International Business Machines Corp. (IBM), a leader of the computer revolution, became one of the outstanding success stories of the second half of the twentieth century. By the 1970s IBM had about 70 percent of the computer market and was highly respected for its progressive management and its integrity. A pioneering multinational, IBM operates worldwide and typically derives over half its revenues from outside the United States.

Up through the early 1980s, IBM continued spectacular growth, but it also became more bureaucratic and slow-moving. Soon after career IBMer John Akers took over the helm in 1985, IBM’s profit margins began to slip, and it became obvious that IBM faced a troubled future. Over the years Akers downsized IBM from over 405,000 to around 300,000 employees worldwide, attempted to focus IBM more on the needs of its customers, reorganized the company twice, cut IBM’s product development cycle time in half, and replaced most of the IBM product line with very competitive hardware. However, IBM continued to lose market share and profit margin and had unprecedented losses in 1991 and 1992. (See Exhibit 1.) Furthermore, IBM stock dropped from $176 in 1987 to $49 in 1992. In early 1993, Akers resigned and the IBM board decided that an outsider was required to turn IBM around.

After much speculation about possible candidates and a widely publicized search, Louis V. Gerstner was named IBM’s CEO. Gerstner had started his career with McKinsey & Company, joined American Express and rose to its presidency, and in 1989 he was hired as CEO by RJR Nabisco Holdings Inc. to lead a recovery after a takeover battle that saddled that company with $25 billion in debt.

Concentrating on downsizing and customer service, Gerstner targeted IBM’s worldwide employment at 225,000, to be achieved by the end of 1994, and told IBM employees: “I start with the premise that our customers are looking for us to deliver solutions to their problems. So we’ve got to get back to delivering superior solutions to our customers.”

**The Telecommuting Project**

In June, 1992, Michael W. Wiley became general manager of IBM’s operations in the state of Indiana. Wiley was a second-generation IBMer who started as a salesman in 1980 and moved rapidly up through increasingly responsible staff and line marketing jobs to become administrative assistant to Senior Vice President George Conrades before taking over in Indiana.

During 1992, IBM continued to downsize and Indiana reduced its head count by about 30 percent. In 1992, IBM had its worst overall financial results ever, and word was out that Indiana faced the prospect of similar head-count reductions in 1993. In February, 1993, John F. Frank, new operations manager for the state, made his first visit to the new IBM building in Evansville that was part of his responsibility. Frank recalls:

> It was a gorgeous new building looking out over the Ohio River, and we had just moved into it in May, 1991. Although IBM did not own it, it had been built for IBM and was one of the most expensive buildings in Evansville.

> That Tuesday, this beautiful building was virtually empty. I looked across a big room full of desks of marketing people, who were all out talking to customers, and I could have shot a shotgun in any direction without hurting anyone. I was shown through beautiful conference rooms and classrooms, most of which were empty. I couldn’t figure out why we had all this space that must have been costing us a fortune. It wasn’t just the real estate cost, but also the occupancy costs—the information technology, support staff, utilities, taxes—that were killing us. So I spent my time on the plane on my way to Chicago making a rough estimate of what it was costing us to run all the IBM buildings in the state of Indiana.

When I got home at 9:30 p.m., I called Mike Wiley and told him that I thought we could save a minimum of two of three million dollars in Indiana in the first year, and three to four million a year from then on, by reducing our real-estate costs. After I went over my rough figures with him, Mike said, “Let’s make it happen!”

When Frank called, Wiley was preparing for a meeting in Chicago with the Midwestern Area vice president and his
counterpart general managers to talk about how many head-count reductions would be required to meet the area’s profitability targets. Wiley recalls:

> With our strategy of providing value to the customer by solving problems, the last thing I wanted to do was to eliminate more people. We solve problems with highly skilled, highly specialized people, and I was convinced that we should cut everything else before reducing our competitive advantage by cutting productive people. So when John called me with his idea of saving big money by reducing facilities costs, I told him we had 3 days to put together a proposal to take with me to the meeting in Chicago so that I could present it as an alternative to cutting people.

