



The Boston Foundation

**The New Economy Initiative:
Using Technology to Empower Community**



Part I
Position Paper
June 2001

Prepared by
The Boston Foundation
75 Arlington Street
Boston, MA 02116

For information please contact:
Geeta Pradhan, Director, New Economy Initiative
Telephone: 617-338-3928
E-mail: ppp@tbf.org

The New Economy Initiative: Using Technology to Empower Community

Part I : Position Paper

Introduction

Described as the "Internet-age," the "digital economy" or the "information technology revolution," the New Economy is most significantly associated with computer related technological innovations which started several decades ago, but which began to show their impact on commerce, service delivery and lifestyles only in the 1990s. With their increased speed of communication and computing, these innovations have led to reductions in cost, better quality products, better connectivity, greater productivity and efficiency, and have increased global competition. In today's information- and knowledge-based economy, technology tools, skills and capacity have become critical means of empowerment that promise opportunity for all.

While access to new information technology skills and knowledge have created opportunities for many in the new economy, the promise of technology alone does not guarantee success for those individuals and organizations that do not have access to the tools and skills needed to benefit from those opportunities. Increasing *digital equity* — described as equal access for all people to the technology tools, skills and proficiency necessary to participate in the new economy— in the Greater Boston region can ensure strategic advantages to young people preparing for the future, adults entering the workforce and nonprofits addressing complex social challenges. It will require deliberate and thoughtful action that responds to local and global realities.

Globalization has increased opportunities for people, as well as the arena within which people compete for jobs and is demanding higher skill and competency levels to stay competitive. At the local level, as Boston transforms itself from a manufacturing economy to one based on services and information, workforce skills have not kept pace with the changing needs of the region's "brain" economy that is dominated by higher education, healthcare, high-tech, and professional and financial services. Studies show that current educational approaches, workforce skills, and technology capacity and support are seriously incompatible with those needed for people and organizations to succeed in the 21st century economy. The shortage of skilled workers poses a serious threat to the growth and sustainability of the region. It also threatens to shut those without requisite skills out of the economic system.

The Boston Foundation's *New Economy Initiative: Using Technology to Empower Community* builds upon the Foundation's deep knowledge of and connections with the Greater Boston community to further its goals of community empowerment, poverty reduction and greater equity. By capitalizing on opportunities created by the information technology revolution it aims to increase the efficacy of individuals and the organizations that support them. The Initiative seeks to support the strategic use of technology to build the capacity of nonprofit organizations, and spark innovation to develop, test

and replicate creative approaches that increase digital equity and enable young people and adults to participate, advance and succeed in the new economy.

Three program areas form the focus of the Initiative. Selected after extensive research, interviews and roundtable conversations with people representing the nonprofit, academic, public and private sectors, these program areas—each important in itself—collectively illustrate the complexity of issues that must be considered in order to secure digital equity and help individuals progress in the new economy and nonprofit organizations increase efficiency and improve effectiveness.

The *New Economy Initiative* program areas are:

- **Technology for Education and Youth Development**
- **Technology for Adult Workforce and Skills Development**
- **Technology Capacity Building for Nonprofit Organizations**

This position paper lays out the Foundation’s understanding of the implications of the technology revolution on the economy and what that means for disadvantaged populations and the nonprofit organizations that serve the social sector. It is organized in two sections.

- *SECTION 1* outlines the impact of technology on work and skills in the new economy and identifies populations that need support in these changing times.
- *SECTION 2* presents the Initiative’s three program areas, explains why technology is an important ingredient in achieving success in the new economy era, and outlines the challenges that must be addressed to achieve digital equity in each of these areas.

SECTION 1:

The impact of technology on work and skills in the new economy

As people become familiar and comfortable with technology, they use it increasingly as a tool to enhance their lives. Technology is changing the way children learn, adults find jobs, individuals access information and services and the way in which nonprofit organizations, businesses and government provide important services. The complexity of issues involved in promoting digital equity and creating opportunities for people and organizations to do well in the new economy runs the gamut— from in-home access and connectivity, to preparing young people and adults for participation and advancement in the economy and extends to building the capacity of organizations that support disadvantaged and underserved populations. In order to do so effectively it is important to understand first how technology has changed the nature of work, and its impact on the skills needed to perform work in this information and knowledge based economy.

The dynamic growth of technology in *all sectors* of the United States economy is creating a growing demand for people with Information Technology (IT) skills— from basic computer literacy needed for routine job performance and program and project management and reporting, to more advanced IT skills needed for data management, network administration, programming, web design and the design of complex information management systems. Developments in the field of technology hardware and software, as well as the Internet, are creating a global demand for IT workers, with most employers— public, private or nonprofit— seeking IT-capable workers to implement the technologies they need to stay competitive in their sectors.

