

Seven Global Work Trends

SR-757

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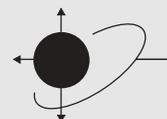
In this memo, Outlook has selected a set of trends about work that we consider timely and important for reflection. It is our hope over time to introduce new patterns of work as the tapestry of work is re-woven to better fit the new context of the organizational “Badlands”*. As organizations leave the industrial economy “plains”, with all its known fitness peaks, and enter into the Badlands of a new world order and networked economy, they must re-think what work is, who does it, and how it gets done.

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*For more information on our organizational Badlands work see the Outlook Program’s Badlands Toolkit, SR-758.

Introduction

This rugged social and business landscape that organizations will face in the Badlands demands many adaptations from workers, organizations, and governments. Our work anticipates important changes while creating guideposts for understanding and implementing significant conceptual and behavioral shifts to come.

To gain the richest insights, we define work broadly to include more than the usual paid work. Our analysis always includes a long-term, practical view to help companies understand the impacts on their workplaces and workforces. We continually ask deeper questions about how work, in all its definitions, is changing or needs to change. For example, What is the work that we need to do today that is not getting done? How and where can that happen? What are key emerging vulnerabilities in our world of work?

In this memo we chose **seven trends** that together are driving changes in work over the long term.

- Children of the Information Age
- Women Entrepreneurs
- Rising Flexibility
- Skilled Immigrants
- Groupware Infrastructure
- New Phases of Retirement
- Redundant Networks

Cross-Cutting Themes

While each of the seven work trends brings its own specific impacts, of greater importance is how they will work together to reweave the tapestry of work. Moreover, the transforming and tragic events of September 11, 2001 and the ongoing stream of new threats have altered the geo-political context for the entire population of the planet. The waves from this historic transformation will continue to produce wide impacts, and the seven work trends will further develop within this new context. The following are some of the cross-cutting themes operating at this intersection.

- Globalization will continue to drive major changes as to how companies organize to create and deliver products and services. This will create demand for new skills. At the same time, the aging demographic will impact each of the advanced economies over the next ten years, thus exacerbating the labor shortages. Simultaneously, tight labor laws mean that there is not enough slack in the labor force. Competition for talent will be fierce.
- The diffusion of the knowledge and networked economy demands higher skilled labor around the world. Those with valuable skill-sets are a select group coming from different countries and generations. How will the generations work together? In

what ways will they compete, and where will there be synergy?

- Government will have a big role, not so much in direct intervention, but in the decision- and policy-making necessary to hold this brave new world of work together. Issues include new retirement and immigration policies to assure access to highly-skilled talent and support talent flows. New security measures and public policies regarding insurance are essential to provide reasonable support for both companies and people, especially those who suffer from catastrophic events.
- Fragmentation will continue, the result of the increasing diversity in the workforce and the workplace. Much has changed over the past decades, perhaps at a faster rate than that to which we can comfortably adapt. Given all this diversity, what will hold the workforce together?
- Our recent thrust toward more open architectures and connectivity everywhere will change, as more friction will be introduced into the system. In the face of our recent experiences with loose connectivity, what will the coming tight network designs promise?
- Uncertainty and change in the geo-political context, as well as in organizations and work, are creating a new vulnerability. Though today's knowledge workers are smarter, more independent, and more connected than ever, crossing the Badlands remains treacherous and the potential for damage is greater. This new vulnerability will manifest itself among people, organizations, and networks.
- To whom will large companies continue to be attractive? How will they attract top talent and what new hiring methods and compensation packages will come into play?

Children of the Information Age

Today's youth are the most educated and sophisticated

cohort to enter the knowledge workforce.

This group brings specific and unique demands to the workplace, differing from region to region around the world.

► **DRIVERS**

- More access to higher education and vocational training; while public policy in the United States welcomes youth into the knowledge workforce, in Japan and Europe policy complicates entry
- Shortage of technology-literate workers opens doors to the knowledge workforce for younger, tech-savvy people
- Work valued as the key to a more whole, fulfilling life
- Opportunities in small firms and for part-time and temporary work rising across industries, creating more options for workers
- Knowledge work comprises an increased share of economic activity
- Diffusion of Internet and communication technologies

Although cultural, political, and structural barriers to work are globally diverse, people born between 1979 and 1995, (Generation Y) share a commonality without borders: they are all Children of the Information Age. They are immersed in technology: they are connected to the Internet, attached to their mobile phones, and reliant on their PDAs. Accordingly, their career outlook is predominately focused on knowledge work.

This sophistication comes hand in hand with an increased demand for the workplace to provide substance and meaning beyond the simple provision of income. In the United States a re-emerging social consciousness impacts what Gen Yers desire from their careers. In Japan, despite being better educated than their parents, youth are choosing not to work, reacting against perceived shattered dreams from their parents' loss of life-time employment. European youth live in an economic context that is increasingly knowledge-work based; subsequent "credential" inflation in the job market keeps more European youth in school, combining their study program with part-time work.

Window on the United States

The increased social consciousness of today's youth influences what type of work they will choose and what role it will play in their lives.

The knowledge workers of tomorrow—Generation Yers—have barely begun to graduate from college; yet as a generation they are showing themselves to be so uniquely socially conscious and emotionally literate that it is possible they will place higher value on work that is grounded in both social and personal fulfillment than earlier workers. The focus of these children of the Information Age extends well beyond personal spheres; their 365/24/7 connection to the rest of the world through the Internet informs and involves Gen Yers in anything toward which they might turn their gaze—or, more precisely, their browsers.

Common stereotypes mischaracterize young people today as a spoiled and self-absorbed generation whose worlds are virtual and whose demands are instantly gratified. In fact, Generation Y's technological "toys" exponentially increase their contact with the world beyond their neighborhoods as well as expand concern and sympathy for others. A Harris Poll reports that 78% of college-aged youth feel that the Internet brings them closer to other people.

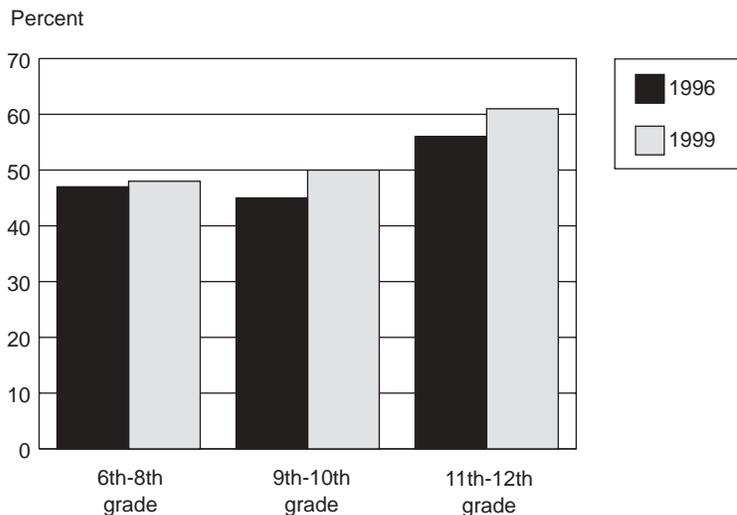
Their education also advances social consciousness, with increased emphasis on volunteerism, teamwork and good citizenship (see Figure 1). This acute social awareness correlates with demanding a sense of purpose in careers: work as a rat-race treadmill will not inspire this generation. According to a recent Harris Poll, 97% of college seniors seek work that will allow

them to have an impact on the world.

