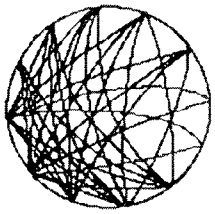
CHAPTER I



WHY VIRTUAL TEAMS?

The New Way to Work

The conventional way in which people work is coming unglued.

Until recently, when you said that you worked with someone, you meant by implication that you worked in the same place for the same organization. Suddenly, in the blink of an evolutionary eye, people no longer must be in the same *place—collocated'—in* order to work together. Now many people work in *virtual teams* that transcend distance, time zones, and organizational boundaries.

Today's trend is tomorrow's reality: In the coming decades, most people will work in virtual teams for at least some part of their jobs.

Human beings have always functioned in face-to-face groups. While the use of teams is on the rise—the *Wall Street Journal* reports that two-thirds of American companies employ them—the face-to-face aspect of normal working relationships is changing dramatically.[2] Electronic communication and digital technologies give people an historically unprecedented ability to work together at a distance. Now there is a powerful trend to team across organizational boundaries.

Today, people frequently work across internal boundaries—the specialized functions and divisions within their companies. And they often work across external boundaries—in partnership across corporate lines with vendors and customers, in alliances with complementary enterprises, and even in association with direct competitors.

A new form of boundary-crossing team is emerging as the basic working unit of the Information Age organization.

Virtual teams are the peopleware for the 21st century.

The onrushing explosion in information and communication technologies makes change in how we team inevitable:

- Dataquest, the technology market research firm, predicts that personal computer (PC) sales, of which there were none in the 1960s, will top 100 million annually by the year 2000[3]—one PC for every 60 people on the planet; and
- By the same time, according to Action Cellular Network,[4] more than 60 million people will use cellular phones—which did not exist in the 1970s.
- Voicemail, rare in the 1980s, is now widespread and all but indispensable in most organizations today.
- Fastest growing of all in the 1990s is the Internet and the World Wide Web, with its internal offspring, intranets. The number of new Internet connections each day surpasses anyone's ability to accurately count them. According to Matrix Information and Directory Services, which has tracked Internet growth for years, electronic connections among people and computers are expanding perhaps on the order of 100 percent annually.[5]

Distance-spanning communication tools open up vast new fertile territory for "working together apart."[6] For the first time since nomads moved into towns, work is diffusing rather than concentrating as we move from predominately industrial to informational products and services.

In all industries and sectors, people are working across space and time. Virtual teams thrive in big companies like Hewlett-Packard and Eastman Chemical Company, in smaller ones like Rodale Press and Buckman Laboratories, and even smaller ones known only to their own markets like Tetra Pak Converting Technologies and US TeleCenters. In government agencies large and small, such as the U.S. Department of Commerce and Minnesota's Department of Natural Resources, in education including Maine's Center for Educational Services and the Massachusetts Teachers Association, and in nonprofits like New York-based Women's World Banking and Boston-based Dance New England, small groups of people work together across boundaries.

How do these new virtual teams form? Sometimes a sudden need to work cross-organizationally sparks their formation. Such was the case recently in the magazine industry.

Like a Rolling Stone

With a circulation of 1.3 million, *Men's Health*, whose moniker is "tons of useful stuff for regular guys," is the second largest men's magazine in the United States. It has in a few short years outstripped its two biggest competitors—Esquire and *Rolling* Stone—both of which have been in business decades longer. *(Men's Health* has grown so rapidly that it has surprised even its publisher Rodale Press, famous for its flagship magazines, *Prevention* and *Organic Gardening.)* The combined circulation of the three men's magazines just about equals that of *Sports Illustrated,* the biggest men's publication in the United States with three million subscribers.

Suddenly in 1995, the three smaller arch competitors found themselves working on a crash project as partners in a virtual team brought together by a mutual client.

"We compete with *Rolling Stone* and *Esquire* for the same advertising business," explains Rodale vice president and *Men's Health* publisher Jeff Morgan. "One day Goodby Silverstein [the San Francisco advertising agency] that represents our client, Haggar [a men's clothing manufacturer], came to *Rolling Stone, Esquire,* and us with a challenge. Haggar would either buy its new ad campaign from the three of us together or

from a combination of titles within Time Inc., including *Sports Illustrated.* All of us were dumbfounded. We're the biggest competitors there are and we had literally a week to become partners!"

It was not a small sale. It meant multiple pages of advertising that would run over the next two years in each magazine. It offered direct exposure to Haggar's market in the retail environment: The three competitors would jointly custom publish a 14-page guide for casual fashion. The 300,000-piece press run would go to customers when they bought Haggar products. It also would become a give-away in in-flight magazines and in health clubs around the United States. *Men's Health* regarded it as "the Cadillac of value-added projects."