They put together a team consisting of Wiley, Frank, and the chief financial and chief information people for Indiana. Frank recalls:

> We spent 36 hours straight putting the plan together. When I made the proposal I knew a little about telecommuting, but I didn’t know much about the details. It was late-night trips to the library researching what other companies were doing that prepared us to put together a rough plan. This plan called for reducing our real estate in Indiana by 65 percent by moving all of our client-related personnel out of the traditional office environment into offices in their homes.

IBM-Indiana’s proposal to substitute telecommuting for head-count reductions was accepted by Midwestern Area management. This proposal would not affect people whose main workplace was an office. Rather, only IBM people who spent most of their time with customers and worked in their offices only 30 percent to 40 percent of the time were to telecommute. Those people whose main workplace was an office would continue to work at an IBM location.

**The Telecommuting Environment**

There were four important components of IBM-Indiana’s telecommuting environment: home office equipment, communications facilities, shared workspace at the IBM location, and reengineered work support processes. Since the major initial motivation for telecommuting was to reduce costs, the project team did not plan to provide an ideal office environment, but rather to provide a satisfactory environment with a minimal investment.

The home office equipment provided included an IBM PC with a standard set of software, an IBM Proprinter dot-matrix printer, a desk, a chair, and a two- or four-drawer filing cabinet. The PC provided was usually the machine that had been in the telecommuter’s IBM building office. Standard software installed on each PC before it left the IBM location included word processing, presentation software, spreadsheet software, FaxWorks for sending and receiving faxes, and standard telecommunications software for getting into IBM’s LAN and mainframe IS facilities. The desks, chairs, and filing cabinets had been used in the IBM offices that were being phased out. An employee could opt to take a cash allowance for any piece of equipment and furnish it himself or herself, but everyone had to use the IBM—provided standard software. IBM configured the PC, installed the software, and moved all the equipment to the employee’s home.

Good communications support would be critical to the success of telecommuting. In addition to the employee’s existing telephone facilities, IBM provided two more telephone lines into the home office, one for voice and another for data. IBM also furnished a 14.4 kilobaud fax and data modem and an AT&T 722 telephone with the following features: two lines (one personal and one IBM), speaker phone, conference between lines one and two, memories to store numbers and access codes, and hold and flash buttons. IBM paid the installation charges and monthly bills for these lines.

IBM intended that an inbound caller should never get a “no answer” or a busy signal, and the caller should be able to talk to a knowledgeable person if he or she wished. This concept was implemented as follows: Any call to the employee’s IBM extension was automatically forwarded to the home office phone. If that line was busy or was not answered after three rings, the call was sent to the employee’s phonemail box, where it was
answered by the employee’s personal message that indicated when the call would be returned. The phonemail message also instructed the caller to touch certain keys to reach a live person, and those calls were forwarded to the customer service center to be handled by the people there.

There were two types of shared workspace at the IBM office locations. First, there were small cubicles equipped with a telephone and a PC with the standard software networked to laser printers and the IBM internal computer systems. One of these work areas was provided for every four telecommuters, and they were available on a first-come, first-served basis. A few enclosed offices were also provided that could be scheduled by managers or teams for private conferences. Although these offices also contained telephones and PCs, there were too few of them to allow their use as work space so managers were expected to use the small cubicles for everything except private conferences or team meetings.

The IBM location also included a conference room or rooms for group meetings, a mail room, a secretarial support center, and an administrative support center. Each telecommuter was also provided with a file drawer near the cubicles.

IBM-Indiana also downsized its office support group and decided to use people provided by an outside contractor instead of IBM employees to perform this function. In Indianapolis they established several support groups: an administrative services group that handled time cards, expense accounts, keeping publications tables up to date, and other administrative functions; a secretarial pool that scheduled the use of shared offices, set up meetings and teleconferences, and performed other secretarial duties; a word processing pool that typed letters and contracts, prepared graphics for presentations, and prepared proposal documents and meeting handouts; and a mailroom crew that distributed mail and faxes, handled copying, and distributed the output sent from home offices to central office printers.