Although Generation Y's social consciousness echoes the world activist, philosophically-minded outlook of the Baby Boom generation, today's youth are not likely to follow in the footsteps of their workaholic parents. Rather, Generation Yers are unafraid to put their families and personal lives first over their careers, seeing work as just one component of their holistic lives.

The World Trade Center terrorist attacks of September 11, 2001 are further impacting the meaning and belief structures of the members of Generation Y, transforming how they view the purpose of their lives and the role of a career. For instance, the concepts of being a "good citizen" or being patriotic may color career and life decisions.

Figure 1
Student Participation in Community Service



Source: NCES, 1999 (National Household Survey).

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▶ **CHILDREN OF THE INFORMATION AGE (CONT.)**

Global Perspective

Japan

Japanese youth have yet to develop a cohesive set of values and work ethic. They are still reacting against the broken dreams of their parents.

The most prominent overall change in Japan's working world is the deterioration of the lifetime employment model. This sea-change in the Japanese labor market has particularly impacted the youth. Notably, there is the recent phenomenon of a group called "freeters," comprised of approximately 3.4 million young Japanese who float from one part-time or temporary job to the next. They avoid settling into a single career track, instead taking time to figure out what they want (as well as spending time traveling or indulging in hobbies). Modest estimates state that one third of young workers now quit or change jobs within their first five years in the workforce. Driving forces of this "freeter" trend include family affluence, lack of traditional corporate jobs, as well as general defiance.

At the same time, more Japanese are attending university. As the working environment shifts from a lifetime employment, seniority-based system, toward a skill-based meritocracy, Japanese youth are now less afraid to change jobs and are consciously investing in developing skills.

Overall, there is a marked drop in youth participation in the labor force over the last five years. Ironically, the working population of Japan is shrinking; therefore, Japanese firms must more actively attract and recruit younger workers, especially women. American companies are paving the way here, as many young Japanese prefer more flexible and merit-based "American" corporate values to traditional Japanese ones.

Europe

Qualification inflation in the European job market has enhanced ongoing education to attain a job in the knowledge workforce. Accordingly, there has been a movement toward combining part-time work with higher education study.

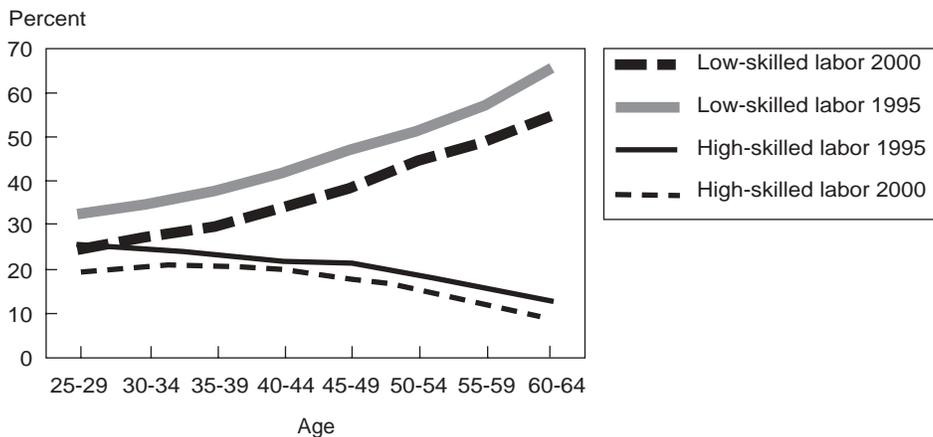
European youth trends follow, even magnify, adult work patterns away from industrial work and toward knowledge work (see Figure 2). Because this transition incited a "qualification inflation," European youth are now spending more time in school pursuing higher education, increasing the average age of entry into the labor market. With young people in school longer, their route to the working world is increasingly complex. For instance, the larger pool of qualified workers means that post-graduate competition for employment has been intensified. In the transition between school and work, unemployment has become a normal occurrence, even for university graduates. Accordingly, there has been a rise in part-time youth employment, though, as the Council of Europe notes, in European Union countries one third of 15-29 year olds said that their part-time status was seen as a means of gaining additional qualifications.

Issues and Implications

- To attract younger workers, companies must ensure their technology and information tools are up-to-date as well as provide increased flexibility.
- Regional-specific strategies will continue to be necessary due to the large structural differences in workplaces across the world. Although global Internet access is readily available, there still exist country-specific cultural and structural barriers to flexible work, accessibility to the workplace, and credentialing.
- Young women, especially Generation Yers, do not see working in large companies as an attractive prospect. They have watched Baby Boomer women struggle to break down the glass ceiling and “have it all,” without much success.

- Japan’s chronic recession and general lack of entrepreneurial spirit foster a stagnant climate for potential youth knowledge workers. U.S. multinational corporations continue to attract young Japanese knowledge workers by offering more intellectual and organizational flexibility.
- Overall, European youth in their 20s will continue to study and hold part-time work simultaneously. They will postpone career work to gain more credentials, and enter with less experience than their U.S. counterparts.
- The emphasis on early work as an essential ingredient to success is more prominent in the United States than in Japan or Europe. In the United States, teens and college student are encouraged to work as a positive and life-building experience. This push does not ring as true in Europe or Japan, where youth well into their 20s place more value on education and training as their key to success.

Figure 2
Skill Content of European Union Labor Force



Source: Eurostat, LFB.

Women Entrepreneurs

As companies over the next ten years face a growing management talent shortage, women will become prime targets for key executive positions. Recruitment and retention of female managers will be a challenge for organizations.

► DRIVERS

- Increase in female higher education
- Public policy support for equal employment rights
- Government incentives for women to open new businesses to combat unemployment
- Increasing availability of start up micro-funds
- Retirement of older male managers
- Rise in women's organizations to provide information and support

Over the last half century women have joined the formal workforce around the globe in growing numbers. While widespread gender discrimination has restricted advancement up the ladder, women have made modest gains in attaining leadership and management positions in large and small companies alike. More importantly, women entrepreneurs starting their own businesses to earn household income are on the rise, in both advanced and developing countries, and especially in America. A strong yet invisible cadre of business women have developed leadership and management capacity—a resource that will advance economic prosperity over the long term in many countries. The role of women will gain further importance as the number of new entrants to the workforce continues to decrease, and older, predominately male managers retire.

From a public policy standpoint, many governments realize that economic growth and low unemployment will depend on adding entrants to the workforce and the continued rise of small business. Over the last few decades there has been a consistent push to increase female higher education, and women are now performing better in school than men (see Figure 3). Recently, new public policies ensure equal rights for women in the workforce and provide support for women starting their own businesses.