A year later you could still hear the excitement—and the outcome— in Morgan's voice: "The client wound up choosing the three of us rather than Time Inc. This was an important win for us and it's the first time I've ever heard of this in publishing."

How did they do it? They combined face-to-face meetings with telephone conference calls and many faxes. Low-tech by today's standards but electronic nonetheless.

People from each magazine's Bay Area office attended the first meeting in San Francisco, home to the advertising agency Goodby Silver-stein & Partners. Then a conference call took place with 15 people on the phone at the same time—from San Francisco, Chicago, Dallas, and New York where all the magazines' advertising directors and publishers are based.

This initial brainstorming session generated enough ideas for the New York contingents of the three publications to take over. They in turn got together at *Rolling Stone's* offices where each of the magazine's marketing directors threw their ideas on the table. Together, they fleshed out the basic concept. A week later the advertising directors of the three magazines flew to Dallas and presented their idea to the clients, Haggar and Goodby Silverstein. Next the advertising agency worked over the phone, coaching the virtual team on how to present the ultimate look. Finally, within three short weeks of the very first phone call, Haggar selected the joint proposal of the virtual team of competitors over that of the media giant.

never would have happened if Goodby Silverstein hadn't proposed it," Morgan says. "But it was such a unique proposition that we just got our heads in there, did it, and then walked away. This is the wave of the future." Considered a harbinger of things to come, the project was written up in the advertising trade press as an example for others to follow.

In record time, the three magazines created a business-winning virtual team. Had they not done so, all would have lost. As with many other industries, losing is not an option for the rapidly changing, highly competitive world of publishing.

The *Men's Health* story may seem a bit extreme—working at light speed with your arch competitors to succeed at jointly winning a highly lucrative contract. It requires an attitudinal shift that traditional business practice does not support. But it is no longer all that exceptional. Teams of people working across boundaries of space, time, and organizations are increasingly common. What is so new is the easy availability-of technology to make it happen. Even the Haggar ad campaign proposal could not have succeeded in such record time without the widespread use of communication technology. Tools such as easy-to-set-up-conference calls, PCs, and fax machines everywhere were in limited use-even as recently as a decade ago.

The Virtue of Virtual

It was not until the 1990s that the word "virtual" made it into the headlines on a regular basis. As a word, virtual has the same Latin root as virtue, an intimately personal quality of goodness and power. It's archaic meaning is "effective because of certain inherent virtues or powers," an apt expression for successful virtual teams.

More recent use brings newer meanings:

- Virtual as in "not in actual fact" but "in essence," "almost like"; and
- Virtual as in "virtual reality."

The "almost like" part of the definition, as in "they act virtually like a team," is on target. "Virtual" is used in the same way in the terms "virtual

corporation," "virtual organization," and "virtual office." A virtual team conjures up a different picture from the one of people in the same organization working together in the same place.

When we use the term virtual, we do *not* mean it as another dictionary definition puts it: something that is "not real" but "appears to exist," something "that appears real to the senses" but is not in fact. It is a bit like the old TV commercial about a brand of audiotape: "Is it live or is it Memorex? With Memorex, you can hardly tell."

With a virtual team, can you tell? It feels like a team and acts like a team but is it a live team? Answer:

> *Virtual teams are live, not Memorex. They are most definitely teams, not electronic representations of the real thing.*

The newest meaning of "virtual" attests to forces that are fast moving teams into an altogether different realm of existence—virtual reality—or more precisely, *digital* reality. Electronic media together with computers enable the creation of spaces that are real to the groups that inhabit them yet are not the same as physical places. The eruption of the World Wide Web in the last decade of the millennium has allowed virtual teams to create private electronic homes. These interactive intranets—protected members-only islands within the Internet—signal a sharp up-tick in the human capability to function in teams.

> *Virtual teams are going digital, using the Internet and intranets.*

And the Definition Is

So what exactly is a virtual team? A virtual team, like every team, is a group of people who interact through interdependent tasks guided by common purpose.

Unlike conventional teams, a virtual team works across space, time, and organizational boundaries with links strengthened by webs of communication technologies.

The image of face-to-face interactions among people from the same organization typifies our older models of teamwork. What sets virtual teams apart is that they routinely *cross boundaries*. What makes virtual teams historically new is the awesome array of interactive technologies at their disposal. Virtual teams now use myriad electronic technologies to cope with the opportunities and challenges of cross-boundary work.