The U.S. Department of Commerce points out that nationally 60% of all jobs now require technology skills. The U.S. Department of Labor reports that almost 50% of all workers use computers on the job, with computer users earning 43% more than other workers do. By 2006, almost half of the United States workforce will be employed in industries that are either major producers of technology or that use information and communications technology products and services intensively.

The changing nature of the work and the increasing demand for technologically skilled workers is creating unprecedented opportunities to upgrade the skills and life chances of workers to participate in the local as well as the global workforce. According to the Information Technology Association of America (ITAA), the total United States IT workforce today is over 10.4 million people. This does not include government, nonprofit organizations or small entrepreneurial firms. The ITAA's April 2001 study, *When Can You Start? Building Better Information Technology Skills and Careers* found that despite the recent failure of several dot.com businesses, the short-term growth slowdowns of many high-tech companies and other changes in the marketplace, the demand for IT workers in the New Economy remains strong. According to the report, which is based on 685 telephone interviews with hiring managers, both inside and outside the IT industry, companies project hiring an additional 900,000 workers this year down from the projected demand for 1.6 million cited in ITAA's March 2000 study, *Bridging the Gap: Information Technology Skills for a New Millennium* (for which over 700 IT and non-IT managers were surveyed). According to the April 2001 study:

- Information technology employment directly accounts for approximately 7% of the nation's workforce. This number is 4% higher than the 10 million total measured in last year's report.
- The demand for IT workers remains high. Although demand for IT workers is down 44% from 2000, IT employment is projected to increase year-to-year.
- The talent gap for IT workers remains large. Hiring managers anticipated a shortfall of 425,000 IT workers to fill their openings, down 50% from last year's figure of 850,000 workers.
- Non-IT companies employ ten times as many IT workers than do IT companies and remain the larger employer of IT workers with 9.5 million people, generating about two-thirds of the demand for IT workers in 2001.
- The hottest demand is for technical support people in both IT and non-IT companies and accounts for 25% of all positions that need to be filled over the next year.

The future of work and skills needed for the New Economy

The impact of the vigorous growth of technology in the "old" and the "new" economy sectors can be seen in the changing nature of work and requisite skills. A U.S. Department of Labor publication, *Futurework – Trends and Challenges for Work in the 21st Century*, describes the new economy as being "powered by technology, fueled by information, and driven by knowledge." It predicts an increasing need for higher skilled and higher education jobs and a lessening demand for lower skilled positions. It emphasizes that though not all jobs will require a college education, the need for new skills in today's workforce will grow as technology introduces new ways of doing age-old tasks. The report stresses that in addition to education and job skills, new and updated skills must include both cognitive/hard skills and communication/soft skills.

New IT skills and new types of workers are evolving on a regular basis and old jobs are being redefined as a result of information technology developments. For example, webmasters and web

designers, unheard of a few years ago are now in growing demand to develop websites and keep information up-to-date on the World Wide Web. The ITAA 1998 task force report titled *Building the 21st Century Workforce: Upgrading the IT skills of the Current Workforce* identifies the need to clearly define IT skill needs that are necessary for different levels of work: skills all workers need; skills all IT workers need; skills specific groups of IT workers need; and skills that are company/sector specific. It found that:

- 21st century workers must have technology proficiency, better problem solving abilities and teamwork skills in addition to a good grasp on reading, writing and mathematics.
- All IT workers need a good knowledge base in the relevant area; hands-on experience; non-technical skills such as good communication, problem-solving and analytical skills; and flexibility and the ability to learn quickly.
- For skilled and niche IT workers employed in specific sectors or with specific companies and for which college degrees are required, the skill gaps survey reported a preference for advanced on-the-job training, compared to pre-hire training. This is primarily due to the customized nature of systems and software designed to meet the specific needs of firms or sectors. However, since smaller companies with 25 or less employees do not typically have in-house capacity for training, the survey reported that smaller companies indicated a preference for trained personnel with industry experience.

The April 2001 ITAA study, *When Can You Start?* — found that the best ways for workers to acquire needed skills include:

- Pursuing four-year college degrees, the demand for which remains high to fill jobs in database development/administration, enterprise systems, programming/software engineering and technical writing.
- Vendor or industry certification programs which remain of moderate importance. IT companies viewed certifications at least as important as a bachelor's degree; non-IT companies placed certifications slightly below a bachelor's degree in importance.

The need for skilled IT workers is exacerbated by the fact that IT companies are producing new technologies at an extremely rapid pace, rendering technology skills ephemeral and requiring constant retraining. In such an atmosphere of change and constant adaptation, a workforce that is familiar and comfortable with technology is a real advantage, and continuous learning a necessity.

Who are the digitally excluded?

Many educators and experts believe that basic proficiency with computers comes from hands-on experience and continual learning comes from experimentation. The debate on the digital divide brought attention to issues of computer ownership and Internet access. While reports indicate that major progress has been made in issues of basic technology access, a digital divide remains or has expanded slightly in some cases. There are still many Americans that are not adequately digitally connected, which puts them at a serious comparative disadvantage in accessing and producing information, increasing knowledge and learning, and developing the necessary technology proficiency and skills to compete effectively.