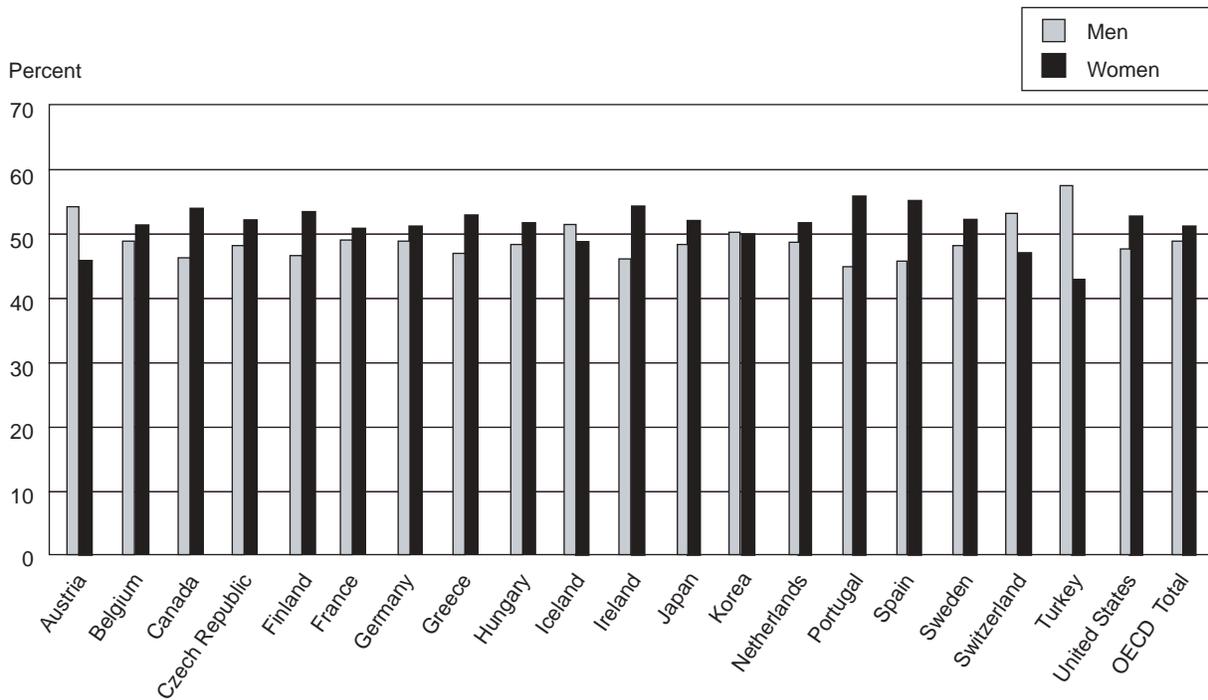
Window on United States
Future Management Gap

By 2008, with over 20 million new jobs anticipated in the United States, women will increase their participation in the workforce by 15% (vs. men, who will increase by 10%) and then comprise 48% of the workforce (vs. 46% for women in 1998). Of these new jobs 2.4 million—over 10%—will be managerial. Large companies in particular are already being challenged to recruit good managers. Despite these organic pressures, in addition to a few special programs to advance women in large companies, gains for women are slow and the leadership pipeline remains predominately

male (see Figure 4). Very few women, with estimates varying from 7 to 20%, hold line officer positions with profit and loss responsibility in large companies.

Women are often discouraged by the corporate status quo and find better opportunities as entrepreneurs. Educational gains give women more control, and in turn, more success in founding their own businesses. Women-owned businesses increased by 16% in the United States from 1992 to 1997, primarily in the service sectors, a fertile milieu for women to build leadership and managerial competency. What will incent them to join the management ranks of large companies as the need rises sharply?

Figure 3
Education of Women Around the Globe
(Gender differences in graduation rates at upper secondary level, % of total)



Source: OECD Education database.

► **WOMEN ENTREPRENEURS (CONT.)**

Global Perspective

Global Managers—A Special Case

While securing good managers of all types is hard, recruiting for global management positions is even more of a challenge: globalization has expanded the need for more global managers well beyond the supply. Women as of yet have not been recognized as an important and willing talent pool. Global women managers report they have little problem executing their jobs across many cultures, yet females still only comprise 13% of expatriates in U.S. companies. Companies need to overcome false perceptions that women are less effective managers and instead utilize their versatile competencies.

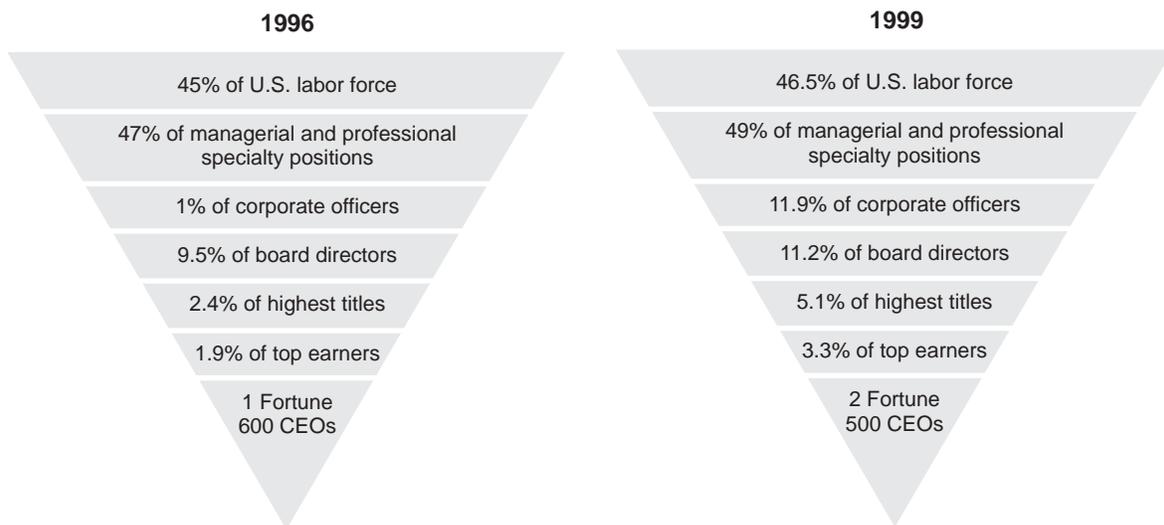
In Europe

Higher level management and executive positions in Europe belong almost exclusively to men. There is not

a single woman at the helm at any of France’s largest 200 companies and 60% of French working women are indeed grouped in “feminine” occupations. In Germany 75% of total hospital staff and more than 50% of school staff are women.

In France, public policy is very sympathetic to women’s needs for flexibility at work, thus supporting the idea of flexible work schedules. However, because recruiters are wary of placing women in high-level positions where flexible work is not possible, official endorsements favoring flexibility actually diminish the rise by women into higher corporate ranks. French policy-makers will be challenged to find ways to ensure that women are not only “accommodated” in the workforce, but are also unimpeded in their path to upper management positions.

Figure 4
Women in Management Trends



Source: Catalyst
www.catalystwomen.org

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In Japan

The most notable workplace change for Japanese women is their increasing role as entrepreneurs. The wage gap in Japan is widening, and most working women only hold temporary or part-time positions in large companies. This dismal situation has motivated Japanese women to experiment with entrepreneurship. Japanese women tend to start companies that offer services and products perceived as lacking in their daily lives. Women constituted more than 5% of entrepreneurs in 1995, up from 2.4% in 1980, and the numbers continue to rise.

In Korea

The Financial Crisis of 1997 and the subsequent IMF bailout resulted in an economic restructuring that adversely affected Korean women. Instead of integrating women into corporate restructuring programs, Korean public policy advocated women return to their “own jobs” within the home. Korean firms laid off or casualized many of their female employees, resulting in the casualized female workforce being twice the number of men. Korean women are forming labor unions to protect their employment rights, but since Korean industrial structure is service-oriented, labor activism has limited use. As a result, a movement toward creating and strengthening an alternative to the existing model of unionization—designed to include all women in all industries—will empower working women in Korea to join the ranks of professional knowledge workers.