Regular meetings, encounters in the hallway, getting together for lunch, dropping into one another's offices—these are our standard methods for getting things done. They lag behind everyday reality. People rarely see one another when they are in different places, spread out around the world, or even housed in different parts of the same city. Motorola, for example, has some 20 locations just in the Northwest Chicago area, each of which has multiple buildings. In the most extreme cases, some teams *never* meet face-to-face but work together online. Such is the case with the 1200 employees of Buckman Laboratories in Memphis, Tennessee, who form and disband numerous situation-specific virtual teams on a daily basis—even though they are spread all around the globe.

A major reason that many of today's teams are ineffective is that they overlook the implications of the obvious. People do not make accommodation for how different it really is when they and their colleagues no longer work face-to-face. Teams fail when they do not adjust to this new reality.

Close *Is Really* Close

What first comes to mind when you think of a team? A group of people working side-by-side, in close proximity to one another—a basketball or a rugby team, perhaps.

How close do you have to be to get the advantage of being in the same place? That is, what is the "radius of collaborative collocation?" The

startling data that MIT Professor Tom Allen has been compiling for the past several decades show that the radius is very small.

> *Based on proximity, people are not likely to collaborate very often they are more than 50 feet apart.*[7]

The probability of people communicating or collaborating more than once a week drops off dramatically if they are more than the width of a basketball court apart. To get the benefit of working in the same place, people need to be quite close together.

To put this in perspective, think of the people you regularly work with. Are they all within 50 feet of you? Or are some of your coworkers a bit more spread out, down the hall, on another floor, in another building, or perhaps in another city or country? Increasingly, the people we work with routinely are no longer within shouting distance. Any team of more than about 10 to 15 people is by sheer physical mass probably more than 50 feet apart (Figure 1.1).

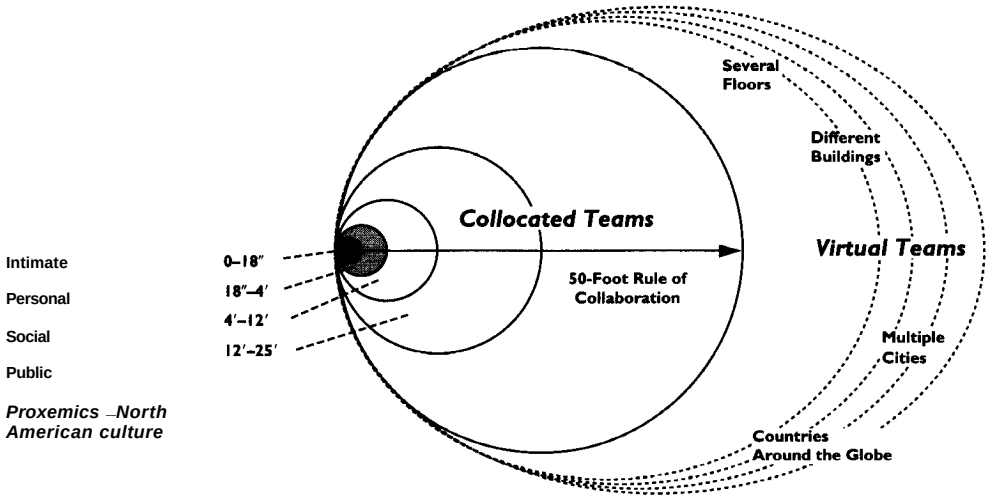
From a team perspective, the important distances are the personal ones. How close people like to be for interpersonal interactions varies by culture.[8] How far away do people have to be before they need to worry about compensating for distance?

The farther apart people are physically, the more time zones they have to cross to communicate. Thus, time becomes a problem when people who are not in the same place need some of their activities to be in sync. The window for routine synchronous work shrinks as more time zones are crossed, closing to effectively zero when people are on opposite sides of the globe. People who work together in the same place also can have time problems. Salespeople or consultants, for example, rarely occupy their offices at the same time. Even apparently collocated teams often cross time boundaries and need to think virtually.

My Organization Is Your Organization

Do all the people you work with to get your job done work for the same organization? Probably not.

Figure I .1 Collocated to Virtual Distance



Most core business processes require that people regularly work across organizational boundaries. Supply chain management, marketing, product development, sales, quality improvement, and change management are just a handful of activities that require virtual teams to work over walls and across borders.

Large-scale systems change invariably requires teamwork across organizational borders. To reinvent its administration and information management system, the U.S. Department of Commerce has involved hundreds of people in teams from five major bureaus and dozens of smaller organizations. Usually numbering 8 to 10 people each, these virtual teams also involve scores of contractors who provide everything from consultation on change management to software programming.