The August 2000 National Telecommunications and Information Administration report, *Falling Through the Net: Toward Digital Inclusion*, measured households and individuals that had a computer

and an Internet connection. The report concludes that noticeable divides still exist between those with different levels of income and education, different racial and ethnic groups, between the old and young, single and two-parent families, and those with and without disabilities.

- Persons with disabilities are only half as likely to have access to the Internet as those without disabilities: 21.6% compared to 42.1%.
- Large gaps remain in Internet access rates among households of different races and ethnic origins. Asian Americans and Pacific Islanders have maintained the highest level of home Internet access at 56.8%. Blacks and Hispanics, at the other end of the spectrum, continue to experience the lowest household Internet access rates at 23.5% and 23.6%, respectively compared to 41.5% for households nationally.
- With respect to individuals, while about a third of the U.S. population uses the Internet at home, the corresponding rate for Hispanics was 16.1% and for Blacks it was 18.9%.
- Two-parent households are nearly twice as likely to have Internet access as single-parent households. In inner-cities, only 22.8% of female-headed households have Internet access.
- Low-income users were the most likely to report using the Internet to look for jobs.
- Schools, libraries, and other public access points continue to serve those groups that do not have access at home.

Survey data on Boston (referenced in Part II of this paper, which covers the local context) indicates that while differences remain across racial/ethnic and income levels, Boston and the region are doing relatively better when compared to national statistics. To ensure digital equity and help individuals and organizations prepare for the new economy, Boston needs to go beyond access to technology and also look at issues of educational reform, skill building and strengthening the capacity of organizations that serve disadvantaged populations.

SECTION 2:

The New Economy Initiative program areas:

In today's global, knowledge-based economy, education is attempting to reinvent itself to meet new conditions, skills and needs of the 21st century, jobs are being re-defined to take advantage of new ways of communicating and doing business, new businesses and organizations are emerging and old businesses and institutions are recreating themselves. Organizational changes and new developments fueled by advances in digital communications and learning technologies are sweeping the world. The new environment has created both opportunity and risk for all organizations, and demands experimentation of structure, form and process.

The *New Economy Initiative* is designed to offer nonprofit organizations the opportunity for just such experimentation. Through partnerships and intensive support, the Boston Foundation is seeking to support nonprofit organizations that use technology in strategic ways to substantively advance their mission, and to develop and test models to illustrate effective and creative uses of technology to further the program area goals of increasing digital equity and participation in the new economy. Besides supporting innovation and the testing of new models, the New Economy Initiative will also

look at the ways in which these models and other creative approaches can be made cost effective, replicated or taken to scale or adapted across sectors. The program areas are:

- **Technology for Education and Youth Development**
- **Technology for Adult Workforce and Skills Development**
- **Technology Capacity Building for Nonprofit Organizations**

Technology for Education and Youth Development

Program Focus:

Young people who are technologically educated, aware and engaged will be better equipped to participate in the world economy. The power of technology is unleashed when new tools of learning and communications come together with the experience and guidance of teachers and the imagination and curiosity of young minds. When teachers research out distant experts and knowledge and connect it with a young mind, students figure out new ways of blending images, words and sounds to express their ideas. When the complexity of real-world problems is understood through new images and knowledge, suddenly the abstract terms and ideas make connections in a young person's mind. Students who have the necessary math and science skills, have integrated the concept of lifelong learning and have technical understanding and expertise will be better prepared for the future.

This area is focused on generating innovative approaches to expand and enrich technology-based in- and out-of-school learning opportunities for young people so they can make successful transitions into the 21st century workplace and adulthood. Technology access, proficiency and the use of technology for personal and community-enhancing purposes can be important aspects of these endeavors.

Why is technology is an important ingredient for success?

Information, communications and media technologies have become important aids to achieving the various "traditional" goals and objectives of education. Computer-assisted learning has been shown to have a strong positive effect on student learning. Studies by the International Society for Technology in Education (ISTE) show that on average, students learn more than 30% faster in computer-assisted learning environments, as compared to traditional school environments. However, literature on computer equity reveals that many minority, disadvantaged, female, handicapped, inner-city and rural students have been hampered by inequitable access to computers and by widespread patterns of inequitable distribution and use of computers within and across schools. This puts them at an enormous disadvantage for learning, skill building and accessing knowledge and information about jobs and opportunities for advancement and success in the future.

A strong foundation for learning can help foster critical competencies needed to participate in the new economy, particularly in the areas of math and science, reading comprehension and problem-solving ability. Studies show that the pathways to for technical careers are established in the early years and young people not engaged and successful in areas of math and science in grades K-8 are less likely

to pursue advanced technology careers. Using the Internet as a vehicle for learning, accessing information and broadening skills can enable young people, especially those who might otherwise be neglected to broaden their horizons and benefit from new technologies.