Issues and Implications

While most of those leaving the workforce are men, most new entrants are women. Successful recruitment and retention of women in all age groups will become a competitive edge for large companies.

- Women make up the majority of flexible workers around the world; if organizations wish to bring more women into the workforce, they will need to create better policies and incentives for part-time and flexible workers.
- Women managers and leaders continue to find more satisfaction in small businesses and the public sector compared to corporate life. This trend is impacting how young women leaders view the future. Many studies show that teenage girls and new college graduates find the environment of large companies unattractive.
- Large companies are not doing enough to put women in the leadership and management pipeline. As fewer overall managers are available over the next ten years, large companies will need to recruit women managers from where they most reside: the small business circle.
- There is a sea-change in the attitudes of young women toward work. They have seen enough to know that the harried superwomen of the Baby Boom generation didn’t get it all. Young women now award flexibility a high priority and readily choose to stay out of the rat race.

Rising Flexibility

The practice of flexible work will grow globally, with the United States continuing its lead, followed by Europe and Japan.

► DRIVERS

- Knowledge workers demanding flexible work
- Aging labor force/working parents who need more work/life balance
- Employers responding to mounting pressures from customers/consumers to produce and deliver service/products flexibly (any time/any place)
- Information and communication technologies allowing various flexible work practices
- Friendly social and legal frameworks: laws, regulations, and increased social reception of flexible work

Both the concept and practice of flexible work have existed globally for years, created as a tool by large organizations to cut labor costs and manage staff better in the rapidly globalizing economy. Early forms of flexible work are part-time work and temporary work. The advent of the Information Age during the past decade has expanded the scope and diversification of flexible work arrangements. Driving this expansion is the convergence of growing demand from workers, employers and consumers/clients, surging information and communication technology applications at work, and smoother facilitation of legal as well as social frameworks.

Flexible work, broadly speaking, refers to all types of employment practices that differ from traditional, 9-to-5 permanent jobs. With such arrangements, both workers and organizations gain flexibility in the time, place, contract, and tasks of work. Indeed, most of today's flexible work practices fit four categories: flexible time (flexible schedules, various hours), flexible place (working from home, telecommuting), flexible contract (independent contractor, temp-to-hire work), and flexible tasks (multi-skills, multi-tasking).

Window on the United States

Flexible work is increasing and knowledge workers are the main driver.

In the United States, long an innovator and leader in this field, almost all flexible work forms operate in organizations across different sectors. The proportion of full-time salary and wage American workers with flexible work schedules increased two-fold to 27% in 1997 from 12.9% in 1985 (see Figure 5). By one estimate, American workers with flexible arrangements total over half of the working population. Some popular flexible work forms are flextime, compressed week, job-sharing, and telecommuting. Flexible work, no longer “alternative” or “non-standard,” is likely to become the norm.

A critical driver in the U.S. flexwork surge is an increased number of knowledge workers. Aside from being a natural fit to the knowledge work business, the growth of flexible work among knowledge workers is, more importantly, enhanced by related performance values. To knowledge workers, flexible work is more than a tool for work-life balance, but a key channel for supporting autonomy and respect at work which, in turn, motivates people to perform, produce and stay happy. For the next 5-10 years, the growth momentum of U.S. knowledge workers will persist.

Global Perspective

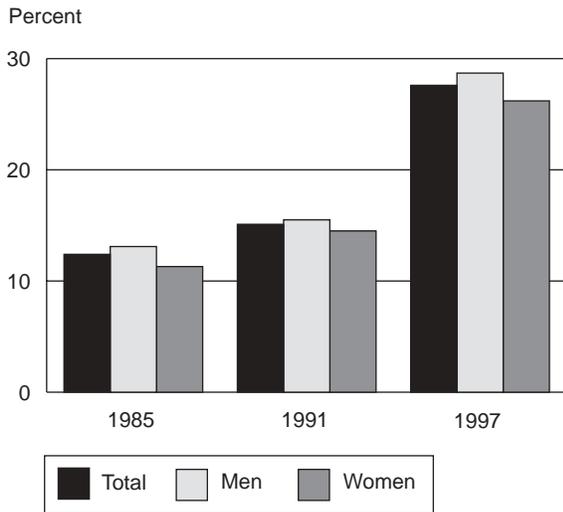
New flexible work forms in Europe are in a nascent stage (see Figure 6). But demand is increasing for flexible work practices.

While major flexible work forms, such as flex-

time, tele-working and contracting, are offered by European employers, the magnitude is fairly limited. Part-time work remains the most practiced flexible work arrangement in Europe, while other relatively new flexible work options, such as annualized hours, are just beginning to take hold.

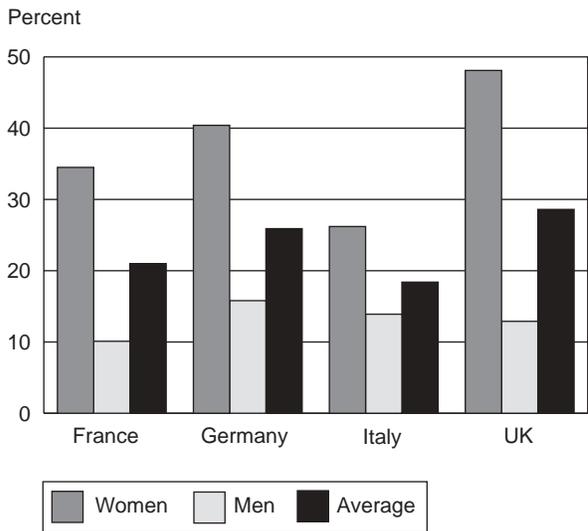
Another emerging regional trend is the increased incidence of flexible schedules and hours. However, as distinct from America, European flex practices follow changes to “the production rhythm” of the networked economy, driven by customer and consumer demand, and new information and communications technology. For example, the banking and insurance industries in Europe, facing cut-throat competition from new players and changing customer needs, extend service access hours and offer more sophisticated products and new delivery channels. This expansion results in the

Figure 5
Share of Full-Time Employees with Flexible Schedules (United States)



Source: U.S. Department of Labor, *Monthly Labor Review*, June 2000.

Figure 6
Europe is Moving Toward Flexibility (Incidence of Flexible Labor by Gender, 1997)



Source: Censis Italie, 1999.

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► **RISING FLEXIBILITY (CONT.)**

rising incidence of flextime options for workers, such as flexible schedules and weekend working. We forecast that knowledge workers' demands for flextime will rapidly increase in the next 5 to 10 years. A second driver will be the rapid increase in 24/7 customer service centers popping up across Europe.

Japan:

Flexible work practices exist in Japan, although incidence of the newest forms, such as flextime and teleworking, is marginal. The most practiced flexible work in Japan is part-time work, and the proportion of part-time workers is increasing. In 1999, 24.1% of total employed workers in Japan were part-time.

Temporary work and contracting work have also become important flexible and non-standard work options, especially for the young generations. Years of economic recession are responsible for the current employment doldrums, wherein many Japanese companies opt to recruit part-time, contracted, or temporary workers to reduce costs and risks. Because young Japanese are no longer interested in life-time employment with well-established companies, they increasingly welcome flexible work options.