Virtually all work support processes had to be redesigned to function in this new environment. For example, how do you schedule meetings and teleconferences when no one is around the office? Does the secretary call each participant to find feasible times, and then call back to notify each person of the time chosen? Do you use e-mail for these communications? They decided to rely on the PROFS\(^1\) calendar function to schedule meetings and teleconferences. PROFS makes it possible for a secretary to enter a list of people and the length of the meeting, and the computer searches for a time when all the participants are available to meet. But to make this work, everyone had to maintain his or her schedule of activities on the computer, and these schedules had to be accurate and up to date. At first, some people did not keep their online calendar up to date, but the secretaries went on and scheduled meetings based on the calendars, and those who missed important meetings soon learned their lesson.

The processes that had to be redesigned ranged from how to submit an expense account to how to get a proposal prepared. Not only did someone have to decide how to perform each of these activities, but they also had to provide training and written descriptions to all 300 telecommuters. The office support staff prepared a thick reference manual describing the new processes and then converted it to an online help system.

The Implementation Process

Wiley recalls setting up the team to implement telecommuting:

We couldn’t have done this without a small group of creative thinkers—visionaries like John Frank—who also have the talent to organize and manage this kind of complex change.

I asked them how quickly we could implement telecommuting, and they said they thought we could do it in 9 months. We couldn’t wait that long, so I told them they had to get it done in 90 days. Now I wish I had told them to do it in 30 days. The faster you can get it done, the less chaos and resistance you have from your people. When they get in the new environment and see it work, they realize it makes sense, they see where they fit in, they learn what to do, and they do it.

There was a lot to do in 3 months. The team had to identify the needs of the telecommuters and define the specific technology to be used to meet those needs. They had to determine who would telecommute and who would not. They had to plan and schedule the activities necessary to move more than 300 telecommuters’ offices to their homes. This planning and scheduling took about a month, so they had only 60 days to do the following:

- Purchase modems, software, and phone equipment
- Secure the necessary furniture
- Upgrade the local office telephone switches
- Set up each of the PCs with proper features and software
- Provide 3 days of training on the new tools for each telecommuter
- Reengineer all support processes
- Prepare homes, including new telephone lines
- Deliver the equipment to each telecommuter’s home
- Vacate the freed-up office space
- Remodel remaining office space to adapt it to new uses

There were a number of issues that had to be resolved on the fly, such as the tax and liability status of the equipment being moved out into employees’ homes and how to deal with security issues relating to access to IBM confidential systems. There was a lot going on at once—for example, they had construction projects going on in six locations in the state at one time. But

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\(^1\)IBM’s Professional Office System (PROFS) is an integrated office software system that runs on a mainframe. Among its many functions, PROFS provides electronic mail, a calendar function that keeps a person’s schedule and can make it available to others, and document preparation, distribution, and retrieval capabilities.
they got it all done and had some 300 people telecommuting, and the freed-up real estate ready for release, in 90 days!

**Motivating the Change to Telecommuting**

Wiley knew that the move to telecommuting was going to be a tremendous change for the people involved, and he took responsibility for leading the charge. He put a lot of effort into selling the idea and motivating those who were reluctant to telecommute, and he was one of the first people in the state to move out of his office.

