# *Understanding Distributed Work*[1]

**By Jim Ware**
Executive Producer
The Work Design Collaborative
jim@thefutureofwork.net

*Overcoming the challenges of working across traditional time, geographic, and organizational boundaries will distinguish the winners from the losers in the next decade.*

*This paper explores the issues and challenges surrounding the management of a distributed workforce, focusing in particular on how new technologies and new management practices have altered the basic "rules" for organizing and managing work.*

## *Introduction*

Today's volatile economy is undergoing a basic transformation in what matters and how value is created. Not only has talent replaced land, capital, and raw materials as the primary source of economic value, but the goals and expectations of that talent have also shifted. Just as importantly, the *way* work gets done is shifting dramatically. Where people work, how they communicate, and how business transactions and interactions are conducted and managed are transforming at an accelerated pace. We are experiencing change that is easily as dramatic as the introduction of the printing press, the telegraph, telephone, and airplane were in their times.

Nothing short of a reformation in management practice is required.  Specifically, your future business success depends directly on your ability to understand these shifts and to redefine your workforce, workplace, technology, and business strategies accordingly.

The undeniable fact is that computing and communications technologies are transforming traditional workplaces into virtual "workspaces."  The once-fanciful notion of working "any time, any place" has become a reality. Indeed, the transformation in the way work gets done – and managed – is one of the most distinctive aspects of the so-called "new" economy. Knowledge work can now be conducted effectively from a corporate office, on an airplane, in a car, at the local coffee shop, or from just about any other place you can imagine.  And with the growth of wireless access to real-time data, our assumptions of what we *can* know at any point in time – and therefore, *have* to know – are also being challenged.

New forms of outsourcing have also become common, driven by new technology capabilities. Many core business processes now cross multiple organizational boundaries and require collaboration among individuals and groups who work not only in different places but for different companies, or for themselves as independent contractors, consultants, temps, or part-timers. However, there are very few long-term telecommuting or hoteling success stories. Today there are more examples of companies that ended telecommuting, and of individual telecommuters who begged to return to the office, than there are of organizations with continuing programs that clearly produced a positive return on investment (ROI). No one fully

---

[1] This paper was originally published in July 2002 as part of the *Future of Work* project, funded by Agilent Technologies, Cisco Systems, Capital One, Intel Corporation, and PeopleSoft.

recognized or understood just how many task, interpersonal, business process, and technology changes they were introducing all at the same time, and hardly any one figured out the real-world economics of all these changes.

The principal challenge remains: how to manage the many changes in organizational culture and behavior that distributed work requires. Every company needs a vision, a strategy and the wisdom to implement new technology and transform working arrangements.  This challenge is unquestionably magnified when the workforce becomes more distributed physically, organizationally, and even culturally. Despite the hype and the growing belief that the Internet and information technology (IT) generally have meant the "death of distance,"[2] managing distributed work and a distributed workforce remains incredibly difficult.

Yet there's really nothing new about people working in and from different physical locations and for different organizations – or is there?

For hundreds of years, larger organizations have had facilities in multiple locations.[3]  Their goals were to be close to raw materials or sources of energy, to be near customers or suppliers, to take advantage of real estate savings, to have access to local talent, or to benefit from varying tax laws. Operating multiple facilities and managing people in different locations was common. Physical separation made managing difficult, but with the telephone and telegraph, in combination with trains, planes and automobiles, managing distributed work was certainly feasible if sometimes awkward and time-consuming.

But times have changed. Today, a richly interconnected and inexpensive communications and computing infrastructure allows those facilities, workers, and separate organizations to access, process, and transmit an incredible variety of information from almost any location on the planet. In many respects their physical separation has become virtually invisible and almost irrelevant.

The idea of computer-supported distributed work is not really that new. Many companies began experimenting with "telecommuting" programs twenty or thirty years ago. "Road warriors" have carted laptops and portable printers into airplanes, hotel rooms, and customers' offices for many years. More than a decade ago, the concept of office "hoteling" was introduced. (That's the situation where individuals forgo private office space and must reserve office space for their temporary use when they visit the facility).