When Acacia Mutual Insurance Company in Washington, DC, decided to have a third-party administrator do the processing of its new variable universal life insurance product, it immediately created a virtual team with its supplier, Financial Administration Systems, located in

Connecticut. Alliances, joint ventures, and partnerships all require companies to establish cross-boundary teams of small groups from member organizations.

Acacia's ability to easily team with a third party draws on its decade-long change effort that began when a new CEO arrived in 1988. "I wanted people to embrace customer service and have a team orientation," says Charles T. ("Tuck") Nason, also Acacia's chairman. "It was a very bureaucratic, function-oriented culture." By working in cross-organizational teams, the company has reduced new product development time from 14 to 18 months to 9. "Every insurance company should be doing this," Nason says who also cautions that it requires patience. "It's a long and arduous process. The magnitude of the change we're talking about is so huge that there's often much resistance throughout the organization."

Not surprisingly, virtual teams also are springing up in the very industries driving the momentous changes that are carrying us from one age of civilization to the next.

A SunTeam Success Story

One company betting its future on operating in cyberspace since its 1982 inception is California-based Sun Microsystems. Highly decentralized— it comprises six independent "operating companies"— Sun maintains an extraordinary information infrastructure: 1.5 million e-mail messages flow through the 17,000-member company each day. Some Sun people say they no longer use paper at all. What other companies manage with more people, Sun tries to achieve with better and faster communication systems. CEO Scott McNealy's 1995 corporatewide injunction "to operate on Internet time without compromising quality" set a daunting new standard.

With sales soaring and profits keeping pace with the annual good news, Sun nonetheless launched an initiative that same year to solve some "real nasty problems," as the company's head of research and development, W. R. "Bert" Sutherland, puts it. In a few short months, it created 70 "SunTeams," virtual teams that operate across space, time,

and organizations to address a number of critical business issues that the company identified (see Chapter 7).

Launched *by Customer Request*

Among the problems that the company wanted to solve was how to respond to requests for additional services from large customers. "Motorola, for example, wanted EDI (Electronic Data Interchange) ordering according to their own system requirements," reports Bill Crowley, who co-led one of the SunTeams and who in his "day job" serves as Operations Manager-North America for SunExpress, Sun's aftermarket business unit. "Our challenge was to figure out how to mass customize things that appeared to be highly customized. Could we then promote them as products?"

To solve the problem, Crowley and a few of his colleagues formed the Customer Order Cycle Team. "Phase 1 was to identify the services that customers were requesting and decide which one to work on. We selected Motorola and its EDI ordering system request as the test case. The idea was that they would be able to place orders online for standard things that they use all the time such as toners and cartridges for their printers and have them in two days. They could place their order online, have it checked for availability, and then have it shipped. Minimal human intervention would be required unless there was a stockout or a problem with the order."

The next step was to expand the team to include all the people they needed. Crowley co-led the team with another SunExpress manager, both of whom were based at the business unit's headquarters in Chelmsford, Massachusetts, 3000 miles from Sun's home base in California. "When we first started the team, we hadn't yet selected the program we wanted to implement," Crowley says, "hut after we made our choice, we needed to add more people." To cover the company's two sales regions outside North America, they recruited a marketing person from Sun's Japanese operation and one from Sun's European operations in Almere, Holland. In addition, they enlisted finance, information resources, and marketing people from SunExpress headquarters. They also

sought the sponsorship of two senior executives, the general manager and the vice president of worldwide operations, both of whom report directly to the president of SunExpress.

"One *of* the values we had was to involve our customers and suppliers as we needed them," Crowley says. Thus, Motorola's Austin, Texas, operation, which initiated the original customer request, and a supplier, Caterpillar Logistics Systems, based in Peoria, Illinois, which provides transportation and warehouse management worldwide for SunExpress, both became episodic members of the team.

"One of our critical internal relationships is with Sun Microsystems Computer Company (SMCC) (the Sun operating company that designs and produces its products). Every SMCC customer becomes *our* (Sun-Express) customer at some point so we also had one of their sales reps involved. Motorola is a huge account and we wanted to make sure that we were working in conjunction with SMCC sales," Crowley reports.

"We moved people in and out as we needed them, kept senior management up-to-date, and made sure that anyone who was impacted knew what we were doing." The team invited the senior sponsors to meetings when necessary and included them in the regular e-mail distribution list.

E-Mails and Meetings

Remarkably, the team completed its work in seven short months without ever holding a face-to-face meeting for the entire group. Weekly meetings took place via conference calls with people phoning in from their remote locations. "We had offline meetings as required but never had our Japanese member, the Europeans, and everyone else in the room at the same time. We were heavily dependent on e-mail which was our #1 communication tool," Crowley reports. Amazingly, for a company with the technology power of Sun, they never used videoconferencing or any sophisticated online project management software. "We were a small team of 15 rather than 100. Sometimes getting into those highly structured project management systems slows things down."

