtual teams.

A related strategy for meeting the challenge of worker isolation used by Sabre is the realistic job preview.[37] Candidates for virtual team positions are given a realistic and balanced description of virtual team positions. This affords some candidates an opportunity to self-select out of consideration for positions that they may consider particularly isolated. Similarly, when testing prospective teleworkers, Merrill Lynch uses a simulation room complete with

workstations where employees work for two weeks without any face-to-face contact with managers or other employees.[38]

In some cases, virtual team members spend considerable time with clients, partially satisfying their social needs. In some locations, Sabre provides employees with the option of working from home or working from an office where they will have opportunities to interact with other Sabre employees who may not necessarily be their virtual teammates. Flexibility in work assignments and locations helps to offset feelings of isolation for many virtual team members.

The team building and training sessions at Sabre also help to overcome isolation in virtual teams. Those who study virtual teams point to the importance of initial face-to-face meetings for these types of teams. The interaction allows all team members to put a face with a name and start to build personal relationships with their teammates. Annual company meetings and occasional special events provide additional opportunities for team members to meet face-to-face. These meetings strengthen team identity and help overcome feelings of alienation and isolation.

General managers play an important role in helping virtual team members deal with isolation. General managers communicate frequently with individual team members. Since face-to-face interaction is not feasible, this communication takes the form of routine phone calls and e-mails to keep isolated team members in the loop but also to gather information from team members about work-related issues. One Canadian manager has worked to encourage the most isolated team members to build networks of contacts within the company and to stay in close communication with others in headquarters and around the country. He emphasizes the value in these conversations for learning from peers. Other general managers have established mentor-

protégé relationships to give the most isolated virtual team members a sense of inclusion. As one manager noted, "I work constantly to counteract the out-of-sight, out–of-mind problems with virtual team members. My goal is to keep everyone fully involved."

      <u>Challenge 4</u>: *Balancing technical and interpersonal skills among virtual team members.*

      An often made, but erroneous, assumption is that virtual team members should be selected based exclusively on their technical skills. Since face-to-face interaction among virtual team members is quite limited, some managers might assume that the need for interpersonal skills among virtual team members is much less important than might be the case for face-to-face team members. Martha Haywood, author of the book, *Managing Virtual Teams: Practical Techniques for High-Technology Managers*, quotes one manager as saying, "I don't care about this guy's feelings. I want to know when he's going to call me back."[39] Such a sentiment illustrates the lack of emphasis placed on interpersonal relations, and the importance placed on having virtual team members follow through on task-based requests.

      A significant challenge for managers of virtual teams is the recruitment, selection, and retention of team members who have a good balance of both technical and interpersonal skills. Clearly, virtual team members must have the financial, marketing, or technology skills needed to carry out their specific tasks. Moreover, all employees must be well versed in using the communications technology necessary to coordinate the efforts of a cross-functional virtual team. However, Sabre's experience suggests that virtual team members must also possess excellent interpersonal skills to ensure team effectiveness.

      Some have argued that the secret to creating successful high-performing virtual teams is that team members need to realize that managing relationships in virtual teams is as important (or even more important) as managing the technology.[40] New team members need excellent

team participation skills so that they can assimilate quickly into existing teams, especially on teams that frequently change composition.[41] Further, research has shown that, compared to face-to-face teams, higher levels of task-based conflict characterize virtual teams.[42] However, if properly managed, task-based or cognitive conflict may prove advantageous, as research has found that this form of team conflict can be associated with more innovative team decision-making.[43] Thus, interpersonal skills will be critical for handling this increased level of conflict. The importance of these skills must be recognized at the highest levels of the organization.

A divisional vice president at Sabre captured the importance of striking a balance between technical and interpersonal skills by stating, "In our hiring in the past, we were guided by the level of technical skill, but now we are more sensitive to the level of interpersonal skills an individual brings to the equation, because this is a very key element in how these teams interact. We are more sensitive to a well-rounded person. If the work ethic is there and their ability to work with others is there, we can train them to be very effective at their jobs."