For the coming 5-10 years, the current global trend toward more flexible work will also hold for Japan; but diffusion of these innovations will be much slower than it has been in the United States or Europe.

Issues and Implications

- While implementation of flexible work spreads a company's business coverage, enhances productivity and helps retain talent, organizations will be challenged to effectively monitor and supervise knowledge workers.
- Total team efficiency will be impacted by the separate flexible work arrangements across organizations.
- While many workers will be able to maintain a satisfying work/life balance via flexible work solutions, some may end up sacrificing their leisure time, income and benefits, and possibly even career advancement.
- Both social and legal frameworks need consolidation to encourage creation of new flexible work forms, facilitate their implementations, and protect the interests of flexible workers.
- Flexible work is reshaping the landscape of the future of work: boundaries between work and life, even boundaries among organizations, are increasingly blurred as work patterns shift.
- Connections with freelancers will be made via personal contacts and new labor categories.
- Portability of pensions, healthcare, and perhaps tenure will expedite transitions between full time and flextime positions.

Skilled Immigrants

The global marketplace for highly-skilled workers will expand and become more integrated over the next 10 years. Knowledge workers will more readily cross national borders, though various barriers will persist. Public policy, cultural and social challenges must be resolved to achieve full, long-term economic benefits.

International migration increased significantly during the last decade of the 20th Century—both legal and illegal. In two thirds of advanced economies (OECD) foreigners (that is, non-citizens) accounted for more than 5% of the labor force (see Table 1). Although most immigration still brings in low-skilled labor, there is a new, rising global transfer of highly skilled knowledge workers, particularly in technology-intensive industries and health care. Immigration policies are now bifurcating to reduce barriers and facilitate the flow of high end talent. Significantly, over 50% of immigration involves family reunifications.

Many immigrants receive temporary employment permissions, while admission of permanent foreign workers is low, especially in Europe. There are an increasing number of zones for citizens of certain countries to flow freely to other countries, such as between New Zealand and Australia, Britain and Ireland, among the Nordic countries, and more recently across the European Union. These passages, following the ebb and flow of business cycles, help keep labor markets flexible and relieve sector shortages.

► DRIVERS

- Aging and shrinking workforces
- Better employment and living conditions in advanced economies
- Technical skills gaps and shortages in native populations
- Policies encouraging immigration of skilled workers
- Unemployment across skill and education level in transition economies

► **SKILLED IMMIGRANTS (CONT.)**

Window on the United States

Immigration greatly benefits U.S. economic growth, with estimates claiming immigrants are responsible for adding \$1 trillion to our annual GNP. Over the last 15 years there has been a marked shift in the skill level and education of immigrants. In just 6 years the number of foreign-born college graduates in the labor force has increased 43.8 percent. In 2000, 26% of foreign-born workers were college graduates, on a par with the native-born employee population.

Undergoing a notable transformation, the American workforce is becoming the major center for the management, information resources and professional services that drive global economic enterprises. The skill-sets in demand for this expansion cannot be filled by natives alone. However, U.S. immigration policies, still guided by 1930s assumptions, view foreigners as a threat to American job security and income, and assume family reunification is the main driver behind immigration. But the realities of this new global labor force call for new approaches to immigration with more realistic assumptions, especially understanding that immigrants are a vital part of U.S. economic growth.

*Table 1
Foreign-born Labor Force in OECD Countries,
1990 and 1997 (Percent)*

	1990	1997
Austria	7.4	9.9
Belgium	—	7.9
Denmark	—	3.1
France	6.2	6.1
Germany	7.1	9.1
Ireland	2.6	3.4
Italy	—	1.7
Japan	0.2	1.0
Luxembourg	45.2	44.1
Netherlands	3.1	2.9
Norway	2.3	2.8
Portugal	1.0	1.8
Spain	0.6	1.1
Switzerland	18.9	17.5
United Kingdom	3.3	3.6
Australia	—	24.6
Canada	18.5	18.5
United States	9.4	10.8

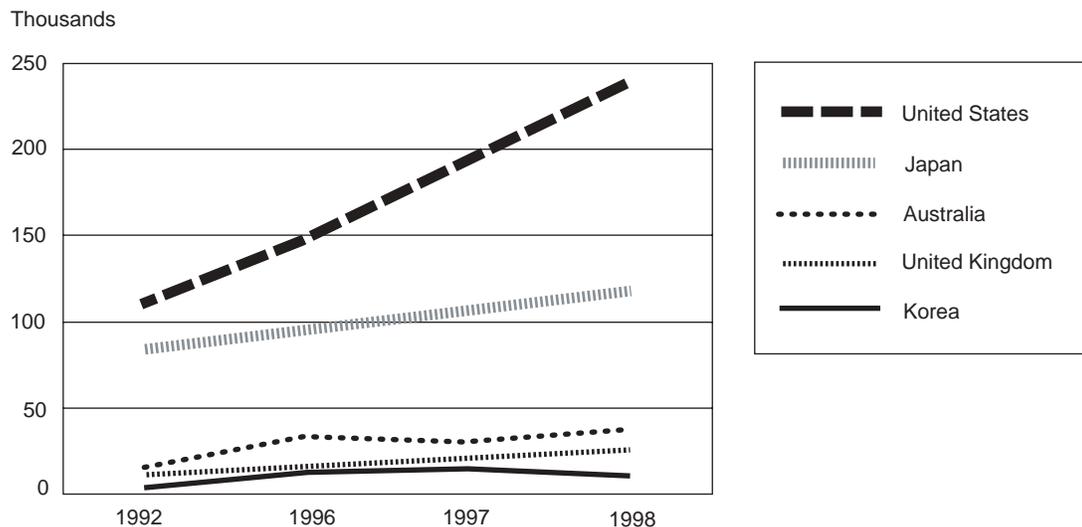
Global Perspective

The immigration of skilled workers is on the rise, driven so far by the globalization of the technology industry and its demand for specialized labor (see Figure 7). Because of shortages and high demands, these new, more skilled immigrants demand higher social and economic benefits for themselves and their families than traditional unskilled immigrants received. Immigrants also want to be more integrated into society; yet, xenophobia in most OECD countries keeps immigrant populations isolated from the mainstream, which only continues to feed deep suspicions about foreigners. In effect, cultural attitudes have not kept pace with the demands for and presence of this labor force. Even when employment is high, proposals to use immigrants to satisfy labor needs inflame passions.

Because most European countries and Japan are rapidly aging, immigrants offer host countries a much-needed youthful labor force, while simultaneously introducing greater labor flexibility. But before long-term economic gains may occur, these countries must address deep cultural and political issues.

Immigrants are migrating from a wider range of countries of origin to a wider range of destinations than before. Cross cultural issues will only increase. As global labor flows increase, policies and attitudes toward immigrants must change. Clearly, countries wishing to benefit from needed skill-sets must improve potential immigrants' access to needed human services and provide wider citizenship opportunities for both adults and children.

