



*1301 K Street NW
Washington, DC 20005*

July 5, 2005

Office of Participant Assistance
Employee Benefits Security Administration
U.S. Department of Labor
N-5623 200 Constitution Avenue, NW,
Washington, DC 20210
Attention: 2006 National Summit on Retirement Saving

Dear Sir/Madam,

2006 National Summit on Retirement Savings

I am pleased to offer IBM's comments as input for developing an agenda for the third National Summit on Retirement Savings in 2006.

IBM is a major employer, with some 130,000 U.S. employees. We have extensive experience in providing both defined benefit pensions and defined contribution plans for employees. We also offer the perspective of a company with a global business model, giving us a good view of the wider forces that play on the retirement security decisions of our U.S. employees.

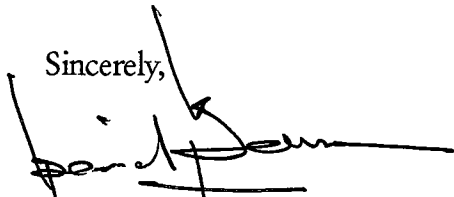
An important consideration for efforts to educate workers about the value of personal savings for retirement is the changing context of the employment experience. Changes in business models, often driven by new trade patterns and technology developments, mean rapid changes for businesses and employees alike. International mobility, job obsolescence, and non-traditional employment are just some symptoms of these changes. Indeed the landscape has changed dramatically since the first National Summit in 1998.

Making wise long term financial choices in this environment is no simple task

Therefore we believe a very important framing element for communications to the public is the changing employment experience and its consequences for savings and wealth accumulation. Equally important is the need for government policy makers, consultants, financial services organizations, and employers to understand the new workforce environment in considering their roles in supporting retirement savings efforts.

I attach a recent IBM white paper that was written to describe the new context for employment and the IT workforce. It lays out some of the themes referred to above. We will be updating the paper in the near future with a greater emphasis on new workforce models and we'd be pleased to share it with the Department.

Sincerely,

A handwritten signature in black ink, appearing to read "David N. Barnes", with a long horizontal stroke extending to the right. A vertical line is drawn through the signature, and a small arrow points to the top of this line.

David N. Barnes

Director, Governmental Programs

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Charting a Course for Growth and New Skills for America: An IBM Perspective

"The United States must decide how it will respond to the challenges of today's economic environment. Rather than accepting lower living standards or erecting barriers, we believe that we must again raise the bar – to take the steps necessary to offer the most fertile and attractive environment for innovation in the world."

***Samuel J. Palmisano
Chairman and CEO, IBM Corporation
Launch of National Innovation Initiative
Washington, DC, October 30, 2003***

Contact: David N. Barnes
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Executive Summary

American companies and their employees face great challenges. New technologies are shortening product cycles. Low cost competition is emerging in developing countries. Global financial markets and an open trading system require firms to match competitors more quickly in efficiency, profitability, price, quality and innovation. Although these trends serve individuals and societies in many ways, they also present significant challenges. Continuously aligning skills with this rapidly changing environment is difficult for companies and employees alike.

IBM's position as a technology leader and as a leader in skills development gives IBM a unique perspective from which to discuss this topic with public and private sector leaders. IBM believes our success depends on investing in the skills and development of our employees, and giving them the opportunity to exercise control over the advancement of their careers.

The information technology (IT) sector is experiencing a pronounced shift in demand for specialized "hot" skills that fuse industry-specific knowledge, IT expertise and business process expertise. Clients want more integrated and customized technology and services solutions that create competitive advantage and enable innovation. New IT jobs are mushrooming in areas like business analysis, security analysis, vendor management, service management, system integration, and others. IBM's clients seek business acumen, project management and leadership skills along with specific IT skills linked to open standards, networking and e-commerce. These emerging occupations require higher skills and they are well paid.

At the same time, the demand for some IT skill sets is shifting from "hot" to "cold" at a much quicker pace than before; i.e. the "shelf life" of many IT skills is growing shorter. Many technical specialties, once leading edge, are being standardized, automated, or can be sourced from low cost countries that have invested in education and raised their workforce skills.

Efficiencies enabled by the global sourcing of standardized software and services will drive intensified IT investment in the U.S. and growth in new job categories. The diffusion of information technology into sectors like health care now under-utilizing IT, also will drive job growth and productivity. The result will be even stronger demand in the U.S. for IT-proficient workers and for better tools to continuously upgrade their skills.