In our interviews, we asked managers and team members to discuss the skills that they thought would be characteristic of an ideal virtual team member.   An overwhelming majority mentioned the ability to communicate as the most important skill. A close second was the desire to support the team and teamwork in general. Team members also listed flexibility and adaptability in relation to the opportunity to play many different roles on the team. Other members talked about the importance of being able to give and receive feedback. Several members mentioned a sense of humor. One Canadian team member commented, "Technical job skills are important but I tend to look at their ability to be part of a team, how they adjust to working with others, and their people skills." Managers often mentioned people who can work independently, are self-starters, think outside of the box, and take initiative. Task-relevant skills

were low on their lists. One manager commented, "It is not what the job is about, we can teach them the job. It is the right personality and the ability to get along with other team members. I don't care if they know 20 different kinds of software or not. I am more interested in how that person is going to fit into that team."

In response to the challenge of recruiting and selecting virtual team members with the right balance of technical and interpersonal skills, managers at Sabre have adjusted their selection procedures. Many managers use behavioral interviewing techniques to assess communications and teamwork skills. They provide a scenario and ask the interviewee how they might respond. For example, a Canadian manager stated, "I will say you haven't seen me for a month, you have been flying around the Northwest Territories. You are out of touch, how are you going to stay connected to us?"

A second approach to selecting virtual team members recently employed by Sabre is the panel interview technique. Candidates for virtual teams are interviewed by their future virtual teammates. Using teleconferences, current members of virtual teams question candidates to assess interpersonal skills and team fit. A secondary benefit of this approach derives from the extra efforts made by current teammates to welcome and socialize candidates that they have helped select. In future years, organizations may develop a variety of simulations to aid in the assessment of candidates for virtual teams. Efforts to find individuals with a good balance of both technical and interpersonal skills should greatly enhance virtual team performance.

Challenge 5: *Assessment and recognition of virtual team performance*.

Again, Charles Handy put it best when he asked, "How do you manage people whom you do not see?"[44] At Sabre, the evaluation and reward of virtual teams and individual team members is a priority. Accordingly, Sabre has developed a very comprehensive, multi-tiered

assessment process. A Team Scorecard approach is used to evaluate team performance. Individual team member productivity is assessed based on accomplishment of objective goals. Contributions to virtual team effectiveness are measured based on managerial observations and peer reviews. The various assessment inputs, in combination, provide managers with a very comprehensive picture of virtual team member performance.

To help assess the productivity of its virtual teams, Sabre has developed a version of a balanced scorecard[45] for each team. A typical balanced scorecard incorporates both financial and non-financial measures of firm performance, and in Sabre's case, team performance. Such a strategy elevates non-financial measures such as employee or customer satisfaction to the level of importance typically held by financial ones such as stock price or return on equity. Sabre's balanced scorecard for virtual teams consists of four measures:

- Growth (share of the market);

- Profitability (costs versus revenue generated for each travel booking);

- Process improvement (cycle time, or the time required to order and install customer hardware); and

- Customer satisfaction (assessed with survey data collected from actual customers).

Of particular interest is Sabre's extraordinary effort to monitor the satisfaction of customers and clients of each team with surveys. At the beginning of every year, Sabre management sets team customer service goals for all 65 of its virtual teams. Managers then collect survey data quarterly from the external customers of each team. Sabre posts team customer service scores on its Intranet, and at any given time, team members know exactly where their team stands relative to all other teams in the company. Some managers also contact customers informally to assess team and individual team member performance. Closely

monitoring customer satisfaction helps to contribute to an intense customer service focus at Sabre. Moreover, virtual team leaders have an objective basis for evaluating and rewarding virtual teams. One area of development for virtual teaming at Sabre is to allow more team member input into setting goals involving customer service outcomes. At present, management has been reluctant to relinquish control over this aspect of decision-making.

Another important aspect of the balanced scorecard is process improvement (i.e., cycle time). Process improvement refers to the extent to which team members can reduce the amount of time from the receipt of a customer order to the successful installation of, and training on, a computer-based travel reservation system. Process improvement essentially translates into learning for Sabre's teams. As with many virtual teams in industry, Sabre's team members are not only responsible for their day-to-day work, they are also charged with constantly improving their work processes and cycle time. One of the keys to enhancing learning at Sabre is communities of practice[46] (or what Sabre calls Centers for Excellence) where virtual teams share best practices and learn from each other. Best practices are archived and teams receive recognition when other teams utilize their ideas. The Centers for Excellence allow learning to occur at Sabre despite the widespread belief that such process improvements are primarily developed in serendipitous face-to-face encounters in traditional work settings.

