Building A 21st Century Workforce

There's A Major Change Occurring

The digital revolution is dramatically powering America's economy and accelerating changes in how we learn, work, and go about our daily lives. During the transition from the Old Economy to the New Information Economy, the fate of specific industrial sectors and particular companies is uncertain. However, any status report on the American economy would reveal that there is an ever-growing need for a workforce that is skilled, knowledgeable, and adaptable to a rapidly changing global landscape.[1]

> Once upon a time, Bill Cambio [fictional name] was a plumber, till he got tired of coming home with gunk on his hands. "I wanted to do something with my brain," he says. So off he went to community college, where new skills awaited. Two years later, he was a technical-support rep, working the kinks out of complex computer networks in Seattle. This may be the feature of the 21st Century Economy that's easiest to fathom: The guy who unclogged your toilet now tends your local-area network. It's other changes that may take some getting used to.

The landscape of the workplace has changed across all sectors of the economy. Imbedded in this change are the critical systems that involve information movement and management in all phases of commercial and public enterprise. The impact of information management will increasingly change the nature of many industries, therefore; an investment in continuous training of the active workforce makes good business sense -- projections for the future estimate that 75% of American workers in the year 2010 will come from the current workforce.[2]

Professional employees, who create value through intangible assets such as brands and networks, now constitute up to 25 percent or more of the workforce in financial services, health care, high tech, pharmaceuticals, and media and entertainment.[3]

Welcome to the 21st Century

A 21st century economy is powered by highly skilled people having great ideas, then having the resources to turn those ideas into practical products and services so the rest of society can benefit from their research.

The 21st Century workforce is not just about making sure that Silicon Valley has enough engineers. Its mission is to provide hope -- to ensure that all American workers have the opportunity to equip themselves with the necessary tools to succeed in their careers and in whatever field they choose in this new and dynamic global economy. This is a time of tremendous change across the country and across the globe. America's 21st Century workforce needs to adjust to the changes of the 21st Century economy. These changes include a fundamental transformation for all industries and increasingly require higher skill sets and higher education.

So what is a 21st century economy knowledge worker? [4]

- A problem solver versus a production worker;
- A person who uses intellectual rather than manual skills to earn a living;
- An individual who requires a high level of autonomy;

- A manipulator of symbols; someone paid for quality of judgment rather than speed of work;
- A worker who uses unique processes;
- Someone who possesses un-codified knowledge, which is difficult to duplicate;
- A worker who sources between his ears;
- Someone who uses knowledge and information to add to deeper knowledge and information.

Management theorist Peter Drucker is credited with coining the term "knowledge worker" nearly fifty years ago. The term refers to employees whose basic means of production is not labor, capital, or land, but rather the creative, productive use of knowledge. Examples of knowledge workers include lawyers, doctors, diplomats, law makers, marketeers, software developers, managers and bankers…" Drucker, writing in *California Management Review* in 1999, indicated that the 21st century's greatest management challenge would be increasing knowledge worker productivity. He offered several recommendations: more careful definition of work tasks; giving knowledge workers a high degree of autonomy; expecting them to "manage themselves"; encouraging continuous learning; finding new ways to measure their work; and treating knowledge workers as "assets" who must really want to work for the organization if they are to be productive.

The issue is important in our high-tech, constantly innovating business environment. The U.S. Bureau of Labor Statistics estimated a few years ago that about 80% of the U.S. workforce generates, moves, and processes information, while only 20% make physical products.

> "Their main value to an organization is their ability to gather and analyze information and make decisions that will benefit the company. They are able to work collaboratively with and learn from each other; they are willing to take risks, expecting to learn from their mistakes rather than be criticized for them."[5]
>
> "Knowledge workers are continually learning, aware that knowledge has a limited shelf life."[6]

The 21st Century Enterprise

Such an enterprise enhances the quality and flow of knowledge, regardless of geography. Key to its success is a strategy that calibrates culture, structure, and systems to the needs of customers and the marketplace. These businesses leverage the knowledge in the organization in interactions with customers, regulators, suppliers, and other stakeholders.[7]

There is no more evidence of this than how outsourcing has gained wide acceptance as a strategic tool in management in the U.S., and as a way to refocus needed resources on value-added activities in the organization (and of course in many instances as a way to cut costs). Outsourcing is roughly a $450 billion business in the U.S., more than 4 times the size of Japan's outsourcing activities, and is growing 15% a year. A further $67 billion is being outsourced to overseas locations.[8]

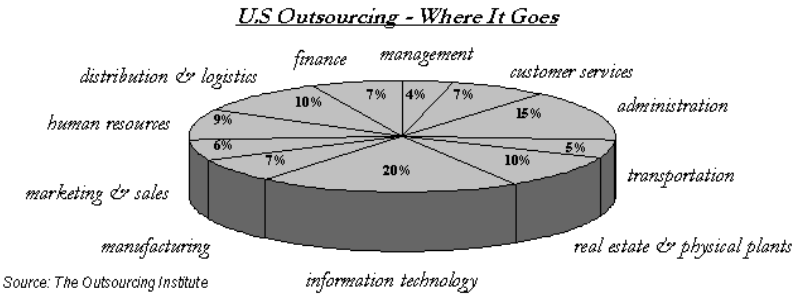

Chart 1 U.S. Outsourcing – Where It goes

U.S. outsourcing also takes place in a wide variety of fields, not only in back office operations, or what has been more recently termed business process outsourcing (BPO). This likely suggests a strategic approach is being taken when companies look at their operations. Furthermore, in a survey of the top ten reasons why U.S. firms outsource by the Outsourcing Institute, at least half of the reasons are seemingly to focus resources on more value related activities.