IBM expects to hire around 18,800 people world wide in 2004. Around 30 percent of the new jobs will be in the United States. Many will be focused on "hot" skills and strategic growth areas; examples include business consulting, middleware architects and open standards specialists. Already, IBM's workforce has more, higher-paid services and engineering jobs, and fewer, lower-paid production and administrative roles.

IBM invests heavily in training and professional development. This year IBM will invest over \$750 million to help our employees build skills, including more than \$200 million for "hot" skills, and \$400 million (53 percent) will be spent in the U.S. IBM is also investing \$25 million in a new "Human Capital Alliance" (HCA) initiative that will allow IBM employees to enhance their skills and experience by joining business partners on a temporary or full-time basis. The HCA aims to ensure that our employees and business partners have skills that clients value and need.

Companies and policy makers should take the initiative to help U.S. employees build new, innovation-focused skills to compete in the global economy. IBM is ready to work with governments to create an environment that encourages dynamic training models and sustains learning and innovation.

Introduction

The debate on world wide sourcing has thrown into stark relief how rapid changes in technology and trade patterns are reshaping contemporary business and the 21st century workforce. Media coverage has both informed and inflamed this sensitive issue. Government leaders face complex decisions in an uncertain environment. IBM's position - as a technology leader, our experience doing business in over 160 countries, and as a leader in skills development - gives us a unique perspective to help policy makers decipher this difficult issue.

Seldom have American companies and their employees confronted an environment as dynamic and challenging as the one we face today. Accelerating advances in technology, a fast-changing and dynamic marketplace, demanding customers, mounting global competition, and pressure from investors are our reality. These forces have been the catalyst for innovative and sometimes transformational responses by companies in redefining their business models to ensure their survival and prosperity.

A competitive business model in the 21st century requires the optimum sourcing of products, services, and people. Success now depends on innovation and on pursuing the best available offerings at the most cost competitive price. Winners and losers will increasingly be determined on the quality of a company's workforce – not necessarily the lowest-priced, but the most appropriately skilled and the most innovative people.

Just as world wide sourcing of manufactured products and components is a well established practice, now services and internal business processes are more amenable to remote sourcing and delivery across borders. Decisions to change sourcing locations and business models can be both disruptive but also create new growth opportunities at home, as reported by a recent study sponsored by the Information Technology Association of America¹.

Businesses that continue to invest in the skills of their employees and that encourage their employees to take responsibility for their professional development will be best positioned to harvest these growth opportunities. Governments too can play a sustaining role by creating an environment that encourages learning, dynamic training models and innovation.

The position of the IT industry is unique in that it provides the infrastructure for world wide sourcing, and it's a leading adopter of the global business model. Many skills and occupations in the sector are vulnerable to technology shifts, and thus may have shorter than expected "shelf lives". These affected skills may quickly lose currency.

For IBM, optimizing sourcing is not a new approach to business. IBM succeeds across the world by being able to deploy the best talent and most suitable resources wherever they're available. We implement these deployment and sourcing changes within countries and between countries. Our success is also built on sustained investments in the skills and development of our employees, and by giving them the opportunity to exercise control over the development of their careers.

From this vantage point, we offer comments on the skills and workforce dimensions of the world wide sourcing phenomenon.

¹ The Impact of Offshore IT Software and Services Outsourcing on the U.S. Economy, ITAA, at <http://www.ita.org/itserv/docs/execsumm.pdf>