---

[2] See Frances Cairncross, *The Death of Distance*, Boston: Harvard Business School Press, 1997.
[3] The Romans developed highly sophisticated "procedures manuals" for remote officials that defined precisely how to lay out a town's roads and buildings – where to locate the post office and the markets, how wide to make the roads, how many horses and cattle were required to support the town, and so on. In fact, the gauge of European railroad tracks today can actually be traced back to the standard width of the axles on Roman carts.
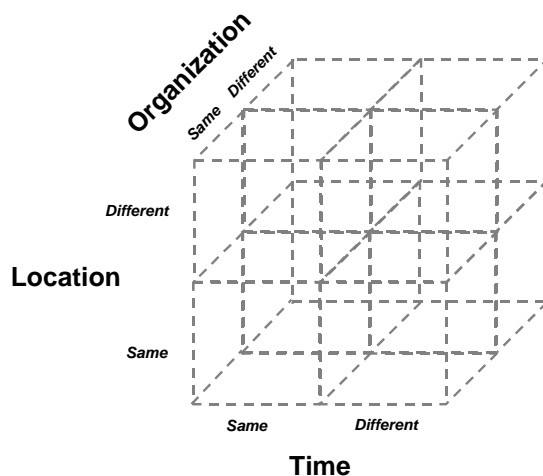
## What is a "Distributed" Workforce?

We consider a workforce "distributed" if it meets any of the following three conditions:

- Individual workers are in different physical locations.

- Most normal communications and interactions, even with colleagues in the next office, are asynchronous; that is, they do not occur simultaneously.

- The individual workers are not all employed by the same organization, or are working within distinctively different parts of the same parent organization. They may have widely different terms of employment

Each of these three dimensions impacts workforce management in today's economy, and the interactions among them create new skill requirements, demand new management practices, and raise stress levels for everyone. However, these new conditions also present intriguing opportunities for productivity improvement, organizational effectiveness, and enhanced personal satisfaction.

Figure One illustrates the symbiotic relationship among these three conditions.

**Figure One: The Dimensions of A Distributed Workforce**

## Physically Distributed Work

Many factors have contributed to the increased physical distribution of the workforce:

- The high cost of land, buildings, and salaries in major urban centers. This condition, combined with advances in information technology, is driving many organizations to open new facilities in a wide variety of new locations, including not only more rural settings close to home but also in other countries and on other continents. India's rapidly growing prominence in the information systems industry may be the best known example.

- The ease and continually declining cost of establishing communications links and moving electronic documents and data around the world.

- The common interest of both corporations and workers to avoid any recurrences of the incredible loss of talent and capability that firms like Cantor Fitzgerald suffered in the World Trade Center attacks. Maintaining an entire workforce in one location is too risky from a business continuity perspective. The belief that technology can enable distributed work to be conducted as effectively as face-to face activity is clearly affecting corporate decisions in this arena.

- Shifting personal priorities. More and more white- and blue-collar workers are redefining their personal priorities to achieve more satisfying balances between their careers and personal interests. For many, *where* they work is becoming more important than *who* they work for. This work life/personal life rebalancing is not just a matter of rational economics; these shifts represent a much more fundamental transformation in values and expectations about life and work.

- A growing desire by many individuals to live in more attractive, less expensive regions of the country. Professor Richard Florida of Carnegie-Mellon University has identified "talent magnet areas" that offer residents an appealing combination of weather, schools, recreational opportunities, lower cost of housing, and a rich diversity of cultural activities. Professor Florida suggests that businesses should actively invest time, attention, and money to identify and help develop talent magnet areas – and locate their facilities there – or they will lose out to companies who do.

- The need to go where the talent is, because the talent often refuses to move. An increasing number of prime candidates are resisting relocating simply for the sake of a "better" job. Also, dual-career couples often do not want to sacrifice one individual's current job for the other's opportunity. Family considerations such as children, schools, aging parents, or recreational preferences are increasingly winning out over a career change.

A growing reliance on outsourcing arrangements, where entire functions or business processes are turned over to a specialist company on a contract basis, is also increasing the volume of physically distributed work.[4]

---

[4] The Gartner Group predicts a 14.4 percent compound annual growth rate in the business process outsourcing market over the next several years (already at well over $200 billion per year in 2001). See "Business Process Outsourcing at the Crossroads," by Rebecca Scholl, January 31, 2002.