Agendas were produced prior to each meeting with decision points carefully identified. "Our strategy was that we did the work during the

week outside the meeting and then came to the meeting prepared to talk about updates or problems. We very specifically kept our meetings

to two hours. That was where the critical role of the team leaders came in, making sure we got through the agenda and did not get stuck."

While pointing out that strict protocols for managing virtual teams such as restricting meeting lengths are important, Crowley also cautions that "it's not necessarily bad to break the rules of the meeting. You can't be too regular about anything. There are no breakthroughs without breaking the rules."

This tolerance for the unexpected is an important feature of working at a distance. Since there is no time-worn body of experience to draw from, virtual team members have to be open to experimentation, often discovering what made them successful in hindsight.

"In retrospect, we realized that we had a formula for success," Crowley says. "Senior management involvement *plus* cross-functional experts *plus* team commitment to the process *plus* stakeholder buy-in equals success.

What Crowley's team did intuitively was to follow the prescription for successful virtual teams:

- They involved the right *people* both from internal organizations and from outside companies.
- They carefully defined their *purpose* and used it as a compass when they started to get off track. "Always keep the end goal in front of the team," Crowley says. "Asking the 'what is the original intent?' question tends to get people back on board in the right way."
- They established excellent communication *links* among the team members, using a mix of media including e-mail, conference calls, and face-to-face meetings to support interactions and relationships.

When the team completed its work, SunExpress had an EDI ordering system and a process in place for responding to new product and service requests from its customers—all in a little over two quarters time—Internet speed, indeed.

Virtual Team Principles

Work in a world in which the sun never sets is very complex. There are few maps in this new world of work and lots of complaints. People are trying to feel their way, uncertain that they are making the right decisions.

Most of us never received any training for living and working in a fluid, instantaneous, global "village." Thus, we need new models for teams that also incorporate the timeless features of working together.

Three words capture the essence of successful virtual teams:

- ? People
- ? Purpose
- ? Links

People populate small groups and teams of every kind at every level— from the executive suite to the subcommittees of the local school's parent association. *Purpose* holds all groups together, but for teams, the task—the work that expresses the shared goals—is the purpose. *Links* are the channels, interactions, and relationships that weave the living fabric of a team unfolding over time, The greatest difference between in-the-same-place teams and virtual ones lies in the nature and variety of their links.

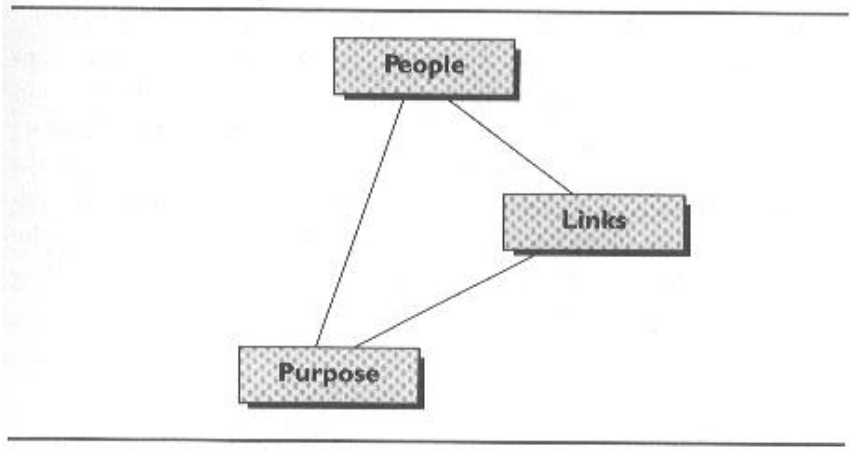
The People/Purpose/Links model (Figure 1.2) unfolds into nine Virtual Team Principles, which provide a framework for practical, adaptable approaches to the creation and management of virtual teams.

Three Slants on People

? Independent members	*Parts*
? Shared Leadership	*Parts-as-wholes*
? Integrated levels	*Wholes*

Virtual teams comprise *independent members*, people with a modicum of autonomy and self-reliance. Although leadership tends to be

Figure 1.2 Virtual Team Model



informal, invariably the diversity of technical and management expertise required in cross-boundary work means that most members take a leadership role at some point in the process. In virtual teams, *shared leadership* is the norm. Finally, the team is a human system arising from people parts. It has at least two levels of organization—the level of the members and the level of the group as a whole. Teams also grow out of and are embedded in organizations; they are parts of larger systems. To be successful, virtual teams must *integrate levels* both internally (subgroups and members) and externally (peers and supergroups).