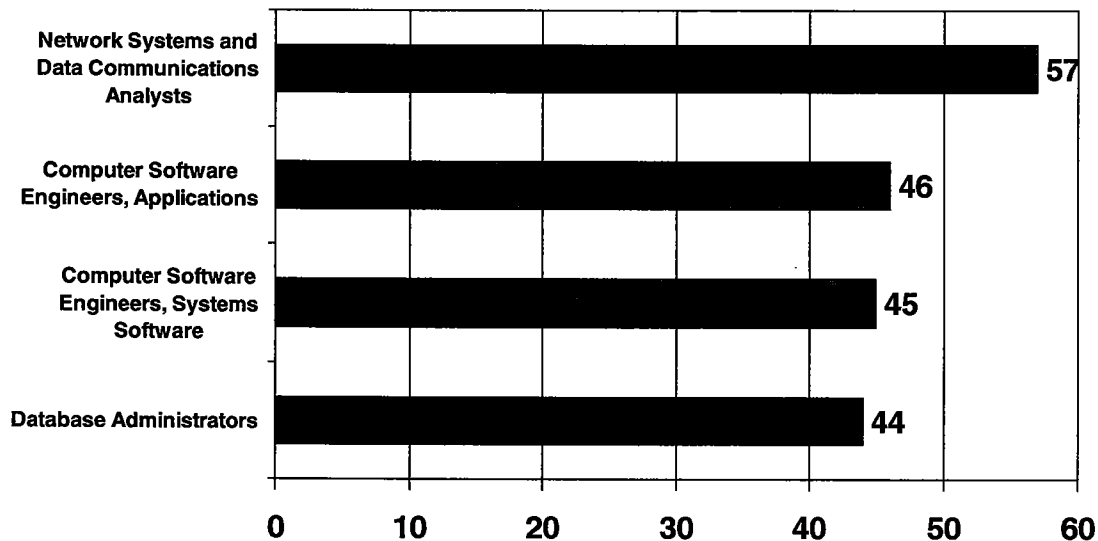
The Growth Horizon for IT

The IT industry is the only U.S. industry currently running a multi-billion dollar trade surplus and has been a major contributor to recent U.S. productivity growth and competitiveness. The productivity benefit from IT was enabled by an environment that fostered open trade and investment in IT. Collectively, we need to do everything possible to keep this economic engine working for the U.S. economy. It's in America's best interest.

U.S. productivity growth will be further accelerated by the world wide sourcing of software and IT services and the resulting reduced prices. Lower prices also create opportunities for broader IT diffusion. The result will be even stronger job demand in the United States for IT-proficient workers, particularly in sectors that are under-invested in IT, such as health care and education. Well intentioned but misguided efforts to erect barriers to world wide sourcing and supply chains will only hinder future productivity growth and U.S. economic leadership.

Bureau of Labor Statistics' projections show that over the 2002-12 period, computer related jobs, especially network specialists, computer systems engineers, and database specialists, are among the occupations expected to show the fastest growth.

Growth (%) of Key IT Jobs 2002-12



Source: Bureau of Labor Statistics, *Occupation Outlook Handbook*

Further, the Department of Labor predicts that the rate of growth of jobs in computer and mathematical science occupations will grow twice as fast as other private employment.²

Companies like IBM that are focused on delivering business value and high-end business transformation for clients have a growing demand for skills that fuse business insight, IT knowledge, and deeper industry experience. These skills contribute to innovation that enables our customers to set a course for growth. Innovation in the 21st century is the "intangible capital" of ideas and insight and provides the basis for growth and job creation.

² Occupational employment Projections to 2012, Monthly Labor Review 127, No. 2, February, 2004

Skills, Jobs and Growth

IBM is the world's largest professional services company and our success depends on the skills of our employees. Matching skills to a constantly changing environment is a significant challenge, and the "shelf-life" of some IT skills grows ever shorter. We are finding that a sizable number of IT skills are now shifting from being in high demand, or "hot", to standardized, or "cold" at a much quicker pace.

Driving these trends are the rapid emergence of new technologies, the low cost availability of commodity skills (e.g. HTML and C++ coding) in emerging countries, and the burgeoning shift in demand for more specialized IT skills that require higher level thinking or industry knowledge and business process expertise. In just two years, eight new skill categories entered the top 12 in demand based on job vacancy advertisements. Conversely, eight skill categories previously in demand exited the list. The newly emerging skill categories go beyond simply writing computer code. They highlight the premium placed on merging business "value" and technical execution.

Top 12 Most-Desired Skills							
<i>Note: Rankings are based on the number of job listings on Techies.com requesting the skill</i>							
2000-2001 Skill Shift				2001-2002 Skill Shift			
2001 Rank	2000 Rank	Skill	Movement	2002 Rank	2001 Rank	Skill	Movement
1	3	Unix	▲	1	n/a	Unix / Tornado Development	*NEW*
2	2	C++	No Change	2	1	Unix	▼
3	1	Java	▼	3	3	Java	No Change
4	5	SQL	▲	4	n/a	COM (Microsoft)	*NEW*
5	6	Visual Basic	▲	5	4	SQL	▼
6	4	HTML	▼	6	n/a	Development Life Cycle for Software	*NEW*
7	12	C Language	▲	7	n/a	Develop Design Specifications	*NEW*
8	8	Oracle 8 / 8i	No Change	8	n/a	Development Programming Code to Specification	*NEW*
9	7	SQL Server	▼	9	n/a	Development Software Architecture	*NEW*
10	10	Microsoft ASP	No Change	10	n/a	Development Methodology and Procedures	*NEW*
11	9	Windows NT4	▼	11	n/a	Project Leadership	*NEW*
12	n/a	TCP / IP	*NEW*	12	2	C++	▼

Source: Techies.com Tech Skills Demand Index

Another way to measure the relative demand for skills is by comparing the bonus compensation of different job categories. The table below shows that currently there is strong demand for skills in Web services, middleware, networking, and open source (Linux).