Number of U.S. Jobs Moving Overseas

	2005	*2010*	*2015*
Life Sciences	3,700	14,000	37,000
Legal	14,000	35,000	75,000
Art, Design	6,000	14,000	30,000
Management	37,000	118,000	288,000
Business Operations	61,000	162,000	348,000
Computer	109,000	277,000	473,000
Architecture	32,000	83,000	184,000
Sales	29,000	97,000	227,000
Office Support	295,000	791,000	1,700,000
Total	**588,000**		**3,300,000**

Data: Forrester Research (from Business Week

Chart 2 Numbers of U.S. Jobs Going OVerseas

One of the key features of this enterprise is its degree of reliance on IT. The following chart shows some of these relationships:

	CREATORS of Information Technology	IMPLEMENTERS of Information Technology	USERS of Information Technology
ROLE	Design & Build IT systems and components	Install, Operate, Maintain & Support IT systems	Use computer-based systems in their work
EXAMPLE OCCUPATIONS	Programmers Web Designers Assemblers EE Engineers	Network Administrators PC Technicians Technical Support Website Maintainers	Accountants Graphic Artists Data Entry Administrative Assistants

Chart 3 Creators, Implementers and Users of IT[9]

Preparing the Workforce – 21st Century Learning

The current and future health of America's 21st Century Economy depends directly on how broadly and deeply Americans reach a new level of literacy -- "21st Century Literacy" -- that includes strong academic skills, thinking, reasoning, teamwork skills, and proficiency in using technology. Every American youth and adult needs to acquire 21st Century Literacy -- strong academic, thinking, reasoning, and teamwork skills, and proficiency in using technology.

Chart 4 Elements of 21st Century Learning[10]

As society changes, the skills needed to negotiate the complexities of life also change. In the early 1900s, a person who had acquired simple reading, writing, and calculating skills was considered literate. Only in recent years has the public education system expected all students to build on those basics, developing a broader range of literacies (International ICT Literacy Panel, 2002). To achieve success in the 21st century, students also need to attain proficiency in science, technology, and culture, as well as gain a thorough understanding of information in all its forms.

*Digital-Age Literacy**:***

- **Basic Literacy:** Language proficiency (in English) and numeracy at levels necessary to function on the job and in society to achieve one's goals and to develop one's knowledge and potential in this Digital Age.
- **Scientific Literacy:** Knowledge and understanding of the scientific concepts and processes required for personal decision making, participation in civic and cultural affairs, and economic productivity.
- **Economic Literacy:** The ability to identify economic problems, alternatives, costs, and benefits; analyze the incentives at work in economic situations; examine the consequences of changes in economic conditions and public policies; collect and organize economic evidence; and weigh costs against benefits.
- **Technological Literacy:** Knowledge about what technology is, how it works, what purposes it can serve, and how it can be used efficiently and effectively to achieve specific goals.
- **Visual Literacy:** The ability to interpret, use, appreciate, and create images and video using both conventional and 21st century media in ways that advance thinking, decision making, communication, and learning.
- **Information Literacy:** The ability to evaluate information across a range of media; recognize when information is needed; locate, synthesize, and use information effectively; and accomplish these functions using technology, communication networks, and electronic resources.

- **Multicultural Literacy:** The ability to understand and appreciate the similarities and differences in the customs, values, and beliefs of one's own culture and the cultures of others.
- **Global Awareness:** The recognition and understanding of interrelationships among international organizations, nation-states, public and private economic entities, sociocultural groups, and individuals across the globe.

*Inventive Thinking**:***

- **Adaptability and Managing Complexity:** The ability to modify one's thinking, attitude, or behavior to be better suited to current or future environments; and the ability to handle multiple goals, tasks, and inputs, while understanding and adhering to constraints of time, resources, and systems (e.g., organizational, technological).
- **Self-Direction:** The ability to set goals related to learning, plan for the achievement of those goals, independently manage time and effort, and independently assess the quality of learning and any products that result from the learning experience.
- **Curiosity:** The desire to know or the spark of interest that leads to inquiry.
- **Creativity:** The act of bringing something into existence that is genuinely new and original, whether personally (original only to the individual) or culturally (where the work adds significantly to a domain of culture as recognized by experts).
- **Risk Taking:** The willingness to make mistakes, advocate unconventional or unpopular positions, or tackle extremely challenging problems without obvious solutions, such that one's personal growth, integrity, or accomplishments are enhanced.
- **Higher-Order Thinking and Sound Reasoning:** The cognitive processes of analysis, comparison, inference and interpretation, evaluation, and synthesis applied to a range of academic domains and problem-solving contexts.