Members of virtual teams are further assessed based on their individual accomplishments. For most team members, Sabre can track objective measures of performance such as number of installations, development of new business, number of individuals trained to use the system, accuracy of financial contracts, retention of customers, and many other objective measures. Because these measures are both objective and easily quantifiable, assessment of virtual team members is much less vulnerable to stereotyping, favoritism, or other perceptual biases found to

contaminate performance evaluations. Ironically, the evaluation of virtual team members may be more accurate than the evaluation of face-to-face team members by an on-site manager.[47] In the latter case, differences on such demographic factors as race, gender, and age can lower performance ratings for employees that are different on these aspects from their bosses [48] and for teams that are different from team leaders.[49] Contamination of evaluations by perceptual biases is less likely when team leaders have extensive objective data at their disposal.

General managers in charge of virtual teams at Sabre supplement objective measures with observations of individual contributions to virtual team effectiveness for each team member. General managers also track subtle behaviors of virtual team members such as taking a leadership role during virtual team meetings, suggesting strategies for internal quality improvements, coaching new team members off-line, and a variety of intangible actions that contribute to team effectiveness. General managers assess virtual team member contributions by monitoring electronic discussions, team e-mails, and other team archives. General managers commented that they frequently have more accurate records of individual contributions to virtual teams than they do from informal observations of face-to-face teams.

General managers at Sabre further supplement their evaluations of virtual team members with inputs from virtual teammates. Using a modification of the well known 360-degree performance evaluation system, general managers electronically collect peer and even customer input into the evaluation process for virtual team members. In fact, general managers are also reviewed using a 360-degree system, with input from regional vice-presidents, virtual team members, and customers contributing to their overall evaluation.

Sabre has built a very comprehensive performance review system. The balanced scorecard provides an excellent approach for measuring team effectiveness. Individual

contributions to team effectiveness are assessed by monitoring electronic communications and by systematically collecting data from peers and direct reports using the 360–degree format. Performance data provide a solid foundation for recognizing and rewarding team and individual performance, developing new training programs to assist virtual teams, and identifying individual team members who could benefit from off-line mentoring and coaching. As one manager at Sabre stated, "Most everyone's work is measured in the results they produce and through statistics, and it can all be pulled out systematically for each individual." In the virtual workplace, team members can be judged more on what they actually do rather than on what they appear to be doing.[50]

Challenge 6: *Providing constructive feedback and coaching from a distance*.

With ready access to comprehensive performance data, a related challenge for Sabre general managers is to give feedback to virtual teams and individual team members from a distance. In face-to-face teams, managers call impromptu meetings or provide informal counseling to individual team members. In contrast, managers of virtual teams must deliver constructive feedback virtually.

 Sharing information that might evoke defensiveness is never easy, but particularly challenging when managers cannot directly observe the recipient's body language, facial expressions, and other cues that help determine whether the feedback is well understood. It would be easy for virtual team managers to postpone feedback sessions until a face-to-face meeting can be arranged. However, managers recognize the importance of providing timely feedback and resolving performance problems quickly. Therefore, Sabre managers have experimented with ways to overcome distance barriers. Some managers emphasize the importance of choosing the appropriate communications media for delivering constructive

feedback. They recommend using two-way communication channels such as teleconferences so that the delivery of feedback can be followed immediately by an interactive problem solving or counseling session.

Managers indicated that communicating constructive feedback from a distance forces them to do more research, collect and analyze all of the relevant facts, and carefully craft their messages. Knowing that opportunities for clearing up misunderstandings are constrained when interacting with virtual teams, managers emphasize the importance of careful preparation prior to the communication of constructive feedback. Moreover, managers underscore the value of identifying ahead of time resources that the group could tap in their response to the problems identified.

Other managers stressed to us the value of holding a regularly scheduled monthly virtual meeting with each team member. One manager mentioned that he views these scheduled exchanges as opportunities for both parties to build rapport and improve their virtual communications skills. In fact, he reported feeling that he is less likely to pull punches and temper criticism when communicating virtually and is certain that his team members are more candid as well. Specifically, the manager said, "It has to be a two-way street. They have to feel comfortable being honest and straightforward with me even with the bad stuff. I find that communicating electronically overcomes some of the interpersonal issues that might have made me hold back in the past."

Consensus was quite strong among managers of virtual teams that providing constructive feedback from a distance represented a major challenge. Managers stressed the importance of choosing the appropriate communications media, preparing thoroughly, and encouraging candid two-way communication as important steps for meeting the challenge.