Wiley sold the move to telecommuting primarily as a way to save 50 IBM jobs in the state. He also expounded other benefits of telecommuting, such as providing more effective service to customers, eliminating the time and stress of commuting into the office, eliminating parking problems, and providing more time at home with family by allowing more flexible time management. But with the history of downsizing that IBM had been through, saving jobs was the justification that most everyone accepted. According to Frank:

When we announced the move to telecommuting, about half of the people involved were eager to go. Many who were initially reluctant were quickly convinced by Mike Wiley’s explanation of why telecommuting was necessary. But the remaining group included most of our managers, who were used to private offices with secretaries answering their phones and providing plenty of one-on-one support. Wiley took the reluctant managers into a room and told them: "I know you are uncomfortable with this. I know this is bruising your egos, because IBM has conditioned you to expect these perks. But if we don't have the guts as a management team to make radical changes in these dire circumstances, we are headed for disaster. We need to show the rest of the company what can be done. If we aren't willing to give up some perks everyone will know that management doesn't understand what is going on. So I'm asking you to fully endorse this." Out of about 20 managers, only one transferred out.

Wiley agrees that the managers had the greatest problems coping with this change. He says:

Those managers who had always been focused on the customer and had been out with their people helping them solve problems were eager to adopt telecommuting as a productivity enhancement. But the ones who had problems were those who were hung up on the prestige of an office and a secretary, who would come in and sign onto their e-mail and their voice mail and sit in their office all day instead of being out with their customers. Not only did they have a problem with prestige, but they had a problem with what to do all day if they didn’t have an office to come to. They had to ask the question: “What marketable skills do I really have?” And if they had none, then they had to go get a skill that brings some value to our customers or there would be no reason for them to be here.

According to Frank, about 25 percent of the telecommuters went along reluctantly with the change. However, after experiencing the new environment, and after some improvements in the support technology provided, about half of this 25 percent converted to supporters of the concept. Frank notes:

It is kind of ironic. Many of those people who did not want to go are now the ones who are writing testimonials and volunteering to go around and talk to other employees and say: I did not want to do this; I had five kids at home; My house was too small; etc. But it works—it has advantages that compensate for the problems.

Still, about 10 percent of our people will probably not be happy with telecommuting for any of a number of reasons. It could be personal in nature, or it could be that they just can’t be happy changing from what they have been used to for many years.

**Reactions of the Telecommuters**

During the process and afterward, the team solicited feedback via e-mail from all the participants and used this feedback to identify and reduce the problems that were revealed.

**Positive Reactions**

The vast majority of the telecommuters agreed that telecommuting was good for IBM, and many felt that it was an improvement for them personally. Many respondents reported that they were pleased with the impact of telecommuting on their productivity and job satisfaction:

Telecommuting is the best idea that we have come up with in all the time I have worked with IBM. My productivity is much higher than before and, hopefully, we have saved a lot of real estate expense.

I can honestly say that you would have to threaten to FIRE ME to get me to go back to the traditional environment. I am almost ashamed of how much time and money I wasted in the office in my career. It has gotten to the point that I refuse to go to the office unless it is absolutely necessary because it is so unproductive.

This has been the greatest single boon to my productivity since I’ve been in IBM. I have become much more organized because I have everything I need in one place instead of in my car, on my desk, at the customer site, or at home. I also find that I do many small things at odd hours; for example, I do most of my PROFS while my kids are in the shower.

I am finding that I spend a lot less time at home than I imagined. Where before there was always ‘the office’ to go to for mail, notes, etc., I know that I can do that stuff for a short time after the kids go to bed and clear it up and get it off my mind, but still be home. I think this has let me spend more and better time with customers.

Some telecommuters were pleased that they no longer had to drive back and forth to the office:

My workload has increased dramatically this year, and this program has allowed me to work the extra hours I need without taking a trip downtown or walking down a dark alley to my car. The net is that I can work whenever I want, I can work safe, and I don’t need to spend time traveling. That is worth a lot to me.
I live approximately 75 miles from the office, so telecommuting has been a real time and car saver for me.

Many people were pleased with the improvements in their lifestyles resulting from telecommuting, especially the ability to spend more time with their children.

I have found that I spend less time at home than I thought I would, but I very much like the flexibility. I can eat an early dinner with the family because of special plans for the evening, then come back to my desk at 10:00 P.M. to cover just a few more things. Also, I now have the option of sitting at home in my jeans, free from traffic, suits and tall buildings, and asking myself: How can I absolutely best spend my time to get the needed results? This freedom allows more creativity in my thinking about what is needed to get the job done.