In many cases, the outsourced work activities are physically transferred to a location where the labor and facilities costs are much lower. In addition, the work is often combined with that being done for other customers to produce economies of scale and reduce fluctuations in workload. These outsourcing arrangements often produce dramatic cost savings while simultaneously improving the quality of the results.

For example, JetBlue, a startup airline that went public in April, 2002, employs 550 airline reservation agents – every one of whom works out of a home office. As reported in *Newsweek* Magazine, JetBlue saves 20 percent on the cost of a booked flight through a home-based agent rather than a traditional call center. The home-based workers love the freedom they have (agent turnover is under 10 percent). As one put it,  "You don't have to buy lunch, pay for day care, or buy new work clothes."

The tremendous growth of home offices and telecommuting is another trend that cannot be ignored.[5]  It has become both simple and relatively inexpensive for workers to set up computer workstations at home to access the Internet and corporate networks without commuting to a central facility. Once they are on-line they can work at home almost as easily as in the office, and often at higher levels of productivity. (Admittedly, network and data security issues must be overcome, but for everyone other than the IT group that must resolve those issues, they are a relatively minor speed bump on the road to the future.)

For some, telecommuting has proven to be more seductive in concept than in reality. It requires organization and discipline, is solitary, and isn't for everyone.  Many workers have tried telecommuting for a while, then returned to the traditional office environment.

In summary, people are learning to work productively in a variety of locations with colleagues, customers, and suppliers who are situated elsewhere. This combination of workforce preferences, real estate and facilities cost differentials, risk abatement, and growing IT capability to connect distributed workers seamlessly points to a future workforce that will be more distributed than ever.

These developments suggest significant cost savings for corporations. Careful attention to facilities design and location, combined with effective use of information technology and appropriate human resource policies, can reduce the total cost of labor-intensive office-dominated operations by over 30% - a very dramatic number in the context of today's lean economy.

For example, FedEx constructed several regional data center locations where the company could find the IT talent it needed at more reasonable salary and facilities costs than near the corporate headquarters in Memphis, Tennessee. Another high-tech company recently moved its entire corporate office out of Silicon Valley to Sonoma County north of San Francisco because the people it needed to recruit and retain preferred to live in Sonoma. Commercial real estate was also much less expensive.

---

[5] The Institute for the Study of Distributed Work estimates that the number of distributed workers (telecommuters, contingent workers, "day extenders," and at home workers) will reach almost 20 million by 2005, growing from 7.6% of the total workforce in 2000 to 12.6% in 2005.

However, Information Age companies must be cautious when investing in new locations. During the Industrial Age, in some "company towns" the major employer often controlled the schools, banks, stores, and the one company-funded hospital. In those days workers could be held captive to geography, but that is no longer the case. A new job is only a click away, and the population is more mobile than ever. Furthermore, in many cases workers can -- and do -- change jobs without changing location, because for them place takes precedence over position.

One result of these changing lifestyle preferences is many more firms whose executive teams are distributed across the country. One $20 million firm that is nominally headquartered in northern California has its CFO living in the Chicago area and its Chief Marketing Officer based in Austin, Texas. As the CEO commented, "Why should I care what city they fly home to on Friday afternoon? We're all traveling a lot anyway. As long as we can be together when we need to be and have access to the people and information we need on a timely basis, what difference does it make where each of us lives?"

Yet managing a distributed workforce is no picnic. Moving to a more distributed, more flexible working environment requires major new investments in technology and redesigned facilities. It also places new and difficult demands on managers. Historically, the biggest barrier to effective telecommuting programs has been the resistance of first-line supervisors. "How can I manage someone I don't see?" is the most common question.

The workers themselves also may find these new arrangements stressful and disconcerting. As attractive as it may be to avoid traffic jams and other commuting hassles, it takes a certain personality and learning style to be comfortable (and effective) working independently for a significant portion of the work week. As one individual put it, "If I'm not there [in the corporate office] how can I make an impact?" And while the reality may not be "out of sight, out of mind," the fact is that building and maintaining a solid, cohesive work group is much more difficult when its members are physically separated for much of their total work time. Furthermore, many workers enjoy and are stimulated by direct social interaction with their colleagues.

Building an effective physically distributed workforce requires fundamental changes in management practice. However, physical dispersal is only part of the challenge. Before defining meaningful guidelines for success, let's consider the impact of working across time and organizational boundaries on the overall management of distributed work.