Demand for IT Skills



Skill Category	Largest Increase in Bonuses	Higher Paying ←	Standard Skills	Lower Paying →	Largest Decrease in Bonuses
Enterprise Applications & Suites		Oracle Enterprise Applications, PeopleSoft	ABAP, SAP, Lawson	JD Edwards	Baan
DBMS / RDBMS		Microsoft SQL Server, Oracle DB	DB2, Microsoft Access, Visual SQL	Sybase Adaptive Server, dbase, xbase	
Messaging, Office & Groupware			Lotus Notes/Domino, MS Exchange	Outlook	Novell Groupwise
Networking & Internet-working	Cisco, VoIP, Gigabit Ethernet	Security Skills, WML	Routing, Microsoft NT Server	APPC, SMTP	WAP, SNA, HTTP
Operating Systems	Linux		Solaris, Other Unix, HP-UX, AIX	Windows NT, Apple OS	
Web / E-Commerce	WebSphere, XML	VoiceXML	Java Server Pages, Java Beans/EJB, XHTML, ISS, Apache, Microsoft .Net, SOAP, JScript	Cold Fusion, CGI	HTML, DHTML, Perl, Visual Interdev
App Dev Tools / Languages		RAD, Extreme Programming, Oracle	C++, Visual C++, Visual J++, Java, J2EE, C#	Delphi, Cobol, Progress, Visual Basic, C	

Note: Skills analysis based on bonus compensation with "HOT" skills paying the highest bonuses and "COLD" skills paying the lowest bonuses. Source: Foote Partners LLC. www.footepartners.com. All rights reserved.

Occupations that are highly structured and standardized, and jobs based on "cold" skills are most commonly relocated to lower cost countries, according to RONIN³. Examples include application coding, software package support, and application maintenance alongside relatively generic system hosting and Web services. Other categories not specific to IT include transcription services, contact and call-center staff, and specialized business process outsourcing services. Similarly, IT services jobs that are low skill, highly structured, and with little or no customer interaction are more likely to be relocated to low cost locations.

IBM's experience parallels the general trend. Over 90 percent of the work IBM sources from our India operations is based on the standardized or "cold" skills. Less than 10 percent of

³ RONIN Corporation, Offshore/Nearshore Outsourcing Syndicated Research, Dec. 2003

the IBM workforce in India has current hot skills, like Linux and Websphere, which are in strong demand in the U.S. and Europe.

While the standardized or “cold” skills are shifting to emerging markets, in the U.S. there’s increasing demand for skills that require a fusion of industry knowledge, high level IT expertise, and business process expertise. According to META Group, the skills most requested by executives in 2004 are split 38 percent for business (business acumen, project management, and leadership skills) and 62 percent for IT (e-commerce and internet, java, networking). IBM’s own assessments of market data conclude that the demand is rising for new IT jobs in areas like business analysis, security analysis, vendor management, service management, system integration, and others. The table below represents these trends:

Hot and Cold Jobs – IBM Assessment

“COLD” Jobs IT jobs in the United States that have been most affected by global resourcing include:	“HOT” Jobs Demand is rising for new IT jobs, including:
<ul style="list-style-type: none"> ▪ Application Development ▪ Application Maintenance ▪ Packaged Application Tools ▪ Transcription Services ▪ Contact and Call-Center Staff ▪ Specialized Business Process Outsourcing Services 	<ul style="list-style-type: none"> ▪ Business Analysis ▪ Security Analysis ▪ Vendor Management ▪ Service Management ▪ System Integration ▪ Data Mining ▪ Business Intelligence ▪ Database Administration ▪ Network Engineering ▪ Network Architecture ▪ Internet / Web Architecture ▪ Web Services

The rise in demand for these “hot” IT jobs stems from demand for more integrated and customized technology and services solutions that create competitive advantage. Intensified investment in such IT solutions and further dissemination of IT throughout the economy will lead to growth in these job opportunities. Employees with high-end IT skills as well as business insight will be the intellectual engine behind the successful implementation of the new systems.