My typical workday has me hitting my office at 6:30, getting things done when previously I would have been starting the drive into the office. A great benefit is the ability to eat breakfast with my children, whom I previously seldom saw before 6:00 P.M.

Not all the feedback was strictly serious. Someone sent in his top ten reasons why telecommuting should be fun:

10. Lunch is cheaper and usually resembles dinner the night before.
9. The printer is closer and isn’t backed up or jammed.
8. The coffee is fresher, and the brand doesn’t upset your stomach.
7. You can impress your friends because YOU have an IBM PC at home.
6. The coffee mugs don’t have green fuzz in the bottom.
5. You have to keep your desk clean or your spouse will.
4. Now the neighbors really wonder what you do for a living.
3. It gives new meaning to the term “business casual.”
2. The chances are better for being the ninth caller for the cash song.

AND THE NUMBER ONE REASON . . .

1. When you want something thrown out you don’t have to write “Trash” on it and trip over it for 3 days before it disappears.

Concerns of the Telecommuters

Although most of the telecommuters ended up supporting the change to telecommuting, some of the supporters reported concerns. Several telecommuters were troubled by the lack of interaction with peers that they very much missed, and some noted that the lack of casual contact made it much more difficult to exchange information and work as a team:

I miss the camaraderie of the branch. It’s hard to get informal communication going between teams, and tracking projects is a little rougher.

The loss of the group-work setting has been a major psychological adjustment which most people are not yet over. The interaction with peers shortened the time required to accomplish many tasks because we were able to ‘group together’ for many short, impromptu meetings to decide strategy, plans, etc. This is very much missing and missed.

The grapevine thing is missing. Face it, we all like to know what’s going on. We don’t know what’s happening out there anymore. We eat lunch alone. We don’t exchange news items that concern our customers. There is no networking, no socialization, no moral support.

Wiley recognized that lack of social contact and casual communication would be problems, and he has encouraged IBM-Indiana offices to set up special occasions, such as weekly office luncheons, to provide opportunities for interaction. IBM-Indiana has also found it necessary to be intentional about communication by scheduling meetings to substitute for the informal communication that took place when everyone was in the office. They also make heavy use of teleconferencing to substitute for face-to-face meetings.

Some telecommuters noted that it was more difficult to communicate than before.

It is almost impossible to contact someone in the branch in under eight hours. If you are in a situation where you need a resource quickly, you are in trouble.

The one drawback seems to be playing telephone tag more often. It is a lot harder to speak with a real person unless you set up meetings or conference calls.

Some people expressed concern about never being away from the work environment:

The only disadvantage I see is that we are working a lot more hours this way. It’s just too tempting to jump on the system on weekends and during the evenings. Vacations will be forced to be ‘away from home’ vacations in order to really get away from it all.

It is very hard to separate personal life from work when you can never really get away from the office. It is always just down the hall!

Those few who did not support telecommuting seemed to be quite frustrated by this new environment.

I am very dissatisfied with the working environment of telecommuting and do not feel that shared workspace at the office is a workable alternative.

Contrary to the PROFS note relating how telecommuting is a good deal, it’s not. I ended up dedicating one room of my house to it. My house is not air-conditioned, and it is pretty uncomfortable sitting on a two-hour conference call in that environment. The correlation between mileage, lunch, etc., is ridiculous.

Problems with the Initial Technological Support

There were a number of significant problems with the technological support provided initially. One telecommuter reported his frustration with these problems:
System configurations are inadequate, printing is a major-league problem, the phone system does not yet support this concept, and shared work space isn’t adequate. These problems seem minor, but they add up to so much chaos and disruption that I find it difficult to get my job done.