Peter Drucker in a 1999 article in the *Atlantic Monthly*, *Beyond the Information Revolution*, likens the enormous psychological impact of the Information Revolution to that of the Industrial Revolution. He points out that, "It has perhaps been greatest on the way in which young children learn. Beginning at age four (and often earlier), children now rapidly develop computer skills, soon surpassing their elders; computers are their toys and their learning tools."

Research on the high tech skills gap points to a nation increasingly dependent on information technology, but lacking appropriately trained workers to fill technology-related jobs. According to the Massachusetts Technology Collaborative's year 2000 Innovation Index, despite the growth of technology, the number of college bound students opting for careers in the science and technology fields is decreasing. Responses to deal with these gaps are resulting in the business sector's involvement to promote School-to-Work programs as an effective way to link classroom learning with office know-how and to generate an interest in technology education and career paths.

The information explosion unleashed by technology means that our world will be one of continuous change and learning. The Internet will be essential both for communicating with others and for acquiring information in real time. Success in such an environment will depend on a "culture of continuous learning." In- and out-of-school learning will need to extend the expanded notion of literacy by creating a seamless environment that integrates exposure to new technologies with interpersonal, analytical and problem solving skills and the spirit of teamwork.

What are the barriers faced by young people in benefiting from the digital revolution?

The NTIA report, *Towards Digital Inclusion*, cited earlier in this paper, identifies racial/ethnic minorities, single parent households, persons with disabilities and low-income populations with lower levels of education as among those with the lowest levels of computer and Internet access in their homes, raising concerns that young people in very vulnerable environments could fall even further behind. An ITAA June 2000 study, *Building the 21st Century Information Technology Work Force: Underrepresented Groups in the Information Technology Workforce*, identifies the following barriers faced by young people:

- Lack of encouragement at home, in school or in the community, which includes teacher bias towards encouraging males (particularly white males) to seek careers in the science and technology fields.
- Lack of role models in home and community settings.
- Inadequate opportunity and access, which includes the absence of widespread computer literacy, education and equipment at home or in schools.
- Insufficient access to technical education opportunities, resulting in the inability of women and minorities to pursue technical careers.

Additional barriers/challenges highlighted through the Boston Foundation's roundtable conversations include:

- Poor math, science and reading outcomes for students, indicating inadequate basic literacy proficiency.

- Difficulty in recruiting, training and retaining qualified public school teachers and after-school program staff.
- Lack of coordination between in-school and after-school time to create a seamless learning environment.
- Need for more focus on the development of teamwork, interpersonal, problem solving and critical thinking skills.
- The lack of supportive learning environments for young people.

Some helpful responses offered by the Boston Foundation roundtable participants include:

- Expose children to technology at a very early age—the earlier the better.
- Use technology to empower young people to meet their own learning needs and to encourage the culture of continuous learning.
- Connect in-school technology based learning with work and after-school activities.
- Consider multi-lingual learning approaches that use technology.
- Promote creative computer learning using the arts.
- Capitalize on the apparent ease with which young people are learning the most advanced technologies to bridge inter-generational learning gaps in the community.
- Draw on youth (an under-utilized resource) for doing work for community based organizations that have technology staffing needs, through paid internships and community service.
- Utilize the expertise, experience and resources of the for-profit sector to benefit young people, by partnering them with nonprofits focused on youth issues.
- Develop shared learning and information resources to encourage seamless learning and increase collaboration across organizations serving different age groups.

Technology for Adult Workforce and Skills Development

Program Focus:

A technologically skilled workforce is essential to Greater Boston’s future. The region’s ability to meet the labor demand of the 21st century economy will depend, for a large part, on having a workforce that has the skills necessary to participate in the new economy. There is broad consensus that strategies to meet current workforce needs and to develop a workforce for the future will require interventions that go beyond technology skills training. Approaches to help boost economic participation must range from increasing in-home computer and Internet access and the use of information technology to improving people’s lives and increasing civic engagement, to more focused strategies for technology skill building through a career ladders approach, an emphasis on literacy and educational advancement, and the culture of continuous learning. According to Alvin Toffler, author of *The Third Wave*, “...the illiterate in the 21st century will not be those who cannot read or write, but will be the ones who cannot learn, unlearn and relearn.”

This focus area seeks to encourage creative approaches that provide technology training and growth opportunities for participation and advancement in the economy; support for individuals to succeed in the new economy; and new collaborations that help build a stronger infrastructure to create linkages between and among industry and community-based workforce development organizations.

Why is technology is an important ingredient for success?

The technology revolution has had a major impact on how even the most routine tasks are performed and how people related to each other in work settings. Technology skills and proficiency, in addition to solid basic literacy, have become critical components of work and offer an opportunity for economic participation and advancement. On-the-ground experience suggests that computer and Internet literacy is cumulative and comes from repeated use and practice.