Challenge 7: *Selecting the appropriate technology to facilitate virtual team effectiveness.*

Executives at Sabre conduct periodic surveys of virtual team members to help determine the technological needs of teams. Top management recognizes that technology is critical to virtual team effectiveness. They acknowledge that inadequate or outdated technology will severely hamper virtual team performance. They also recognize that too much or the wrong kinds of technology will be expensive, distracting, and may hurt team effectiveness. The challenge is to fit the level of technological sophistication to each team's requirements.

Analysis of the cross-functional virtual teams established at Sabre revealed the need for rapid electronic communications among team members, with clients, and back to headquarters. Further analysis revealed the importance of maintaining a customer relations database so that all virtual team members would have easy access to the history of communications with each client. Employee and customer needs are the driving forces behind technology decisions. With respect to intra-team communication, Sabre provides team members with a variety of options, including e-mail and teleconferencing, and various software packages to facilitate group discussions and decision-making. Since many virtual team members work from home offices, Sabre provides these team members with a technology allowance for the purchase of hardware and software.

In our surveys and in-depth interviews at Sabre, very few virtual team members reported that technology was a major obstacle to team effectiveness—including teams that had relatively limited technology (telephones, laptops, e-mail and faxes). Virtual team effectiveness has proven to be more a function of team members using the technology appropriately and responsively. Unanswered voice mail and e-mail, limited participation in teleconferences, and unwillingness to respond to pages are more damaging to team effectiveness than the lack of sophisticated technology.[51] When used appropriately, technology can help team members make

and implement decisions faster, overcome problems associated with time and distance, and use their resources more effectively.[52]

One team member commented, "I think we have the right technology to do our jobs at Sabre. But sometimes people find it easy to ignore an e-mail or voicemail. Whereas, if they were face-to-face, they couldn't ignore it, they'd have to deal with it right away." Another issue further compounding this problem that was mentioned by Sabre's team members was dealing with the information overload accompanying multiple communication channels, especially e-mail. The research firm International Data Corporation estimates that in 2001 there were 1.4 trillion messages sent from businesses in North America alone (up from 40 billion in 1995).[53] While e-mail overload appears to be a growing problem for everyone, it is particularly problematic for virtual team members. Among virtual team members, rapid responses to teammate requests are critical to the delivery of excellent customer service. Several virtual teams have started to code e-mails according to a priority system. E-mails are designated as immediate action needed, pending issue needing resolution, or information only. Many of the coding schemes are unique to specific virtual teams. Unfortunately, no standardized procedure for managing e-mail overload has been adapted company-wide. However, the basic practice has proven to be very helpful because it helps team members communicate to each other priorities and helps to overcome the challenge of making requests through e-mail or voicemail rather than face-to-face.

CONTINUOUS IMPROVEMENT AT SABRE

While we have focused on many of the positive lessons learned from Sabre's experience with virtual teams, some of their lessons were learned by trial and error and new problems continue to surface. General managers reported that it took some time to recognize how to deal

with the sense of isolation among certain virtual team members. Initially, general managers interpreted minimal communication as a signal that all was well with virtual team members working from home offices in isolated locations. Over time, managers recognized that a subset of virtual team members needed more frequent and in some cases almost daily communication with their supervisors in order to overcome feelings of isolation and neglect. Similarly, some general managers reported an initial reluctance to provide strong negative feedback virtually, preferring to wait for face-to-face meetings. General managers learned over time that virtual team members preferred rapid virtual feedback, both positive and negative, to delayed face-to-face feedback. These examples illustrate the continuous learning necessary to manage virtual teams effectively.

Our research identified a variety of other problems associated with managing and supporting virtual teams at Sabre. General managers are still struggling with effective strategies for empowering virtual teams. The human resource department continues to fine-tune the content and delivery of virtual team training materials. Virtual team members have little patience for virtual team training modules that seem unrelated to the day-to-day problems they encounter. Lastly, the organization continues to struggle with the appropriate mix of rewards for individual contributions and team performance. Executives at Sabre recognize the complexity of balancing individual, team, region and company-wide incentives to motivate peak performance. So, while we have emphasized the positive lessons learned from Sabre, several of these lessons were learned after false starts, stumbles, and reassessments. Moreover, new problems require continuous fine-tuning of management practices.