The *Point of Purpose*

? Cooperative goals *Do*
? Interdependent tasks *Doing*
? Concrete results *Done*

Purpose, which defines why a particular group works together, expresses some minimal level of interdependence among the people involved. Virtual teams are far more dependent upon having a clear purpose than face-to-face teams. Because they operate outside the bounds of

traditional organizational life without bureaucratic rules and regulations to guide them, they must rely on their common purpose to stay in tune.

Cooperative goals are what purpose looks like at the beginning of any successful teaming process. This is why so many books about teams begin by focusing on goals. A set of *interdependent tasks*, the signature feature of teams, connects desires at the beginning with outcomes at the end. When a team completes its process, it expresses its purpose as *concrete results*, the measurable outputs of joint effort. These three elements—cooperative goals, interdependent tasks, and concrete results—enable virtual teams to stay focused and be productive.

The *Web of Links*

? Multiple media	*Channels*
? Boundary-crossing interactions	*Communicating*
? Trusting relationships	*Patterns*

What gives *virtual* teams such distinction is their links. Relatively suddenly, multiple, constantly enhanced modes of communication are widely available, providing access to vast amounts of information and unprecedented possibilities for interaction. We chose the term *links* for this defining feature of virtual teams because it bridges three key aspects of communication.

First people need the actual physical connections—wires, phones, computers, and the like—that provide the potential for communication and are the prerequisite for interaction. *Multiple media* are moving virtual teams from the extraordinary to the ordinary as the technology wave of Information Age change reaches the mainstream.

Connections make *boundary-crossing interactions* possible. The back-and-forth communication between people—the activities and behaviors—constitute the actual process of work. It is here—at the boundaries of interaction—that virtual teams are truly different.

> *In virtual teams, people's interactions across boundaries require behaviors that are fundamentally new.*

Through interactions near and far, people develop *trusting relationships,* the invisible bonds (and baffles) of life. People's patterns of behavior mark the outlines of their relationships that persist and feed back into subsequent interactions. As important as positive relationships and high trust are in all teams, they are even more important in virtual ones. The lack of daily face-to-face time, offering opportunities to quickly clear things up, can heighten misunderstandings. For many distributed teams, trust has to substitute for hierarchical and bureaucratic controls. Virtual teams with high trust offer this valuable social asset back to their sponsoring organizations for use in future opportunities to cooperate (see Chapter 9).

It is far better to cross boundaries than to smash them.

Cyber Teams

With electronic technology, virtual teams can work across time and space in ways that provoke the formation of entirely new ways of working and organizing. The word *cyber* is telling: it means steersman in Creek, putting you in the driver's seat. To travel across distances faster than the speed a person can walk requires transport—ships that sail across oceans to new worlds, horses that ride over mountain ranges to new frontiers, electronic media that open up cyberspace.

The World Wide Web Inside and Outside

In an area of fast paced technology change, such as communication, it is dangerous to make predictions. We do, however, put a stake in the ground for the awesome impact of the Internet and intranets on the future of virtual teams.

The particle physicists at CERN (Conseil Europeen pour la Recherche Nucleaire)[9] in Geneva, Switzerland, came up with a powerful new way to interconnect their global research community using the Internet in 1989. When they did, they could not have predicted what would happen

with their technology. In a few short years, the World Wide Web has become the communication phenomenon of the decade. Suddenly anyone with Internet access can explore millions of postings around the world on nearly every conceivable topic gliding from continent to continent in click-of-a-mouse time.

Ted Nelson and Doug Engelbart were among the earliest seers to envision the possibilities of *hypertext* and the resulting global web of networked knowledge. The word *hypertext* is rather self-descriptive: It is text that behaves as if it is hyperactive. Anything written in hypertext (or any graphical element) can become what amounts to a computer button of its own, the simple but profound linking capability. Click your mouse and off you go to that destination. This means that everything on the Web can be interrelated—linked. Thus, witness our ability to wonder what country the Kalahari Desert is in and discover the answer—Botswana—in less than 30 seconds, thanks to the World Wide Web.

The technologies that support hypertext make the World Wide Web possible:[10] The basic computer language used to design Web pages is called HyperText Mark-up Language (HTML); the communication link that connects Web sites uses a standard called HyperText Transfer Protocol (HTTP).

Companies, libraries, universities, government agencies, hobbyists, nonprofits, political campaigns, social activists, and just plain folks all have jumped on to the World Wide Web. Millions of home pages are joined by many thousands more every day.

For virtual teams, the use of private World Wide Web sites is a singular blessing.