**Working Across Time**

Time increasingly separates workers from one other. Whether working in different time zones, interacting electronically or working flexible hours, many co-workers do not observe the same time schedules.

Anyone employed in a global company has experienced the challenge of holding real-time conversations with co-workers in other time zones, especially when the difference is significant. The normal working day may be offset or extended by one to twelve hours, for example requiring someone in Chicago to participate in a mid-morning Hong Kong conference call at 9:00 p.m. Central time.

Even when people are co-located or working in close proximity with one another, it is unusual to engage exclusively in real-time interactions. In the last two decades, voice mail and e-mail have greatly improved asynchronous communication and organizational productivity.

Many companies today have formal flexible-hour policies or allow "extended day work." These individuals may leave the office early to pick up children from school and spend evenings with them, then make up that daily "time off" by working from a home office later in the evening.

Supporting these work patterns can increase the amount of total time (and quality time) that individuals devote to their work. However, these practices also increase the complexity and difficulty of real-time interaction. Consider the extended day worker who leaves the office to pick up her child at school at 4 p.m. every afternoon but must collaborate with a night owl programmer who chooses to work from 6 p.m. to 2 or 3 a.m. several nights a week.

The time overlap among workers clearly decreases when companies allow or even encourage extended day work or flexible working hours. It often becomes necessary to establish policies regarding availability at specified times to ensure adequate opportunity for collaborative work.

Situations like these often raise stress levels for individuals, their teams, and their families. Technology makes it possible to work odd hours, to shift between work and personal tasks multiple times in a single day, and to be "at work" when we are physically "at home" (and vice versa). Because we can work this way, many of us do. As Dr. Judith Bardwick has observed, we have figured out how to dissolve the boundaries between work and home, between work and personal life, and between working hours and. nonworking hours. Even though we may choose to live this way, for many of us it is chaotic and – at least for now – unnatural.[6]

## Working Across Organizational Boundaries

The third dimension often separating people who work together is organizational boundaries. Different organizations inevitably have unique cultures, value systems, and overall objectives. Integrating these elements into a seamless, cooperative work unit can be incredibly challenging. And the impact of organizational boundaries is only exacerbated when physical and chronological distance also separate workers.

In recent years, the number and variety of alternative work structures has exploded. Separate companies collaborate via joint ventures, alliances, outsourcing arrangements, subcontracting or partnerships, bringing workers together around a common task or goal even as they remain members of legally separate entities. The end result is a truly "virtual" work environment.

Fiscally-conscious businesses are relying more and more on contingent and contract workers who provide the companies with greater flexibility to expand and contract without being bound by long-term employment commitments. Thus, even "in-house" teams may be composed of a diverse mix of individuals who may or may not have common values, loyalties, and histories with one another.[7]

Recognizing the impact of physical and psychological separation, many outsourcing and temporary staffing firms deliberately arrange to locate workers at their customers' sites. Employees generally benefit from the improved understanding and cooperation that results from being co-located. Experiences as simple as sharing parking lots, hallways, coffee stations and a

---

[6] Bardwick, Judith, *Seeking the Calm in the Storm*, Prentice Hall, 2002.
[7] See Robert Reich, *The Future of Success,* Daniel Pink, *Free Agent Nation*, Marion McGovern, *A New Brand of Expertise*, and Charles Grantham, *The Future of Work,* for important discussions about the increasing diversity of employment patterns and career paths.

cafeteria can improve interpersonal understanding and cooperation in ways e-mail, voicemail systems or face-to-face meetings cannot achieve.

However, in concert with the improvements in collaborative technologies alluded to earlier, it is increasingly common for outsourced and subcontracted activities also to be physically separated from the "host" company. These technology developments enable the outsourcers to house their workers in less expensive locations yet continue to collaborate with the "in-house" workers. Clearly, technology is a major enabler of this evolution towards more distributed work.

# The Nature of the Work

We have discussed the three basic dimensions characterizing a distributed workforce.  But the *type* of work being performed also has a dramatic impact on distributed work environments.

Our focus here is on knowledge work, but of course there are many kinds of knowledge and many distinctively different types of knowledge work. This section discusses two important dimensions of knowledge work: the *type of knowledge* involved; and the *way it is used*. These factors have a major influence on how work activities must be conducted and managed in a distributed environment.