Working with other similar organizations, we have found that this on-going process of adaptation and adjustment is crucial in maximizing the effectiveness of virtual teams.

Permanent, inflexible programs or policies such as a rigid structure or one shot training do not provide adequate support for a form of collaboration such as virtual teaming, in which members themselves are expected to grapple with uncertainty, innovate, and remain flexible. The ability to establish and re-establish equilibrium between changing needs and requirements is a critical competency for organizations utilizing virtual teams.[54]

HAVE VIRTUAL TEAMS IMPROVED SABRE'S BOTTOM LINE RESULTS?

Most of the interviewees we spoke with at Sabre agreed that the transition from traditional, functional, face-to-face teams to cross-functional, virtual teams has improved customer service. However, subjective positive impressions tell only part of the story. Regarding more objective measures of outcomes, it is important to note that over the period that Sabre has introduced cross-functional virtual teams, customer ratings of satisfaction with Sabre's level of service and support have improved each year from a low of 68 percent in 1997 to 85 percent in 2000. In addition, North American market share has increased from 43 percent in 1997 to 50 percent in 2000. Also during this period, Sabre's number of travel bookings increased significantly each year. Clearly, customers have responded very positively to Sabre's use of virtual teams.

It is important to keep in mind, however, that benefits such as improved customer service are only half of the equation needed to assess the efficacy of virtual teaming. In determining any return on investment, managers must also assess the costs of implementing organizational designs. A central issue for virtual teams is that it can be difficult to assign monetary values to costs that are not easily quantified.[55] This may include opportunity costs associated with internal resources devoted to the team. Several researchers have recommended that calculating the costs of team member time and support person time based on average salary and time spent with

virtual teams is a good start.[56] Data regarding costs and benefits of virtual teaming can then be used in a comparative mode to compare different virtual efforts using the same metric. The goal of such an analysis is to determine if a virtual team's charter is consistent with a company's bottom line objectives. Given the substantial resources necessary to support virtual teams, these are important questions to address in designing virtual teams and setting them up for success.

SABRE'S VIRTUAL TEAMS: CHALLENGING CONVENTIONAL WISDOM

Table 2 shows a summary of how our findings at Sabre challenge conventional wisdom with regard to virtual teaming.

Insert Table 2 about here

Specifically, we demonstrate how the lessons learned from our study of cross-functional virtual teams extends existing literature and questions common assumptions. Much of what we documented based on a relatively large sample of virtual teams extends, and sometimes even contradicts, previous reports. We hope this provides a catalyst for both improved practice and subsequent large-scale empirical research in the near future. We hope our research has helped to dispel some of the common myths of virtual teaming and expanded current thinking about the dynamics of virtual teams. We briefly summarize each piece of conventional wisdom in Table 2 and show how each contrasts with our findings at Sabre.

First, conventional wisdom suggests that establishing trust in virtual teams is difficult and fragile. Our research findings indicate that trust among virtual team members can be strong and enduring, even in a cross-functional setting where a number of factors make establishing trust particularly challenging. However, trust in virtual teams is based less on interpersonal relationships and much more on reliability, dependability, and responsiveness to virtual

teammates. Accordingly, it is important that team leaders coach new virtual team members on specific behaviors that lead to attributions of trust.

Second, conventional wisdom suggests that virtual teams will experience process losses based on gaps in communication, difficulties in reaching consensus, and the relative ease of social loafing among distantly located members. Our findings suggest that with proper preparation and strong leadership, virtual teams can maintain focus and create synergies that match or exceed face-to-face teams. Our findings also highlight the value of comprehensive training to prepare virtual team members for the many challenges they are likely to encounter.

Third, conventional wisdom suggests that virtual team members situated at distant locations will experience isolation and detachment, which could adversely affect their commitment and contribution to the virtual team. Our findings indicate that many individuals enjoy the autonomy, flexibility, and freedom from organizational politics associated with working in isolation. Our findings further suggest that virtual team leaders can help overcome feelings of isolation through frequent off-line communication. These findings have important implications for selection of virtual team members and development of virtual team leaders to diagnose and respond quickly to problems of isolation and detachment.

Fourth, conventional wisdom suggests that a major consideration in forming virtual teams is to take advantage of the technical expertise of geographically dispersed members. Particularly, the formation of cross-functional virtual teams is often based on the specialized skills of individual members. Our findings indicate that selection of members based on both technical expertise and interpersonal competencies including communication and collaboration skills enhances team performance.