Reflecting market needs, IBM has created new job designs for 2004 to target candidates with a broader mix of business and IT backgrounds. *Security Consultant* and *Logistics Consultant* are just two examples of these new jobs. The qualified degrees for these jobs are bachelors or masters degrees in accounting, business administration, computer science, electrical and industrial engineering, mathematics, mechanical engineering, management, marketing, or management information systems and similar.

Security Consultants work under supervision to support engagements on projects in the Security practice of IBM Business Consulting Services (BCS). The Logistics Consultant is a dynamic position supporting projects in the Supply Chain Management practice of IBM BCS. The responsibilities of Security Consultants and Logistics Consultants could include: application

development based on provided technical specifications, data research and analysis, and as-is process documentation.

IBM has also identified three areas of specialty that are growing rapidly as a result of changes in client demand and technology. We already have hundreds of employees working in these areas, and we also expect their ranks to grow strongly outside IBM:

- **Middleware**: Middleware refers to software that acts as the “glue” that holds systems and networks together. Workers in this category are software engineers and IT specialists who have additional training in the nuts and bolts of how computers and software of different kinds communicate and share data. Specific opportunities include:
 - *Technical Solution Architect*: Assumes overall technical responsibility for solution construction, implementation and integration in a technology, industry or business specialty. Requires in-depth knowledge of leading-edge products and technology, as well as industry and business skills.
 - *Performance Architect*: Designs and deploys enterprise-wide solutions for clients, and performs critical evaluation and selection of the necessary technology and system components. Also develops plans for future functionality and capacity.
 - *Web Producer*: Translates business goals and online strategy into an appropriate Web experience. Works with editorial staff to develop production processes, schedules, and guidelines, and provides advice to the entire Web production and development team. Integrates various media modes (data, video, images etc) into a single model, and manages and tracks digital media content.
- **Open Standards Software**: Widespread adoption of open standards is causing dramatic changes in market demand, and expertise in open standards based systems is highly sought after. Most open standards opportunities will be for software engineers who combine general programming and IT skills with knowledge and insight of the legal, intellectual property, and industry practices in the open standards arena. Marketing and sales specialists will also be required in this fast-growing area of technology.
- **Business Transformation**: IT experts who also have expertise in business operations are in demand to apply IT innovations in creative new ways to boost business performance. Opportunities in business transformation include:
 - *IT Management Consultant*: Provides management consulting to IT and business executives who offer IT services to end-users and external customers. They define the business needs and associated IT capabilities, and develop and implement the IT capabilities, and the management systems that support IT service delivery.
 - *IT Strategy Consultant*: Helps clients adopt, adapt, and use information resources to meet business challenges and to achieve financial objectives. Provides clients with a high level, management-oriented view of how IT can be deployed to further the business strategy.
 - *Business Transformation Consultant*: Develops comprehensive transformation recommendations. Uses a strategic or tactical perspective of a client’s business, and helps refine or redevelop business strategy in line with competitive and market forces. Identifies strategic capabilities (IT, process, knowledge, etc) needed to create competitive advantage. Uses tools to identify, align and change the factors that affect performance, stability, and teaming.

Many other new job categories are emerging across the IT industry, consistent with the rapid tempo of change. Examples include:

- *Advanced Business Analyst*: Brings the organization's overall strategy to bear on business process definition.
- *Application Portfolio Manager*: Oversees a more active, architected approach to managing a portfolio of system applications. Able to identify and prioritize new projects, programs and maintenance activities; determine the degree of alignment of existing applications with future business processes and associated gaps; and rationalize and consolidate applications.
- *Application Measurement and Metrics Specialist*: Measures productivity and success in applying new technologies, e.g. Web services, Java, etc.

Not only will these emerging occupations require higher skills, they'll be well paid. The largest salary increases (8-10%) are forecast⁴ for jobs requiring more professional experience and industry relevance such as Senior Business Developers, Senior Web Developers, VoIP Specialists, WebSphere Specialists, Advanced Systems Architects, Linux and Gigabit Ethernet Engineers. Other jobs expected to show salary increases in 2004 are Systems Auditors, Data Security Analysts, Senior Internet/ Intranet Developers, and Application Architects.