These two dimensions of knowledge combine to create four distinct types of knowledge work, as depicted in Figure Two.[8]

## Figure Two: A Knowledge Work Typology
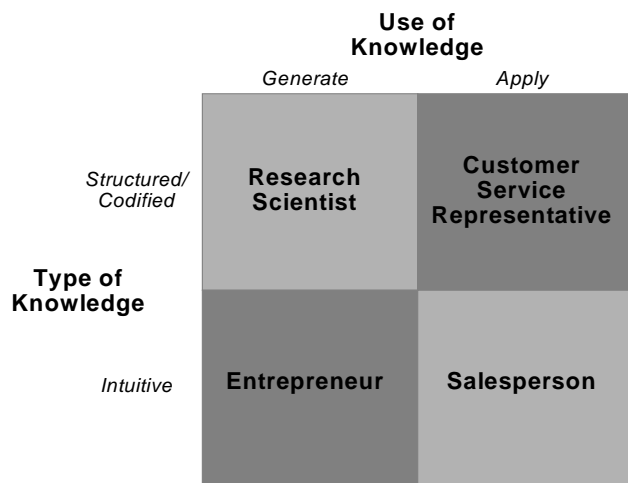


This diagram highlights (on the vertical axis) the differences between structured, fact-based work and intuitive, creatively-based work. Different kinds of interactions and interdependencies are needed to carry out differing work activities effectively. In addition, some tasks involve the

---

[8] This model is drawn from the work of Homa Bahrami of the Haas School of Business, University of California, Berkeley.

*creation* of information or procedures while others involve the *application* of knowledge that has already been identified or created (the horizontal axis in Figure Two).

While a customer service representative faces some unexpected situations, he typically follows a well-defined set of procedures and has very little discretion on a daily basis. A customer service representative frequently works independently of his colleagues, interacting primarily with customers over the telephone or via the Internet. With the right technical support, this work can actually take place almost anywhere, as the example of Jet Blue's customer call center demonstrates.

In contrast, a research chemist continually applies her skills to new situations in the quest to create new products, new processes, or new scientific understanding. While some aspects of a researcher's work may be relatively structured, the work is usually highly varied and it is difficult to evaluate the researcher's performance on a daily basis.

There is also third a characteristic of work that directly relates to operating in a distributed environment: some tasks are relatively individual, while others are highly interactive. Many activities, like copywriting, programming, graphic design, and legal research, require only periodic interaction with others. Other organizational roles typically require extensive interaction, sometimes with the same people (e.g., team members, supervisors, peers) and sometimes with an ever-changing mix of others (e.g., customers, suppliers, public officials, etc). Each of these activities has a different pattern of interaction and mobility, resulting in different needs for physical and IT support.[9]

Distributed workers whose jobs require interaction with others must rely on electronic media and postal and delivery services when they have to communicate, or on travel when it is necessary to meet face to face. In fact, many interactions are just as effective – and often actually more productive – when they take place electronically. For many issues a telephone call can actually accomplish the required information exchange far more quickly than a face-to-face conversation. While informal social conversation is just as common in telephone calls as it is in face to face interaction, there is typically a good deal less of it – and of course it takes much less time to dial a phone number than it does to travel to another person's office or another city.

One of the biggest challenges facing firms with a large number of distributed and mobile workers is how to develop and maintain the "tribal knowledge" that characterizes cohesive organizations. It's much more natural for close relationships and common views to form among workers who are together physically most of the time.[10]

## The Ultimate Challenge: Managing Complexity

These new possibilities of locating work almost anywhere and of splitting up business processes across time and space add up to an incredibly complex configuration of variables to be managed. Historically, most businesses simply organized work to flow from one person to

---

[9] See "Workforce Mobility Reexamined" in *The Corporate Toolkit for the Nineties: Organizations, The Work Force, and Technology,* Institute for the Future (Corporate Associates Program, vol. 4, number 2, 1993) for an extended discussion of the different types and ranges of mobility.

[10] For an extended discussion of this challenge, see *Managing Distance and Diversity*, by Bob Johansen and Mary O'Hara Devereaux of the Institute for the Future.

another within a common office facility; there were few options and consequently few choices to be made, either by office designers or by individual workers.