Fifth, conventional wisdom warns of the difficulties and complexities encountered by virtual team leaders charged with assessing the performance of team members who they cannot observe first-hand. Our findings indicate that virtual team leaders can draw on multiple information sources to assess individual contributions, including archives of virtual team communications, 360-degree feedback from team members, and customer satisfaction reports. Indeed, our findings suggest that virtual team leaders are in a position to complete comprehensive performance reviews and constructively manage the performance of the virtual teams they lead.

Sixth, conventional wisdom suggests that virtual team leaders may find it difficult to give negative feedback to their virtual team members. Our findings suggest that virtual team managers can overcome the difficulties of providing negative performance feedback. In some instances, virtual team leaders provide more timely feedback electronically. In other instances, virtual team leaders are more candid and less emotional when communicating negative feedback virtually.

Finally, conventional wisdom stresses the importance of providing sophisticated communication technology to virtual teams. Our findings indicate that helping virtual team members match the appropriate communication technology to the task at hand is more critical for virtual team effectiveness than adopting the most advanced technologies. In addition, preparing virtual team members to use the existing technology to its full potential contributes to team effectiveness. Often the team leader must become a communication technology role model to help team members break old habits and use communication technology effectively. This may also include encouraging the team to modify how they use the technology so that it can be applied in ways that best facilitate team process gains.

As organizations expand globally, the need to tap the talents, experience, and special skills of teams of employees working in distant locations will only increase. Most corporate executives report that technology-mediated communication and virtual teaming will increasingly replace the physical travel of their employees. However, creating and supporting virtual teams is a very difficult assignment for any organization. Identifying the challenges ahead and learning from the Sabre experience represents a good place to start. In the words of one Sabre executive we interviewed, " I think that virtual teams is inevitably the way business is evolving. We are working hard to get ahead of the curve."

TABLE 1

Challenges to Virtual Teams and Lessons Learned

Challenges to Virtual Teams	Lessons Learned from Sabre, Inc.
1. Building trust within virtual teams.	➢ Ensure rapid responses to electronic communications, reliable performance, and consistent follow-through. ➢ Develop a team charter to encourage these norms.
2. Maximizing group process gains and minimizing group process losses on virtual teams.	➢ Utilize teambuilding and team training to build synergies. ➢ Provide teams with the communications and information technology to interact and make decisions as a team via distance. ➢ Train team members on how to utilize technology to ensure sure that minority opinions are expressed.

Challenges to Virtual Teams	Lessons Learned from Sabre, Inc.
3. Overcoming feelings of isolation and detachment associated with virtual teamwork.	➤ Recognize differences among individuals with respect to needs for social interaction. ➤ Give a realistic and balanced description of virtual team positions. ➤ Use flexibility in work assignments and locations. ➤ Use team building. ➤ Team leaders should communicate frequently with individual team members.
4. Balancing technical and interpersonal skills among virtual team members.	➤ Use behavioral interviewing techniques and panel interviews to assess communications and teamwork skills.

Challenges to Virtual Teams	Lessons Learned from Sabre, Inc.
5. Assessment and recognition of virtual team performance.	➤ Consider a team scorecard approach with a mixture of objective and subjective measures. ➤ Assess virtual team members' contributions by monitoring electronic discussions, team e-mails, and other team archives. ➤ Use 360-degree feedback.
6. Providing constructive feedback and coaching from a distance.	➤ Use two-way communications channels such as teleconferences so that the delivery of feedback can be followed immediately by an interactive problem solving or counseling session. ➤ Hold regularly scheduled virtual meetings with each team member.
7. Selecting the appropriate technology to facilitate virtual team effectiveness.	➤ Fit the level of technological sophistication to the teams' requirements. ➤ Emphasize training to help teams use the technology effectively.