As jobs in the new economy become reorganized to respond to 21st century changes they are requiring higher-level skills and more computer literacy. To take people from learning basic technology skills to putting them on a path of continuous self-enhancement and skill building requires a deep understanding of the complexity of issues involved in training and developing a strong workforce. It begins with building community capacity to use technology in meaningful ways and strengthening the capacity of nonprofit organizations that serve them, to developing workforce-training programs that offer different levels of skill building to create ladders of opportunity. It requires a focus on hard skills as well as soft skills such as the ability to work as part of a team, problem-solving skills, business etiquette, interpersonal skills and even interviewing skills for some entry-level workers. Technology skills are critical to creating a more solid foundation for Greater Boston's new "brain economy" which includes growth sectors such as higher education, healthcare, professional and financial services and high-tech.

An educated and technologically adept community provides enormous social benefits. People are more able to engage in civic issues, participate in educational opportunities, increase self-sufficiency and engage in their own or in their children's learning.

To build a workforce that meets the needs of the economy will require building bridges between community-based workforce development organizations, community colleges that reach out to low-income populations and the business/industry sector. Those relationships and strategies that foster communications and collaborations among employers, community based organizations/nonprofits and governments can help build an infrastructure that can help meet ongoing industry needs and respond to the needs of the economy in a timely way.

What are the barriers faced by adults to participate and advance in the new economy?

The proliferation of digital technologies in different sectors of the United States economy is creating a strong demand for workers who can create, use and manipulate technology. It is also opening up opportunities for many who are under-employed or not currently part of the workforce. To capitalize on this unprecedented opportunity requires understanding and overcoming entry and advancement barriers for underrepresented groups. That includes racial/ethnic minorities, women, persons with disabilities, older workers and low-income populations with lower levels of education.

The ITAA study on barriers faced by *Underrepresented Groups in the Information Technology Workforce* notes, that participation of women and some minorities is very low in most technical fields. In fact, according to a recent report by the Council of Economic Advisors, women comprise only 29% of the high-tech workforce nationally (with New England being marginally higher) and their salaries are 22% lower than those of males for similar professions. The study identifies the following barriers besides those already mentioned above in the *Technology for Education and Youth Development* section:

- The image of technology professions as a domain of the highly educated and technical elite.

- Insufficient access to technical education opportunities, resulting in the inability of women and minorities to pursue technical careers.

Barriers and challenges that emerged at the Boston Foundation's roundtable discussion include:

- Insufficient understanding among people of the importance of technology in the 21st century and the lack of confidence about one's ability to use technology.
- Concerns about stereotypes based on race and age
- Affordability of training, including the inability of people to take unpaid time off for training.
- Limited availability of evening and weekend training programs.
- Literacy and language challenges facing the current workforce. According to the December 2000 MassINC study, *New Skills for the New Economy*, almost one-third of the Massachusetts workforce does not have the basic literacy and/or language skills necessary to participate in the new economy.
- Lack of clearly defined career ladders and inadequate information about skills needed to advance in careers.
- Haphazard training approaches that are not linked to ladders of skill enhancement or economic advancement.
- Inadequate links between industry and workforce development organizations, and a general lack of understanding of the complexity of training current populations and the needs of the economy and the industry.
- Inadequate staff and training capacity at community level.
- The inability of most small companies (25 employees or less) to train employees on site, which then tend to replace employees whose skills are outdated with new skilled workers.

Some helpful responses offered by the Boston Foundation roundtable participants include:

- Identify different levels of clientele and develop a better understanding of the current workforce. Focus both on how people "get in" and "move up."
- Categorize organizations that provide the continuum of training needs—from keyboarding to high tech skills. Leverage what each community based organization (CBO) does best.
- Use technology as a means to provide adult literacy instruction through CBOs, in order to help bring literacy learning to scale and teach basic computer skills.
- Involve industry in creation of curricula to make sure that workforce-training organizations are responding to industry needs.
- Develop shared training responsibility between community and the industry sector. If people receive basic training from CBOs the industry can take over their continued training.
- Help executive directors of CBOs understand technology and provide skills training within their own organizations.
- Provide paid internships and develop more weekend and evening training modules to ease training access.
- Develop an outlet or website that provides up-to-date information on workforce availability, skills levels and industry needs to facilitate job placements and better information flow on skill needs of employers, expected levels of experience and training, vendor certifications and salary and benefit levels.

Technology Capacity Building for Nonprofit Organizations

Program Focus:

Nonprofit organizations are the drivers of social change. They provide critical health, education and social services for our most vulnerable populations, they enrich community life with arts and cultural activities, and offer opportunities for civic engagement and volunteerism. They teach newcomers language skills and help them assimilate in the community, they train residents for jobs and represent communities on critical public policy issues. Nonprofit organizations are valuable assets in our communities. They are also the vehicles through which the Boston Foundation carries out its mandate. The ability of nonprofits to be effective is critical for the development of the social sector and the health and well being of communities. Technology advancements in hardware, software and systems offer tremendous opportunities for nonprofits to advance in the 21st century.