> *For the first time, teams can virtually collocate all the information they need to work together and put it all in context.*

That does not mean that all of the team's information is on the Web site, but it does mean that the Web site can point you to wherever you

need to go. Pointers are embedded in text, outlines, graphics, maps, and other media. Virtual reality for virtual teams is going digital and be coming conceptual.

When Microsoft bought Vermeer, a small software company whose product, Front Page, is a Web page design tool, the two companies needed to do a lot of work to integrate the Boston-based firm into the -Redmond, Washington, giant. Instead of using the familiar frustrating process of endless meetings, phone tag, and lost memos, Richard Dale, then Vermeer's vice president of Operations, used a different solution. "The work of moving Vermeer was a pretty mundane sort of thing requiring a bunch of fairly boring tasks," he explains. Dale's observation echoes the experience of many people involved with such transitions—closing offices, arranging the move, resolving personnel issues.

So Dale decided to liven things up. He used his company's product to design "a little Web page which had all the numbers we needed. Anything we needed to remember we put on our internal Web site."

"Intranet" is the term for a private Web site that is internal to an organization or one of the networks that make up the truly vast Internet. Dale's company already had a rather substantial intranet running. It contained everything from "project status to people's names and addresses to forms for ordering office furniture to how to send a FedEx, to what was on the lunch menu at the local take-out place."

"I was in charge of operations for the company," Dale says, "and my philosophy was that if more than one person asked me a question, I put it on the Web site." The fancy name for Vermeer's intranet? "The Internal Web Page." Soon their Web page became Vermeer's institutional memory. They also had an external page for customers.

The Vermeer home page (as the "front door" to a Web site is known) had a norm attached to it that underscores the subtle organizational difference that virtual teams reflect. Everyone in the group had privileges to "author," that is write, material to the page. "That wasn't controlled, but we were only 35 people and we knew that if people started to mess it up, we'd control it," Dale explains. "The day we were bought someone put up a picture of Bill Gates and set a link to the Microsoft home page. The due date for one of the engineer's baby became a sweepstakes."

There was even a Coffee Manifesto, which included instructions on how to use the coffee machine on the site. (As Dale says, "You know software engineers are very particular about their coffee.")

The family feel to all this speaks to the sense of community that the technology makes possible, that elusive quality called virtual that makes work-at-a-distance possible, allowing previously separated people to be pulled into a team. While older qualities of virtual teams find new expressions in cyberspace, true novelties also are appearing.

Information Is Money

"Rocks Bank," a pseudonym for one of the world's largest custodial banks, handles $500 billion annually, about a quarter of the entire budget of the U.S. government. Until recently, one huge player—State Street Bank— and two smaller ones—Chase Manhattan and Bank of New York—dominated custodial banking. When the two smaller players, each a giant in its own right, grew separately through mergers and acquisitions, the industry became explosively competitive.

Suddenly custodial services—all the backroom functions that enable money to change hands in mutual funds, pension funds, and private transactions so they can finally rest someplace (in custody)—became a commodity. To distinguish themselves to their dients, custodial banks have become information providers. The boundaries between financial services and information technology services have faded in an electronic instant.

Rocks Bank's clientele is diverse, including mutual funds and state and corporate pension plans, one of which is an investment company that is both its client and its competitor. "We compete fiercely with them for 401(k) management but we're also their custodian," says Ian Stevens, Rocks Bank's vice president of New Technology. "We hold about $50 billion of their money because they're not a bank. It's all so interwoven and incestuous." Even clients and competitor lines have blurred for this institution that is growing at astronomical rates—25 percent annually year after year.

If you think the most exciting software development is coming out of the brand name houses or even the brilliant boutique shops, reconsider.

Places like Rocks Bank also are building the electronic superstructures for virtual teams.

Stevens is the architect behind Rocks Bank's Work Stream Technology project, a harbinger of technology support systems for virtual teams. When complete, the system will make each trade "a self-aware work object." The trade will move around the world among virtual team members according to what it knows needs to happen to it next on its own clock. ORBs (technically, "object request brokers") at each site coordinate and distribute work in a global 24-hour-per-day office that is always open for business. Object technology like this, the next generation beyond relational databases, eventually will make virtual teams completely self-sufficient. When Rocks Bank's home office in Sydney, Australia, closes at 5 PM, its ORB will automatically move work to its New York branch where that part of the virtual team is just waking up. The individual work object will carry its own set of instructions complete with the attached interactions of everyone who has worked on it.

Every time a trade is made on any of the assets that Rocks Bank holds for its clients, the bank needs to know about it. Simple enough, but 50 percent of the transactions that the bank receives in its Medallion Trust department each day come in by fax—many of them handwritten! The fax problem was only the first obstacle that Stevens' team had to overcome: Medallion Trust, just a small part of the bank, receives 2000 faxes a day. Each fax has its own demanding timetable and elaborate set of actions that its existence initiates.