TABLE 2

Conventional Wisdom about Virtual Teams Versus Research Findings at Sabre

Conventional Wisdom	Research Findings at Sabre
1. Virtual team members cannot trust those members they do not see. If trust can be built, it is often very fragile.[57]	1. Virtual team members can and do trust their fellow team members. The level of trust is oftentimes equal to that of face-to-face teams.
2. Virtual teams will be more susceptible to process losses than will face-to-face teams.[58]	2. Virtual teams can overcome process losses and become even more efficient than face-to-face teams.
3. Virtual team members will feel isolated and detached from their teams.[59]	3. Many virtual team members prefer to work autonomously to avoid cliques, interpersonal clashes, and office gossip.
4. Virtual team members should be hired primarily for their technical skills, not their teamwork skills.[60]	4. Teamwork skills are at least as important as technical skills.
5. Virtual team leaders cannot assess those members they do not (or rarely) see.[61]	5. Technology can make virtual team member assessment and performance management easier and more accurate than before.
6. Virtual team leaders will find it difficult to give negative feedback to team members.[62]	6. Virtual team leaders find it easier to give negative feedback to team members.
7. Providing virtual teams with advanced communication technology is the key to their success.[63]	7. Helping virtual team members know when to use what communication technology and how to tailor the use of the technology is the key to their success.

APPENDIX 1

SUMMARY OF METHODOLOGY USED TO STUDY VIRTUAL TEAMS AT SABRE

Sabre's North American Sales and Service, Operations, and Financial Services Division was selected based on its extensive use of virtual teams and strong interest in documenting the current state of virtual teaming. Our work with other organizations using virtual teams suggests that Sabre's use is representative and comparable to the typical organization. All 65 virtual teams and their team leaders in this division of Sabre were selected to participate in our survey. From those 65 teams, members of a representative subset of 18 teams (i.e., varying by division, region, size of customer, and country) were selected to participate in face-to-face interviews. From those 18 teams, a representative subset of 58 team members (34 percent of the total of 169 members) were chosen to be interviewed based on variance in job function, demographics, and organizational tenure. We also interviewed the 11 team leaders of these 18 teams (some team leaders led more than one team), six divisional vice-presidents who supervised the team leaders, and the executive vice president of the North American Division. No team members or leaders declined to be interviewed, and only one division vice president declined based on scheduling conflicts.

Separate interview protocols were developed for each of the three organizational levels; and all interviewees within each level were asked the same questions. Each of the researchers interviewed a roughly equal number of team members and leaders. The majority of the interviews were conducted in person. The researchers traveled in the U.S. from New York to California and in Canada from Quebec to British Columbia to meet with virtual team members and leaders. Each interview lasted for one hour. The interviews were tape recorded and in some cases video-recorded. Full transcriptions of each interview were prepared. All of the researchers

participated in the divisional and executive vice president interviews via conference call. The interviewees were told that Sabre and the researchers had formed a partnership to examine the key drivers of, and significant obstacles to, virtual team effectiveness. All respondents were assured that their interview and survey responses were the property of the researchers, and that only summary data would be returned to Sabre. Thus, their responses were anonymous and confidential. Total time to conduct and analyze the interviews was six months.

Regarding the analysis of the interview data, all researchers read each of the interview transcripts and created their own categories and themes. Each researcher then collected representative comments under each category. The researchers then met face-to-face to compare the categories created. Discrepancies were resolved, and the researchers agreed upon a consensus set of categories. Representative comments were then collated by category. This process allowed us to retain only those themes that were represented by a large number of comments from the respondents.

Web-based surveys were administered to all team members, team leaders, and divisional vice presidents. The survey response rate for team members was 84 percent (460 out of 550); the survey response rate for team leaders was 89 percent (23 out of 26); and the survey response rate for divisional vice presidents was 86 percent (6 out of 7). Survey data were analyzed at both the individual and team levels of analysis.

While the top-level findings from this combined qualitative and quantitative research are used to draw the conclusions presented here, additional analyses are being conducted to address more specific research questions regarding virtual team effectiveness. Details concerning these analyses and findings are available by request from the first author.

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[29] Gibson & Cohen, op cit.

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Research paradigms for a changing workplace: 187-215. Washington, DC: American Psychological Association.

[34] The notion of process gains and losses is explained in more detail in J.R. Hackman's work. See Hackman, J.R. 1987. The design of effective work teams. In J.W. Lorsch (Ed.), *Handbook of organizational behavior*: 315-345. Englewood Cliffs, NJ: Prentice-Hall; and Hackman, J.R. (Ed.) 1991. *Groups that work (and those that don't)*. San Francisco: Jossey-Bass.

[35] Emery, F.E. 1959. *Characteristics of sociotechnical systems*. London: Tavistock.

[36] Geber, op cit., 36; Cascio, op cit., 82.