This area searches for creative uses of technology to generate advantages for nonprofit organizations through strategic technology-driven approaches that enhance their efficiency and increase their effectiveness. Technology capacity building to further organizational missions, creative uses of technology in program delivery and organizational management, as well as unique collaborations among nonprofits and between the nonprofit and for profit sectors, are seen as ways that can help nonprofits create and increase social value, as well as develop an infrastructure for support and ongoing advancement of this sector.

Why is technology an important ingredient for success?

The technology and communications revolution is creating new opportunities for nonprofit organizations to improve their efficiency and respond more effectively to their constituents. As technology becomes more intertwined with organizational missions and processes it is helping nonprofits reach out to constituents more easily, manage programs more effectively, coordinate and expedite administrative tasks, and to build connections with funders, volunteers, and donors. Information management systems are making record keeping, tracking and case management, reporting, referrals and even billing more efficient. Communications systems and networks for advocacy, constituent mobilization and outreach, as well as for improving the internal communications within organizations are enhancing the flow of information.

Experts see the emergence of nonprofit organizations in the 21st century as information- and knowledge-based organizations that could benefit greatly from the information technology revolution. While nonprofits are using information technology to improve their delivery systems, the transition of nonprofits to become learning organizations is harder. Nonprofits are storehouses of valuable information about communities and the programs developed to help communities. Information technology can provide opportunities for data and information sharing to improve program outcomes and can enable access to valuable information about national trends, working models, and shared ideas and knowledge that otherwise could only be accessed through expensive research and site visits.

Nonprofit organizations are major employers and the efficiency and effectiveness of their employees, which can be boosted through technology infrastructure, training and education, has a major impact on the social outcomes for communities and a profound impact on the economy. They are also an important, untapped market for the technology industry. According to the Benton

Foundation, nationally, nonprofits had \$416.4 billion in revenues in 1990 and \$395.3 billion in expenses. Nonprofits spent \$227.5 billion in health care; \$67.8 billion in education; \$37.9 billion in human services; and \$13.4 billion in arts and culture.

While technology provides a panacea for many problems faced by nonprofits, it is also placing new demands that affect their structures, systems and how they function in their changing environments. Nonprofit leaders are increasingly seeing new technologies as positive and powerful additions to their organizational operations, however, according to Technology Works, a Washington, DC based nonprofit organization, nonprofits fall into one of four cultures based on their view of technology: unnecessary, necessary evil, necessary good and strategic advantage. Nonprofit technology management consultants believe that over 60% of nonprofit organizations still view technology as a necessary evil. Unlike the industry and business sector, which has reengineered itself to use technology as a strategic advantage, the nonprofit sector lags far behind, particularly in terms of a technology culture shift.

What are the barriers faced by nonprofits in building their technology infrastructure?

- Most nonprofits lack the necessary knowledge and skills to assess their technology needs adequately.
- Most nonprofits do not have a strategic technology plan focused around their mission, who they are serving and where they need to be in the next five to ten years.
- Organizations often think of technology as something to think of later.
- Nonprofit organizations face the challenge of juggling time between the more pressing day-to-day issues and the need to step back and integrate 21st century technology resources into their operations.
- There is difficulty getting senior staff involved and having organizations commit time and resources for staff training in technology.
- Nonprofits struggle with information overload and lack the knowledge, tools and time to efficiently manage learning within their organizations. They often lack adequate resources for staff education and training for technology skills and use.
- There is the sense among some nonprofits that IT requires only one up front cost.
- Difficulty in implementing IT plans because of the resources required.
- There is a lack of multi-year funding for hardware and software. Even if free hardware equipment is available, nonprofits do not have the time or expertise to find it.
- Operating support to maintain and sustain technology systems is often lacking.
- Smaller nonprofit organizations do not have the capacity to support full time IT staff.
- Organizations are unable to hire and retain IT support personnel because of for-profit industry competition and a shortage of people with good IT skills.
- Community technology centers have a limited number of training and support personnel.
- There is inadequate technical support for computer and Internet repair and troubleshooting.

Some helpful responses offered by the Boston Foundation roundtable participants include:

- Nonprofits need support to take the time to think about and move on technology issues.
- Create peer-learning opportunities for nonprofit executives and board members so that they can provide leadership and support for technology capacity building.
- Technology operating support should be included in and funded as a part of program costs.
- Organizations need to be developed internally so that they can transform delivery systems and connect better with achieving the mission of the organization.
- Improve networks among nonprofits to benefit from knowledge of precedent-setting solutions within and across sectors, across organizations of similar size and organizations that have similar purposes such as advocacy, education, delivery of services, etc.
- Shared tech-support staff/ circuit riders that rove among smaller nonprofits.
- Nonprofits should partner with for-profit organizations to provide technology support and resources.
- Nonprofits could draw upon under-utilized community resources such as high school youth to fill the technology support gap through internships and community service.
- Nonprofits need to build community capacity to use technology, work together, share data and use data in day-to-day operations.