Until recently, workers really had no choice about how to get things done; they had to go to the office to access files, work with support staff, meet with colleagues, use the company telephone, or work with the computer. But times have changed; today we can (and do) choose where, when, and how we work, and with whom we interact, almost independently of our physical location.

However, while we may have gotten much closer to that "any time, any place" world first envisioned by Stan Davis over twenty years ago,[11] the key word in that last sentence is "almost." In reality, we are still some distance from being able to configure work in "any combination of location, time, and organizational responsibility the individuals involved want."

In many parts of the world, technology's limitations make actual communication far more difficult than it could be (i.e., secure, reliable broadband Internet access, simple PC technical support services). However managing a remote, flexible, and mobile workforce is not easy even in a well-designed environment. Despite the appeal of a distributed work arrangement, many managers resist the added levels of complexity and difficulty that inevitably accompany distributed work. Alternative work programs still seem to require more changes in the way managers think, monitor performance, and relate to their subordinates than those managers are ready to accept.

## About the *Work Design Collaborative* and the *Future of Work* Program

The *Work Design Collaborative* is an applied research and development consortium focused on defining the future of work and helping its members achieve order-of-magnitude improvements in workforce and workplace productivity. The Collaborative is widely recognized as the leading source of knowledge and expertise related to the future of work. We produce and distribute management tools, surveys, benchmark databases, white papers and technical reports, conferences and workshops, newsletters, books and articles, and public presentations on the changing nature of work. Our consortium is composed of senior business, IT, HR, and facilities executives, as well as smaller technology companies and service providers selling into these markets.

*Future of Work* is a focused research and product development program funded by corporations interested in sharing their knowledge and expertise for their mutual benefit. *Future of Work* enables its members to reduce the time it takes to build and apply new knowledge by at least 50%.

Direct inquiries to either Charles Grantham at +1 928 771 9138, or charlie@thefutureofwork.net, or James Ware at +1 510 558 1434, or jim@thefutureofwork.net.

---

[11] Davis, Stanley M., *Future Perfect*, Perseus Books, 1987 (now out of print; however, there is an updated paperback edition, published in 1997, with a new Introduction in which Davis reflects on how the business world has changed since the first edition was published ).

## *References*
### Selected Print Resources for Understanding Distributed Work

Note: This reference list goes well beyond the issues and guidelines discussed explicitly in this paper to identify relevant background materials and seminal sources related to the management of a distributed workforce.

Bardwick, Judith, *Seeking the Calm in the Storm: Managing the Chaos of Your Business Life*. New York: Prentice Hall, 2002.

Cairncross, Frances, *The Death of Distance*. Boston: Harvard Business School Press, 1997.

Champy, James, *X-Engineering the Corporation*. New York: Warner Business Books, 2002.

Davis, Stanley M., *Future Perfect* (second edition). New York: Perseus Books, 1997

Drucker, Peter, *Management Challenges for the 21st Century*. New York: Alfred A. Knopf, 2000.

Drucker, Peter, "The Next Society." *The Economist*, November 3, 2001.

Ghoshal, Sumantra, and Bartlett, Christopher, *The Individualized Corporation*. New York: HarperBusiness, 1997.

Grantham, Charles, and Nichols, Larry D., *The Digital Workplace*. New York: Van Nostrand Reinhold, 1993

Grantham, Charles, *The Future of Work*. New York: CommerceNet Press/McGraw-Hill, 2000.

Herman, Stan (editor), *Rewiring Organizations for the Networked Economy*. San Francisco: Jossey-Bass/Pfeiffer, 2002.

Institute for the Future, *The Corporate Toolkit for the Nineties: Organizations, The Work Force, and Technology* (Corporate Associates Program, vol. 4, number 2), 1993

Johansen, Robert, and O'Hara Devereaux, Mary, *Bridging Distance and Diversity*. Menlo Park: The Institute for the Future Outlook Project, 1992.

Lipnack, Jessica, and Stamps, Jeffrey, *Virtual Teams*. New York: John Wiley & Sons, 2000.

McGovern, Marion, *A New Brand of Expertise*. Boston: Butterworth Heinemann, 2001.

Pink, Daniel, *Free Agent Nation*. New York: Warner Books, 2001.

Reich, Robert, *The Future of Success*. New York: Alfred A. Knopf, 2000.