[37] Philips, J.M. 1998. Effects of realistic job previews on multiple organizational outcomes: A meta-analysis. *Academy of Management Journal*, 41(6): 673-690.

[38] Kurland & Bailey, op cit.

[39] Haywood, M. 1998. *Managing virtual teams: Practical techniques for high-technology managers*. Boston: Artech House.

[40] Caproni, op cit., 261.

[41] Townsend et al., op cit., 23.

[42] McLeod et al., op cit.

[43] Jehn, K.A. 1997. A qualitative analysis of conflict types and dimension of organizational groups. *Administrative Science Quarterly*, 42(3): 530-557; Eisenhardt, K.M., Kahwayjy, J.L., & Bourgeois, L.J. III, 1997. How management teams can have a good fight. *Harvard Business Review*, 75(4): 77-85.

[44] Handy, op cit., 41.

[45] For more information on the balanced scorecard, see: Kaplan, R.S., & Norton, D.P. 1996. Using the balanced scorecard as a strategic management system. *Harvard Business Review*, 74(1): 75-85.

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[47] Alexander, S. 2000. Virtual teams going global. *Infoworld*, 22(46): 55-56.

[48] See, for example, Kraiger, K., & Ford, J.K. 1985. A meta-analysis of rater race effects in performance ratings. *Journal of Applied Psychology*, 70(1): 56-65. See also, Pulakos, E.D., Oppler, S.H., White, L.A., & Borman, W.C. 1989. Examination of race and sex effects on performance ratings. *Journal of Applied Psychology*, 74(5): 770-780.

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[50] Andy Campbell, a virtual teams consultant for Applied Knowledge Group in Reston, Virginia argues that in traditional organizations, people were often measured by the amount of activity they were engaged in, and managers asked such questions as "Do they look like they are working?" This idea rested on the assumption that if people appeared to be working, then they must be. Additional thoughts from Campbell can be found in Alexander, op cit.

[51] See Montovani, G. 1994. Is computer-mediated communication intrinsically apt to enhance democracy in organizations? *Human Relations*, 47(1): 45-62, for a discussion on the limits of using technology to improve the quality of communication for dispersed team members.

[52] For more information on making appropriate choices with regard to face-to-face versus electronic communication and for managing the technological environment in a virtual team setting, see Caproni, P.J. 2001. *The practical coach: Management skills for everyday life*. Upper Saddle River, New Jersey: Prentice-Hall (see specifically, Chapter 8, entitled, "Diverse teams and virtual teams: Managing differences and distances: 247-287); and Munter, M. 1998. Meeting technology: From low-tech to high-tech. *Business Communication Quarterly*, 61(2): 80-87.

[53] Weinstein, E. Help! I'm drowning in E-mail! *Wall Street Journal*, 10 January 2002, B1.

[54] Earley, P.C., & Gibson, C.B. 2002. *Multinational teams: A new perspective*. Mahwah, NJ: Lawrence Erlbaum Associates.

[55] See Levenson, A. & Cohen, S.G. forthcoming. Meeting the performance challenge: Calculating ROI for virtual teams. In C.B. Gibson & S.G. Cohen (Eds.), *Emerging perspectives on creating the conditions for virtual team effectiveness*. San Francisco: Jossey-Bass; and Levenson, A. forthcoming. ROI and strategy for teams and collaborative work systems. In M. Beyerlein, C. McGee, G. Klein, L. Broedling, & J. Nemiro, (Eds.), *The collaborative work systems field book*. San Francisco: Jossey-Bass Pfeiffer, for more information about assessing the costs and benefits of virtual teaming.

[56] Levenson and Cohen, op cit.

[57] Alexander, op cit.; Cascio, op cit.; Caproni, op cit.; Geber, op cit.; Handy, op cit.; Jarvenpaa et al., op cit.

[58] Alexander, op cit.; Cascio, op cit.; Geber, op cit.; Kurland & Bailey, op cit.

[59] Caproni, op cit.; Cascio, op cit.; Geber, op cit.; Handy, op cit., Kurland & Bailey, op cit.; Kurland & Egan, op cit.

[60] Geber op cit.; Townsend et al., op cit.

[61] Cascio, op cit.; Handy, op cit.; Kurland & Bailey, op cit.

[62] Kurland & Bailey, op cit.

[63] Caproni op cit.