*Figure 7
Highly Skilled Temp Workers Lead the Way Around the World
(Entries of Highly-Skilled Temporary Workers in Selected OECD Countries)*



Source: OECD, *Employment Outlook*, 2001

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► **SKILLED IMMIGRANTS (CONT.)**

Issues and Implications

- Highly-skilled immigrants represent a critical resource to any future growth and competitiveness in advanced economies.
 - Severe labor shortages loom in the future of most advanced economies, especially in high-skilled work, over the next 10-20 years. Immigration promises one important part of the solution.
 - There is no foreseeable end to the brain drain in transition and developing countries, as better jobs and living conditions will continue to attract talent to advanced economies.
 - The free flow of top talent across borders will create a global elite not rooted in any one place. This will lead to a backlash from those left out from participation in the increasingly elitist global economy.
- More women are preparing for technical jobs and making up a higher percentage of the workforce. Filling shortages in advanced countries means recruiting more women. Accordingly, more highly-skilled women will comprise immigration numbers.
 - Countries and corporations need to study a new cultural literacy. There is extreme diversity in immigration as flows are not constrained to nearby countries, such as between Mexico and the United States. To attract more sophisticated workers countries need a new form of cultural readiness
 - Although most countries are reworking their immigration policies, change is still incremental and not comprehensive. Much remains to be done to facilitate immigration flows and cultural assimilation once newcomers arrive.

Groupware Infrastructure

Converging factors are transforming groupware from its original, basic function—support of a group’s communication and coordination needs—into a less obtrusive, but far more powerful array of tools for group sense-making.

Organizations are in inevitable flux, following the shift from hierarchical structures and local companies to globally far-flung, diversely-structured organizations. Work itself is changing, with people joining multiple project teams, working across time zones, and having ambiguous reporting relationships.

Collaborative technologies have been co-evolving with this changing work environment for the past 15 years. Groupware, or collaborative technologies, has migrated from the exceptional and expensive into infrastructure that today’s workers expect to use. Extremely diverse in its early forms, groupware is converging around key functions, including communicating, filing and retrieving information (managing documents), and managing groups (see Figure 8). (For more on the current state of groupware, see IFTF Special Report SR-751, *Groupware and Knowledge Management in the Internet Age: Retrospective and Forecast*, Fall 2001.)

► DRIVERS

- Organizations are doing more global work, with widely distributed work teams
- Some companies are moving to new office configurations that anticipate fewer people with permanent spaces and more people working at a distance
- Cost pressures from recession and fears of travel restrict corporate travel policies; renewed interest in substituting telecommunications for travel
- Commuting grows more time-consuming and frustrating for many workers
- In the suburban United States, high gasoline prices may discourage driving 30-50 miles each way to work
- Even with substantial new investments in public transit, rebuilding a workable infrastructure in the United States would take many years
- Ubiquitous e-mail, instant messaging, cheap storage, peer-to-peer architectures, and powerful search engines are in place

► **GROUPWARE INFRASTRUCTURE (CONT.)**

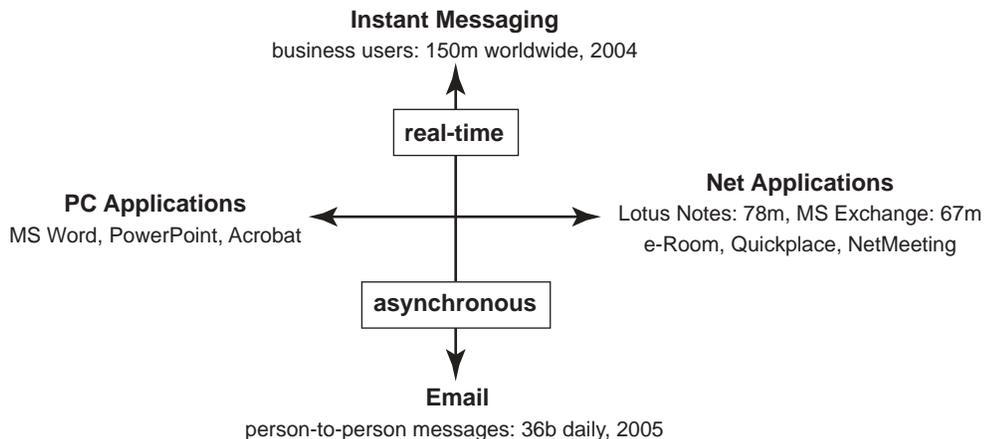
Technology Trends

Several key technology trends will affect how people work in the next five years:

- *Communicating.* E-mail, already ubiquitous for knowledge workers, will extend its functionality in several important directions:
- *Integration with other applications.* “Mail-enabled applications” are becoming increasingly automated and integrated with the Web. Thus, a Web-based transaction application will automatically trigger an e-mail to confirm the transaction. Such computer-generated e-mails will free workers for higher-level tasks while increasing the volume of messages.
- *Growth of instant messaging.* Instant messaging (IM) is expanding from a personal, social technology into an essential part of business communications. Workers now have more choices to reach colleagues, though with more interruptions as a trade-off. Again, the flow of messages will increase.

- *Hardware.* There will be a proliferation of communicating devices in the next five years. As knowledge workers adopt these devices, message flows will, again, increase. Inexpensive storage makes it practical and economical to capture much of that message flow.
- *Architecture.* Peer-to-peer data architectures will redefine the boundaries of individual, group, and company information spaces. Specifically, instead of requiring group members to consciously put information in an information repository on a server, a decentralized, “unobtrusive repository” simply captures the flow of information and communications.
- *Search engines.* Based on search engines and crawlers designed for the public Web, the search function on the “unobtrusive repository” draws from across the peer-to-peer network.

Figure 8
Work is Increasingly Represented Electronically



Source: IFTF; IDC.



Business Impacts

- Security of Information—In flat, distributed, networked organizations, managers will be increasingly responsible for who gets access to what information. Defining the security parameters on decentralized, peer-to-peer networks will be difficult, requiring both technology development and changes in habits.
- New Leadership Models—As technologies tend to flatten organizational structures and work collaborations with partners outside the traditional boundaries increase, management will develop new models to support leaders of the networked organization and to engage efficient use.
- Social Networks—How do we value (and consider managing) informal social lubrication (“who is talking to whom”), especially as these contacts are undocumented and poorly understood? Good networking is vulnerable to inadvertent management actions, like reorganizations or changes in physical location or environments. Not only is collecting data about these networks expensive and labor intensive, the results could give management intimidating power to track employees’ communications.
- Awareness Technology for Distributed Groups—Use of this technology replicates a sense of “mutual awareness,” as if physically close, to a widely distributed group. Such tools offer the beneficial support for productive team collaboration, though with the risk of being used to monitor, even spy on, workers.

Issues and Implications

- Application of “contextual information” will become possible.
- Conflict will emerge concerning “idea property”.
- Organizations that adapt to groupware infrastructures will see bottom-line benefits.
- Workflows will become better documented and changeable.

New Phases of Retirement

Reversing a 30 year trend for **early retirement**, the retirement age in most advanced economies will slowly rise over the next 20 years.

► **DRIVERS**

- Increased longevity; decreased morbidity; middle-age years expanding
- Fewer mandatory retirement rules and decline of age discrimination
- Pension plans shift from defined benefit to defined contribution
- Older single women lack adequate retirement funds
- Knowledge workers choose to work longer
- Government- and employer- provided incentives to work longer
- Technology supports flexible work
- Dependency ratios make public retirement plans unsustainable

As older workers occupy more of the workforce, a 60 year career span will become commonplace in most advanced economies.