"In this one department, we have 50 people and half a dozen fax machines that run nonstop with a very complex method of logging and tracking," Stevens explains. "Faxes are frequently either missing information or they are illegible. 'Is that $5m or

So his team's work is to build an environment that will allow each transaction to become its own self-collecting history. By working around the clock without disruption, passing work from time zone to time zone, the bank can increase its volume and accelerate its service—quite a competitive advantage. The team will be truly virtual—their hand-offs reaching around the globe following the path of the rising sun.

Feeding the Virtual Team Cycle

Virtual teams are not just a nifty way to organize and make use of cutting-edge technology. Whether consciously or not, many companies like Rocks Bank are betting their future on virtual teams as their strategic differentiator. By employing virtual teams, they can do things that are impossible within the prevailing model of side-by-side, 9-to-S work.

Virtual teams are a strategy for success.

If they cannot accomplish their goals within their own four walls, virtual teaming companies climb over them and partner with someone or several someones with whom they can make it happen. If their competition suddenly overpowers them, 21st-century organizations see virtual teams as the way to become smarter and more flexible, adaptive and more competitive.

The way is not easy. Virtual teams are microcosms of the organizations and environments that spawn them. Today's teams are complex and reflect all the stresses and strains induced by the extraordinary shift in human civilization now underway. As the Industrial Age recedes more swiftly and the peak of the Information Age still looms far ahead, we and our groups are betwixt and between. We are born into ages past, yet navigate ahead to an uncertain future.

The Virtuous Loop

Many teams now are physically distributed. Long-standing management molds that funneled information up and sent orders down are cracking. More information is becoming more omnipresent to more people. Competitive pressures to constantly improve cost and quality are driving the redesign of work processes. All the while, information seeks its natural path, flowing with its own simple process physics, horizontally linking people across boundaries through and among organizations.

There is a *virtuous[1]' feedback loop* building in the development of virtual teams that promises an exponential rise in this form of organization. Virtual teams are not a fad. They are the future.

The virtuous loop begins with yesterday's assumption that people must collocate to work together. "Shoulder to shoulder" the traditional team works together. Shoulder to shoulder traditional teams hand off their work to the next team in chains of larger processes, the bucket brigade view of working groups. Organizational building blocks of closely spaced bodies stacked in command-and-control pyramids. This is the idealized machine organization of the Industrial Age. Thus:

- **Given:** Traditional work group design creates stable spatial and organizational boundaries based on locating people with interdependent tasks next to one another.
- **Change:** Today, however, technology, speed, globalization, and complexity are rearranging this root premise of work design.
- **Impact:** As a consequence, people working on interdependent tasks are no longer necessarily proximate in space and time, nor need they be in the same organization. Two things happen: distance and time become problems to solve and organizational issues develop within rigid hierarchy-bureaucracies. To deal with distance, people usually turn to a mix of face-to-face meetings and electronic communication technologies to replace key elements of collocation. To deal with the demands of cross-boundary work, organizations create virtual teams as needed.
- **Novelty:** Electronic, particularly digital, media that people typically use to compensate for distance, eventually go beyond their replacement application. In time, they offer entirely new ways for people to communicate interactively.
- **Adapation:** This in turn leads to new networked forms of organizations—which are virtual teams at the small group level. Meanwhile, new energy is pumped into the system as increasingly more work is created around digital products and services.
- **Result:** As the technology and organizational support structures for virtual work improve, more work is designed to take

advantage of new network technology and management. This only fuels the trend toward virtual teams, making it easier for them to work interdependently on tasks that cross boundaries, feeding the loop. So, more and more virtual teams are in our future.

Looking Forward and Back

A good virtual team is, at its heart, a good team. Since many virtual teams do meet periodically or a few times or at least once, they also find themselves in the conventional face-to-face setting. As Bernie DeKoven, a pioneer in using technology to support virtual teams,[12] says, "When I think of virtual teams in the best light, I think of teams of people who are as comfortable with each other as they are with a wide variety of communication and computing technology. When they meet 'virtually,' they take advantage of all their technical know-how to continue their work; and, when they meet face-to-face, they use the same technology to develop, organize, and refine their understanding. They have an emotional bandwidth that is as broad as their communication bandwidth, so that no matter how or where they meet they relate to each other with humor, understanding, and respect."

For virtual teams to be complete, they must include what is timeless and enduring in human groups. They also must include the features that are really new in the turbulent years at the turn of the millennium. The challenge of our time is to invent and improve virtual teams and networks while retaining benefits of earlier organizational forms.