IBM's Growth

IBM expects to hire around 18,800 people world wide in 2004. Around 30 percent of the new jobs will be in the United States. Many of the new jobs will be focused on the "hot" skills and strategic growth areas such as Linux, middleware architects, and hardware and software open standards specialists.

Despite the recent economic slowdown, the average IBM U.S. salary has grown by 7.3 percent on a compound annual rate (CAGR) since 1999, consistent with our transition to higher-skilled positions. Average starting salaries for new hires increased by 11 percent CAGR over the same period. IBM's total workforce composition reflects a growing proportion of software engineers, IT specialists, project managers, and consultants with business expertise, while we have fewer people in lower paid production and administrative roles.

IBM is also hiring more in engineering and consulting positions as the table below illustrates:

IBM New Hires: Top Job Categories				
1999	%		2003	%
IT Specialist	14		Software Engineer	25
Software Engineer	13		Sales	11
Sales	10		Engineer in Development	8
Production	9		Consultant	8
Technical Services	7		IT Specialist	5
Administrative Services	6		Planning/Pricing	4
Engineer in Development	5		Product Services	4
Consultant	4		Technical Services	4
General Finance	4		Accounting	4
Other	4		Specialty Sales	3

⁴ The Robert Half Technology Report. <http://www.roberthalftechnology.com/FreeResources>

This shift in hiring trends is consistent with the focus on our services business over the past decade. It is also consistent with the increased use of IT in the U.S. economy and rise of demand for new “hot” IT skills concentrated around high-end IT knowledge and business experience and insight.

The size of IBM's workforce is subject to changes driven by business performance, market conditions, and by acquisitions and divestitures. Overall IBM has maintained its U.S. workforce in a range between 135,000 and 146,000 for the past five years. Although our U.S. hiring drifted downwards after 2000 due to difficult economic conditions, in 2003 we increased hiring by 17 percent over 2002. We expect a further increase in hires in 2004, and also expect U.S. hiring to increase as a proportion of our world wide total.

Many states where IBM has a large presence (for example Arizona, Massachusetts, Connecticut, and Colorado) have seen double-digit growth in IBM employment over the past five years. In absolute terms, New York, Texas, North Carolina, and California have been IBM's top four hiring states, both over the past five years and also in 2003. IBM has hired over 25,000 people in just those states combined in the last five years.

IBM will also be expanding its workforce in places like India, China, and Brazil, the bulk of which will come from the acquisition of new contracts and not from relocating work from other parts of the world. Current plans are that less than 2 percent (3,500 to 4,500) of full-time IBM positions could be relocated from developed nations to emerging countries this year.

Considering these numbers against other measures of changes in employment gives better perspective. For example, in 2003, voluntary attrition in the U.S. outpaced the number of outsourcing jobs eliminated or shifted to emerging nations as client demands changed. IBM's voluntary attrition rate is among the lowest in U.S. industry.

IBM's Investment in Employee Skills

Highly-skilled employees are critical to IBM's success, and we invest heavily in their training and professional development:

Training: This year IBM will invest more than \$750 million to help our employees build needed skills; \$400 million of the total will be spent in the U.S. More than \$200 million is designated for “hot” skills; e.g., Linux programming, business transformation services, and standards-based IT architecture design. These are areas where we expect the greatest growth.

Redeployment: When the demands of the marketplace make current jobs redundant, IBM believes it is prudent to look first to redeploy the affected employees within IBM. Where appropriate, these employees will be matched against internal openings and in some cases will replace the need to hire externally. While overall external hiring could be reduced, successful redeployments reduce the need for separation of employees from IBM and result in a win-win for IBM and our employees.

IBM has now instituted a policy that requires all global sourcing actions that may result in redundancies to be advised to Human Resources (HR) with a target of 90 days in advance and more desirably 180 days. IBM HR will then have the authority to redeploy affected employees, and others that may not be impacted by global sourcing, into other parts of IBM. Alternatively, IBM HR can arrange for retraining that will facilitate redeployment within IBM or with business

partners. Because of the size of IBM and the breadth of opportunity within the company, our ability to redeploy employees is substantial. Additionally, there are self-service tools available for our employees to review all internal opportunities and apply to move within the company.

Any employees that cannot be redeployed, are provided with a wide range of assistance including career transition services for 120 days, financial planning services, reimbursement for retraining of up to \$2,500, subsidized post-employment medical benefits (IBM helps defray COBRA costs for a period of time), and subsidized group life insurance during a period of transition.