What constitutes the optimal retirement age will remain a dilemma. The traditional standard of 65 years was set years ago, to minimize retirement payments. Retirement schemes are largely a phenomena of the 20th Century, the result of social and economic pressures from the Great Depression and two World Wars. In fact, labor force participation of older workers has declined in recent decades in all industrialized countries. In 1950 the average retirement age for men was 65 and older, but fell to below 60 for both men and women by the latter part of the 20th century.

Rising wealth has been the most powerful driver of early retirement in the United States and other advanced economies over the last 30 years, coupled with access to pension funds and health benefits before age 65. A second phenomenon advancing early retirement in the recent past has been an increase in retirement schemes, as large companies across industry sectors have adjusted to global competitive forces and downsized. However, these socio-economic factors prompting early retirement are giving way to the new context of the 21st Century (see Figure 9). Indeed, the convergence of new driving forces will lengthen typical work lives and redefine exactly what “retirement” means and when it will happen.

Window on the United States

More Choices, More Responsibility

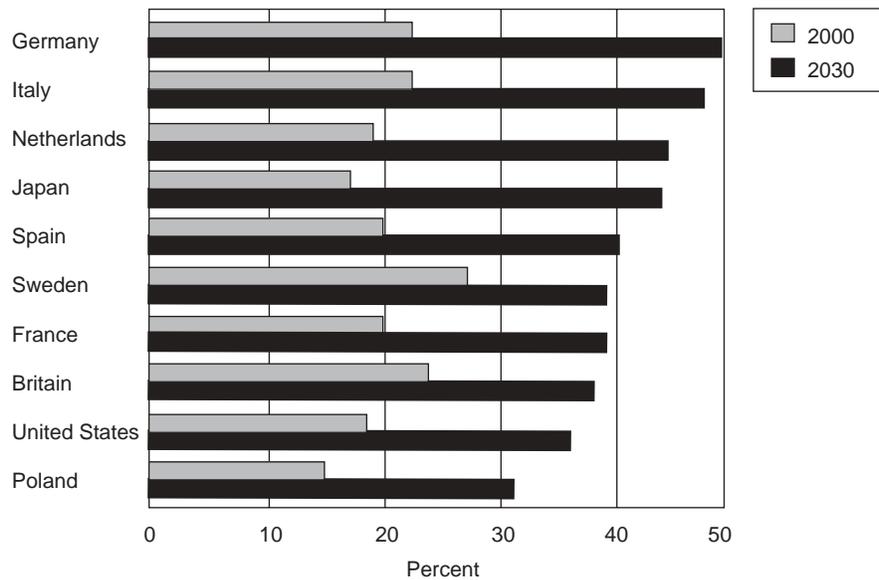
American workers are beginning to leave the paid workforce later than they were a decade ago, reversing the early retirement trend of the late 20th Century. Both negative factors, such as changes in types and provisions of pension plans, and positive factors, such as expanded work opportunities and flexible schedules, contribute to the reversal.

More retirement product choices since the 1970s

Since the 1970s, with the introduction of 401(k) plans and increased options from employer pensions to IRAs, participation in new types of retirement saving

has grown rapidly. As Americans moved retirement savings from traditional venues to these new products, the result has shifted employer-sponsored retirement to employee contribution (see Figure 10, page 24). Workers are increasing both personal risk and responsibility for later years, especially since support from the three-legged stool of financing retirement—social security, private pension funds and savings—has never come together. Social security is still the mainstay of support for the majority of Americans, especially women and persons over 65, as retirement plans only cover two-thirds of full-time employees and one-fifth of part-time employees. Earnings will become an increasingly necessary source of retirement income.

Figure 9
The Pensions Time Bomb
 (People aged 65+ as percent of those of working age)



Source: OECD, United Nations Population Division.

► **NEW PHASES OF RETIREMENT (CONT.)**

“Phased retirement” on the rise

Since the early 1990s older employees increasingly choose to work longer, thus rejecting traditional retirement ages. A low unemployment rate, declining new entrants to the workforce, and increasing knowledge work makes certain older workers attractive to employers. We forecast knowledge workers will begin to delay their retirement late into their 70s. Moreover, they will retire later whether they need income or not, as the meaning of work to older workers changes.

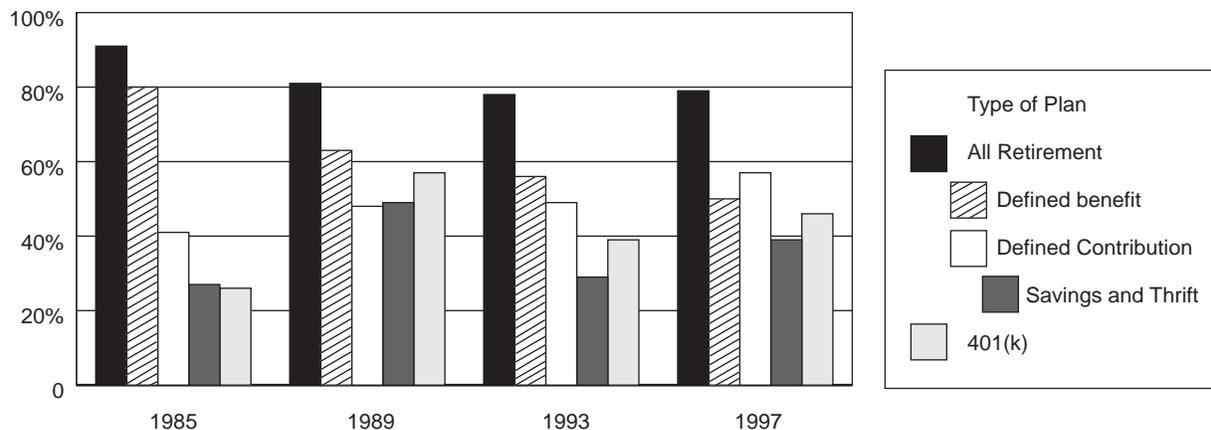
Global Perspective

Cultural values about aging, safety nets, and the role of government differ among the United States, Europe and Japan in ways that will dramatically affect retirement patterns. Europe and Japan offer retirees a more holistic approach, providing support beyond minimal income that sustains a comparable quality of life.

Europe

Europe will struggle with retirement predicaments, given its cultural values and strong labor unions. Most European countries modified their pay-as-you-go pension systems (invented early in the 20th century) in the 1950s in an attempt to assure workers’ living standards would not decline after retirement. However, decreased populations from lowered fertility rates (except for Ireland and to a small degree France) now present financial challenges to many European countries: how will they pay for retirement years? By lowering state contributions from 85% to 45% over the next 10-15 years, Germany’s new solution provides radical pension reforms (by European standards) that shift more responsibility to workers for their retirement income.

Figure 10
Percent of Full-Time Employees Participating in Various Retirement Plans



Source: U.S. Department of Labor, *Monthly Labor Review*, April, 2001.

Note: Data for 1989-97 are for establishments with 100 workers or more; data for 1985 are for establishments with a minimum of 50 to 250 workers, varying by industry. Differences in the data between 1985 and 1989 reflect in part this change in the survey definition.

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Japan

Japan's large increase in life expectancy since the late 1960s is fueling a great social challenge—an increasingly evident dependency burden that anticipates similar upcoming challenges for Europe and the United States. By 2005, estimates are that over half the Japanese population will be 50 years old or more. The cultural norm—of the eldest son taking care of aging parents—is no longer feasible, given the wages of most middle-class workers.