The phone system was one of the most difficult problems, because it was very difficult to forward calls to the telephone where a person was working when in the IBM office. That meant incoming calls would end up in voice mail. Also, in some areas the phone company could not transfer a call to the IBMers’ voice mail when their home phone was busy or unanswered, so all incoming calls had to go directly into voice mail to make sure that all calls were picked up. Two typical comments:

The area that causes the most difficulty is getting my calls when I am in the downtown office. Not being able to have a customer call you back at the desk where you are sitting, but instead call your voice mail is frustrating.

We must get our office phones to ring at our homes and then roll over to voice mail. Our current environment of our customers not being able to reach us directly is NOT working out well, and our not being able to reach each other efficiently is greatly affecting our productivity.

One of the most common problems with the initial technology was the difficulty of getting letter-quality printing done:

Yesterday I directed several printouts to the 3820 printer at the office. I stopped in for a few minutes this morning to pick up the printouts only to find that the printers were broken (again). So far I’ve spent three hours redirecting stuff to other printers. Not very productive!

The IBM internal information systems and the difficulty of accessing them from home offices provided many frustrations:

Our equipment and programs are exactly what we tell our customers to move away from as quickly as possible. I am still working on an obsolete PC and applications that do not work properly. Our online systems are very old and out of date. Much productivity gain could be realized by new equipment, better software, and a more up-to-date network.

We MUST provide remote access to some of our most basic IS tools. It boggles my mind that from my home I can pull up a sales report that would be very attractive to a competitor, yet I cannot look at an on-order record to check an install date or a feature code.

One of the lessons learned from the previous feedback was that success of telecommuting is heavily influenced by the supporting technology that is available. IBM-Indiana soon replaced the dot-matrix printers that had been provided for the home offices with Lexmark laser printers, which greatly alleviated the printing problems. The telecommuting team also worked to upgrade the communications facilities, and Wiley has devoted a lot of effort to improving the IBM information systems setup.

The Change to “Mobility”

In the fall of 1993, the IBM ThinkPad laptop was made available as an exchange for desktop PCs on very favorable terms. This enabled IBM-Indiana to switch to ThinkPads that fall and to upgrade from telecommuting to “mobility.” The term mobility refers to an environment in which workers can access information and perform their work anywhere and at any time. Wiley and Frank have preferred mobility to telecommuting from the beginning, but because their first objective was major cost savings, they were initially unable to afford the technology investment required for mobility.

The technology involved in implementing mobility requires laptop computers and may also include cellular data communications, alphanumeric pagers, and dial-in LANs. In Indiana, going from telecommuting to mobility involved replacing the desktop PCs with IBM ThinkPad laptop computers loaded with essentially the same operating system and applications software as the PCs they replaced, so it was easy for the telecommuters to convert to the use of the new machines.

IBM-Indiana also replaced the data lines to homes with dial-in access to LANs in the IBM offices. Not only was the dial-in access less expensive, but the employees could dial in from anywhere, not just their homes. In addition, alphanumeric pagers were furnished to many employees. IBM-Indiana considered cellular communications, but decided the additional cost of that technology could not be justified except in special cases. IBM-Indiana also experimented with the use of a pen-based version of the ThinkPad for some people.

Evaluation of the Results

After the telecommuting project was implemented, Wiley invited IBM to send in a financial team from outside the state to evaluate the results. This team reported that IBM had saved $3.2 million in 1993 and that they would save $5 million a year in 1994 and each year afterward, which was far better than Frank’s original estimates. In addition, Wiley was convinced that the productivity of the telecommuters had been significantly enhanced. “I know that my own productivity has improved by at least 20 percent since I moved my office home,” Wiley asserts.

Impressed with the results of telecommuting in Indiana, the Midwestern area in late 1993 adopted the mobility concept. John Frank became the leader of the effort to extend what had been done for 300 people in Indiana to some 2,500 people throughout the Midwest.

As of March 1994, the concept of mobility was being embraced throughout IBM, although only a few locations were as far along with it as Indiana.