Retraining: Government retraining programs are valuable, but companies also have a responsibility to ensure their employees and their business partners have the skills valued by clients. For that reason, IBM is investing \$25 million in a new initiative called the IBM Human Capital Alliance (“HCA”). The funds will be used over the next two years to develop, improve, and share IBM skills and people with IBM’s network of 90,000 Business Partners. This will derive benefits for IBM employees and for our Business Partners who are often small and mid-sized firms that need the highly skilled workers, but at times cannot afford their training costs.

HCA will allow IBM employees to enhance their skills and experience by joining business partner firms on a temporary or full-time basis, with special attention to people whose jobs have been eliminated or may be relocated. The objective is to equip them to compete for a next job inside IBM or, for those that will leave IBM, allow them to take a high-value set of skills into the marketplace and ideally find a match between their skills and the needs of a business partner.

This global program builds on a similar, highly successful IBM program in Europe called “Skills for Growth,” under which certain qualified IBM employees were moved to business partners. The HCA will include a training program to help IBM and its partners develop key skills in emerging high-value areas, such as Linux programming, business transformation services, and standards-based IT architecture design.

Issues for Further Consideration

Forecasting demand for jobs and skills is imprecise; in the IT sector there is extreme volatility and sudden shifts in technology and markets. When considering strategies to improve our ability to better equip employees for the future, a number of important questions deserve further consideration:

- **How does employer engagement impact skills development programs?**

There have been efforts in the past to upgrade incumbent workers skills as well as the skills of displaced workers. Many have been ineffective because they did not involve the employer who has direct knowledge of the skills required to do the job at hand. Programs that gave benefits directly to the employee and encouraged them to seek out training often led the employee to opt for trendy or fashionable job skills rather than what employers needed. Revalidation of employer directed programs would be desirable.

- **Given that many opportunities for skills development exist, how can we convince workers to take greater personal responsibility for their own careers by continually developing their skills?**

Most major corporations offer an array of learning opportunities such as tuition reimbursements. For example, at IBM, we have the Academic Learning Assistance Program (ALAP). Through

ALAP, IBM pays for an employee's education at eligible institutions (accredited colleges and universities). It is an opportunity to develop skills and enhance career opportunities within the company. Employees are eligible to participate in ALAP as long as they meet program criteria, agree with the management team on the selected education, and it is overall a good investment for the employees and the company.

There is a sense that many of these programs are under-utilized as workers become caught up in their day-to-day work. Understanding this, IBM in collaboration with CompTIA (Computer Technology Industry Association) is developing an on-demand e-workplace to bring needed certifiable skills to the desktop or work location.

Building new skills takes time and effort as skill development is a continual process of improvement. On the one hand, employees need to recognize that the opportunities for improvement exist. In many cases they are free, or heavily subsidized. On the other, employers need to make a marketing effort to improve perceptions of skills development as an ongoing process that provides job security for the individual and improved productivity for the firm and the country. Yet, the effort needs to start with individual employees recognizing that they are not just passive participants in the economy.

- **How can we learn from previous government sponsored job creation programs?**

The New Jobs Tax Credit of 1977 was one of the more effective job creation programs of the past half century. The concept should be revisited in the context of the proposal for the Human Capital Tax credit that's being supported by various business groups and economists.

- **How can we better identify the skills that will be hot in the future? How can we partner or work with educators to help them identify and build curriculums to grow the skills that the IT industry will need?**

Skills are too numerous and too specific to particular industries and processes to have a centralized authority such as government; or even a corporate center dictating which skills are in demand and will continue to be in the future. Deep knowledge and insight on skills is decentralized, residing with managers and entrepreneurs who are closer to the development cycle and business processes. This decentralized group should be seen as thought leaders and trusted advisors on the direction of business, and the future skill requirements for employees.

Certainly, research conducted by experts and government provided economic and occupational statistical data will give us some sense of direction. In addition, some policy incentives to make real the declared importance of life-long learning should be explored. A partnership between the private sector and government should be created to assess how we can improve education and training of the U.S. workforce, build "dynamic" training/upskilling models, focus on next generation technology and services, and provide incentives for U.S. companies to further invest in "hot skills." Such coordination and collaboration will reduce any potential impact that economic downturns, global resourcing, and changes in IT may have on the U.S. workforce. Yet, above all, personal responsibility and willingness to develop new skills in order to ensure job security will drive the best results.