Changes in public policy are slow in coming, though a recent shift lowered the retirement age from 60 to 65. A powerful, diffuse social/cultural shift at the community level across Japan is working to support older members through social group support, as well as an increase in small businesses run and utilized by older people.

Issues and Implications

- The emerging 60-year age span of workers increases cross generation issues, making recruitment and retention a unique challenge to each company.
- Most large companies will need older workers to fill jobs located in the advanced economies. Labor shortage will be most acute in Japan in the next 10 years; Europe follows closely behind; and for both the United States and Britain, worker scarcity worsens post 2010.
- Companies will face more competition for older knowledge workers, whose value will increase across the globe. Expect more senior leader incentive programs.
- In response to this compelling demographic, corporate and social/cultural mindsets about what constitutes middle age, retirement age, and aging in general will slowly change over the next 20 years.

- Most governments will encourage older people to stay on the job to facilitate funding of state pension and health services for retirees by, for instance, supporting phased retirement policies.
- Many older women in the United States will need to work longer to supplement retirement income.

Redundant Networks

As a society, we will reintroduce redundancy and “friction” into all of our networks to make them more robust and secure.

As a global society, we are critically dependent on a wide range of networks—roads, airlines, rail, ships, electricity, natural gas, gasoline, water, financial transactions, physical goods distribution, postal services, fixed and mobile telecommunications, paging, Internet, cable and broadcast TV, radar, and local and global surveillance, to name a few.

The trend over the past 40 years has been to make these networks as efficient and friction-free as possible. This has been accomplished through two main devices—the introduction of computers and communications technologies to speed the distribution of information within the network, and streamlined network designs that minimize costly redundancy.

Streamlining and efficiency have come at a price—in security and reliability of systems. Recent terrorist actions have exposed the vulnerability of our networks and how easily they may be turned against us. We will reintroduce redundancy and “friction” into our networks to make them more robust and secure.

The Frictionless and Efficient Economy

In the United States, few structural rigidities impede companies from applying technology, changing locations, or shedding staff. Successive waves of deregulation through the 1970s, 80s, and 90s enhanced efficiencies in many industries. Around the world, large multinational corporations have quickly embraced IT in core operations, distribution, and customer service and relations.

- Federal Express and others gain huge efficiencies by using a hub-and-spoke distribution network which eliminates redundant sorting centers and maximizes capacity utilization. Advanced IT and communications systems make it easy for FedEx to provide a seamless, seemingly frictionless experience for its customers and their customers. As a result, such seamlessness gives Amazon.com’s customers immediate online access to tracking information.

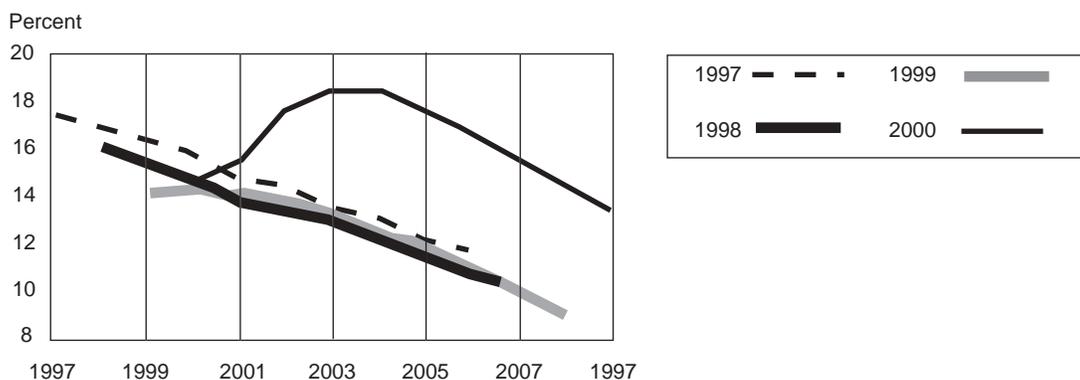
- Just-in-time production is the norm in many manufacturing industries, including autos, electronics, and personal computers. Peugeot, for example, streamlined its inventory turnover by nearly 40 percent and cut the number of non-assemblable cars on its production line by 70 percent.
- Internet routing protocols maximize throughput while minimizing overheads for tracking or otherwise measuring packets. As a result, the Internet is an extremely efficient communications network, though its openness makes tracing communications for law enforcement or security nearly impossible.
- Global financial networks, having increased the velocity of financial transfers in the past decade, have substantially contributed to the growth of world GDP. Increasingly, companies and governments rely on the availability and integrity of financial transactions.

The Hidden Costs of Efficiency and Less Friction

One dramatic trade-off behind these gains in efficiency is surfacing. The higher efficiency and lower redundancy of interconnected networks do not leave much margin for error. Increasingly apparent is that the most efficient networks are also the most vulnerable to disruption by accident, natural disaster, or terrorist attack.

- A sustained road or rail traffic bottleneck may bring a just-in-time manufacturer to its knees when crucial parts don't arrive.
- Efficient Internet routers, which pass packets along without tracking them, make it difficult or impossible to detect and identify the source of denial of service attacks or other challenges to the network.

Figure 11
Electric Capacity Margins in the United States Will Decrease to Critical Levels



Source: North American Electric Reliability Council

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► **REDUNDANT NETWORKS (CONT.)**

- Electric utilities, now using real-time control systems to save generation and distribution costs, get by with much smaller reserve margins and excess capacity (See Figure 11). Smaller reserve margins make utilities much more vulnerable to blackouts and network disruptions.
- Airline security systems, geared for efficiently moving passengers, reveal insufficient protections against determined people carrying weapons on board.

Business Impacts: Restoring Redundancy and Friction in Critical Networks

A key insight from the September 11, 2001 attacks is how our networks may be used against us—airplanes turned into high-powered missiles, letters turned into disease vectors, trucks turned into bombs, water systems turned to poison, and crop dusters turned to poison gas sprayers. Moreover, interruption of critical parts of networks for days or weeks wreaks damage to the economy.

These dire results are refocusing the world on the trade-offs we make between security, privacy, and efficiency. In the United States, that trade-off typically has been resolved in favor of privacy and efficiency. Around the globe, different regional equilibriums have been reached, with the use of national ID cards, surveillance by on-street cameras with facial recognition, smart cards, police registration of inhabitants, and other security approaches that impose social costs.

In network businesses of all types, we will reexamine whether we have leaned too far toward frictionlessness. In many cases, the answer will be that we have. Some impacts to look for:

- Just as preparation for Y2K delayed investments in innovative IT applications by 12 to 18 months, there will be similar delays as resources are diverted to patch rampant security holes. Hackers provided the “antibodies” that strengthened our information systems against larger attacks; now is the time for serious vaccinations.
- Similar investments to protect physical infrastructure from attacks, such as water, electric, and gas utilities, will delay investments in quality of service or depress investor returns.
- Insurers must relearn how to underwrite policies for new, extremely unpredictable and potentially catastrophic losses. Governments will step in as insurers of last resort in many instances.
- There will be greater business opportunities in certifying the authenticity and identity of people for different functions and situations. For example, airlines may issue special ID cards with biometric identification. Bonded, thoroughly vetted employees may become common in many more industries.
- E-commerce sites will move toward systems with excess capacity and more stringent firewalls to protect themselves against denial of service and other attacks.
- There will be a security/efficiency trade-off, with many networks choosing to sacrifice efficiency in the interest of increased security.