*Effective Communication**:***

- **Teaming and Collaboration:** Cooperative interaction between two or more individuals working together to solve problems, create novel products, or learn and master content.
- **Interpersonal Skills:** The ability to read and manage the emotions, motivations, and behaviors of oneself and others during social interactions or in a social-interactive context.
- **Personal Responsibility:** Depth and currency of knowledge about legal and ethical issues related to technology, combined with one's ability to apply this knowledge to achieve balance, integrity, and quality of life as a citizen, a family and community member, a learner, and a worker.
- **Social and Civic Responsibility:** The ability to manage technology and govern its use in a way that promotes public good and protects society, the environment, and democratic ideals.
- **Interactive Communication:** The generation of meaning through exchanges using a range of contemporary tools, transmissions, and processes.

High productivity:

- **Prioritizing, Planning, and Managing for Results:** The ability to organize to efficiently achieve the goals of a specific project or problem.
- **Effective Use of Real-World Tools:** The ability to use real-world tools—the hardware, software, networking, and peripheral devices used by information technology (IT) workers to accomplish 21st century work—to communicate, collaborate, solve problems, and accomplish tasks.
- **Ability to Produce Relevant, High-Quality Products:** The ability to produce intellectual, informational, or material products that serve authentic purposes and occur as a result of students using real-world tools to solve or communicate about real-world problems. These products include persuasive communications in any media (print, video, the Web, verbal presentation), synthesis of resources into more useable forms (databases, graphics, simulations), or refinement of questions that build upon what is known to advance one's own and others' understanding.

Educational Programs

Educational programs need to be modeled on several common principals:

- The growth and development of the worker is a critical success factor in the global economy.
- The "knowledge worker" is essential for economic success as the nature of work evolves.
- Individual workers must " own the process" of their own educational and training development (empowerment) and be convinced of the value of lifelong learning for their personal and career growth.
- Educational and training opportunities must be relevant to individual workers' needs and interest and be easily accessible.
- The development of a more highly skilled workforce benefits all parties-it strengthens individuals, unions, and business.
- Companies, unions, and other strategic stakeholders must assure that the resources, financial and otherwise, for lifelong learning opportunities are made available.
- Labor and management have a joint responsibility for the development, design and implementation of the program.

A model of worker development includes:

- Comprehensive career planning for employees, including drafting of personal development plans, which are continuously updated to reflect new circumstances.
- Needs assessments to determine the skill needs of the future and to plan training for them; training that meets current and future business needs and also enhances employment security for the workers by giving them the skills that are in demand, transferable, and portable.
- A focus on personal ownership of the educational process and the freedom to choose. (Voluntary Enrollment)
- Access to educational opportunities both at the workplace and at external educational facilities and through the development of delivery systems that are not time or place bound.

- Dedicated access to funds to support individual training and development activities.

Though building a collaborative business is an ongoing process, there are steps that will get you on your way with a content and collaboration platform in the short term. It involves both technology and corporate culture.

- Develop and heighten the awareness of concerning what effective content and collaboration could represent for the economy.
- Bring together a cross-functional group of business leaders and IT staff to formulate a content and collaboration platform that's linked to the business' strategic drivers. Be sure business-process owners are involved.
- Put in place a multi-tiered governance structure that will ensure the right level of business sponsorship and consultation to engender the shared ownership of this platform.
- In the course of formulating the strategy, identify the key business applications that will justify the investment in the platform. Start small to show early wins. Use existing infrastructure and skill sets to keep costs and training at a minimum.
- Define and map the different phases of implementation and the results to be obtained at each phase.
- Experiment and renew the strategy as you go along.

Endnotes

[1] "A Nation of Opportunity: Building America's 21st Century Workforce," U.S. 21st Century Workforce Commission, Cornell University, 2000, http://www.cccco.edu/divisions/esed/econdev/resources/ANationofOpportunity.pdf, retrieved July, 2005

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[3] "The 21st-Century Organization," Lowell Bryan and Claudia Joyce, *McKinsey Quarterly*, Issues 3, 2005, http://www.mckinseyquarterly.com/article_abstract_visitor.aspx?ar=1628&L2=18&L3=30, retrieved March 31, 2006

[4] "What is a knowledge worker?" National Electronic Library for Health, http://www.nelh.nhs.uk/knowledge_management/km3/knowledge_worker.asp, retrieved November 2005

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[8] "Human Capital Productivity Key to the 21st Century Organization," Economic Research Institute, February, 2003, http://www.marubeni.co.jp/research/eindex/0302/index.html, Retrieved March 31, 2006

[9] ibid, "A Nation of Opportunity: Building America's 21st Century Workforce"

[10] "21st Century Skills", ," *enGauge*®, North Central Regional Educational Laboratory, http://www.ncrel.org/engauge/, retrieved: July 24. Excellent online overview to help districts and schools plan and evaluate the system wide use of educational technology. The site undergoes changes with periodic updates.