In conclusion:

The information and communications technology revolution is rapidly changing the economy and transforming society. If harnessed, it can create a more equitable and democratic society. If ignored it threatens to widen the gap of opportunity and equity between those individuals and organizations that have access to technological tools and expertise and those who do not. Technology skills today present an opportunity to significantly assist in fulfilling the aspirations of people to achieve better lives and for organizations to achieve their missions more effectively.

Greater Boston is rich in intellectual and knowledge based resources. Its universities and communities have been at the forefront of new ideas and innovation. Our challenge is to bring together the tools and developments offered by the technology revolution and combine them with the spirit, resources and creativity of the Greater Boston community to find new ways to strategically support people and organizations for success in the 21st century.



The Boston Foundation

The New Economy Initiative: Using Technology to Empower Community



Part II

The Local Context

Prepared by
The Boston Foundation
75 Arlington Street
Boston, MA 02116

For information please contact:
Geeta Pradhan, Director, New Economy Initiative
Telephone: 617-338-3928
E-mail: ppp@tbf.org

The New Economy Initiative: Using Technology to Empower Community

Part II : The Local Context

Today, despite nationwide slowdowns in the economy, Greater Boston is in relatively good shape thanks to a decade long period of sustained growth and prosperity. For the region to retain hold of its economic progress, it must, among other things “...grow its own workforce by enabling its own residents to acquire necessary skills for the New Economy...” (Index of the Massachusetts Innovation Economy, 2000. Massachusetts Technology Collaborative(MTC)). The severe shortage of labor that Massachusetts saw in the late 1990s is attributed by many to the changing nature of work and the incompatibility of skills of the current workforce. While slowdowns in the economy have eased some of the labor shortage, Massachusetts needs to seriously focus on upgrading skills of the current workforce and retooling education to meet the demands of the new economy in the 21st century.

A December 2000 report released by MassINC, *New Skills For A New Economy: Adult Education's Key Role in Sustaining Economic Growth and Expanding Opportunity*, reports that more than a third (1.1 million) of Massachusetts's 3.2 million workers are ill-equipped to meet the demands of the state's rapidly changing economy, which not only threatens the state's economy but also traps the workers themselves in jobs with little opportunity to advance. The report highlights that 667,000 of the 1.1 million at-risk workers have high school credentials but lack basic math, reading, writing, language and analytic skills at the level considered acceptable for the typical 21st century workplace. The report also describes two other distinct problems that face the Massachusetts workforce: a Language Challenge facing the 195,000 immigrant workers with severely limited English speaking skills; and an Education Credential Challenge for the 280,000 workers who never obtained a high school degree.

Higher skilled and higher paying jobs in the region also continue to suffer from labor shortages due to a lack of highly skilled workers. The region's high cost of living and relatively low rates of college graduation in the areas of science, engineering and information technology exacerbate the problem. In addition, data from the MTC's Innovation Index indicates that college-bound students expressed low levels of interest in technical careers.

There are several ongoing efforts in Boston that are focusing on digital equity from a range of different perspectives. However, comprehensive information about these efforts is currently not available in any one place. The following section attempts to provide an environmental scan of what is occurring within the region.

The digital access divide

Efforts are underway to provide access to computers and the Internet throughout Boston's neighborhoods. Government, businesses, foundations and community-based organizations are working to provide residents with new or refurbished computers at low cost. Many of these efforts are also providing training and technical support. As mentioned in Part I of this paper, in-home access to

computers and the Internet is seen by many as a critical first-step in achieving digital equity. National level data indicates that access to computers and the Internet is growing rapidly. It also indicates that racial/ethnic minorities, single parent households, persons with disabilities and low-income populations with lower levels of education as among those with the lowest levels of computer and Internet access in their homes.

In early 2001, FleetBank Financial Foundation conducted a survey *Bridging the Digital Divide*, to address these issues. The survey of 1,600 residents of low-to-moderate income neighborhoods examined rates of computer and Internet access in five Northeastern cities. The sites included Boston, Harlem, Brooklyn, Newark, New Jersey and Hartford, Connecticut. About half of those surveyed, or 752 households, earned less than \$40,000. According to the survey:

- Among households with incomes under \$40,000, Newark had the lowest level of computer ownership at 35%, while Boston had the highest at 48%. Harlem reported 41%, Hartford 42% and Brooklyn 44%.
- Respondents who said they knew not much or nothing at all about the Internet varied widely across the five cities. Results reported include. Newark at 69%; Hartford at 60%; Brooklyn at 58%; Harlem at 53% and Boston at 45%.
- Twenty-five percent of the respondents in households with annual incomes less than \$40,000 knew quite a bit or a great deal about the Internet, but 56% reported knowing not much or nothing at all. The respondents said cost was the major obstacle to becoming computer literate and accessing the Internet.
- Among those who have little or no familiarity with the Internet, 80% said they would be eager to participate in training.
- Fewer than half (42%) of respondents have computers in the home, and only 32% are connected to the Internet. In contrast, more than three-quarters (77%) of those with incomes over \$40,000 use a computer in the home and 61% are very comfortable using the Internet.
- Almost one in two families without a computer (46%) said that purchasing a computer was not very affordable or not affordable at all. While affordability is a problem among low- to moderate-income households without a computer, it especially impacts African American and Hispanic households: 64% of African Americans did not own a computer, compared to 55% of Hispanics and 42% of Europeans surveyed.
- Familiarity with the Internet also varied by race and income. For example, 44% of African Americans with incomes under \$40,000 reported knowing nothing at all about the Internet, compared to 15% for African Americans with incomes over \$40,000.
- As education increases so does computer access. Among those who earn less than \$40,000 a year and have less than a high school education, 70% were without a computer, versus 40% for those with a college degree.

In-home access to personal computers—regional and local

The year 2000 Boston Annual Survey conducted by the Center for Survey Research at UMass Boston shows that while computer access rates in the metro region are rising rapidly, there are large inequities in computer access within neighborhood communities. East Boston for instance had 42% in-home access versus Mattapan, Roxbury and Dorchester, where people reported in-home access at about 60%, closer to the citywide total for Boston.

In-home access to personal computers also varied widely by race. Latino/Hispanic households reported the lowest rates at 48%, followed by Non-Hispanic black households at 56%, white households at 66% and other races leading at 70%.

In-home access to the Internet—regional and local

According to the survey while 72% of suburban residents reported in-home Internet access only 58% of the Boston residents had access, and the rates across the sample neighborhoods tested varied widely. East Boston had the lowest in-home Internet access rate at 40%, while Dorchester, Roxbury and Mattapan had over 53% —which is closer to the citywide average.

In-home access to the Internet by racial/ethnic group shows Latino/Hispanic households at 39%; Non-Hispanic black households at 52%, white households at 62% and other ethnic groups at 67%.

Public access to computers and the Internet

Reported use of public access to personal computers in the metro-Boston area was at 82% with access in the city of Boston at a close 78%. Within Boston however, rates varied across sample neighborhoods with Mattapan at 82%; Roxbury at 75%; Dorchester at 71%; and East Boston at 61%. Across racial/ethnic lines public access to personal computers for white households was reported at 81%, for black households at 74%; for Latino/Hispanic households at 68%; and for all other races at 89%.

UMass survey data shows public access to the Internet at 76% and 75% at the regional and Boston city-wide levels, with sample neighborhoods showing Mattapan at the highest at 78%; followed by Dorchester at 68%; Roxbury at 67%; and East Boston at 55%. Internet access by racial/ethnic groups was 79% for whites; 69% for Non-Hispanic blacks and 57% for Latino/Hispanic households. All other races indicated Internet access at 89%.

What is Boston doing?

Boston is working to increase technology access, skills and infrastructure to support the advancement of its residents in the new millennium. These ongoing investments are creating opportunities for many people in Boston's low-income communities to move to the next level — full participation in the new economy.

Public access to computers and the Internet are available at 26 Boston Public Library branches and in over 40 of the City of Boston's Community Centers. Hours of access to these facilities are, however, limited.

Community access to computers has increased dramatically throughout the city. In fact, Boston is among cities with the highest concentration of computer centers in the nation. Computer labs have opened in over 1,000 community centers with varying degree of sophistication and resources. These centers are located in housing developments, social service agencies, community-based organizations, health centers and youth service agencies. Thirty-seven of these centers are funded and endowed with state-of-the-art computer and furnishings updates by the Timothy Smith Fund for Old Roxbury. A U.S. Housing and Urban Development (HUD) initiative, Neighborhood Networks, has opened multi-service technology centers in all HUD-supported housing developments. Most community technology centers typically limit access to their own constituencies. They provide facilities for youth programs,

adult basic education or job training programs. The sustainability of these centers, however, is severely threatened by the lack of adequate funds for operating costs, staff and technical support.

In-home access to computers in Boston's low-income communities, deemed by many to be a key part of bridging the digital divide is improving. It, however, still continues to lag behind that in higher income and suburban communities. Though Boston is working towards bridging the technology access gap, its needs far exceed current efforts. About 3,000 Boston families have received computers through several public and nonprofit efforts. However, the number of Boston Public schools students who do not have in-home access to computers ranges between 20,000 to 30,000 students. Additional funding and support is needed for these efforts to scale up.

Some examples of ongoing efforts:

- Today more than 80% of Boston households could access high-speed digital subscriber line (DSL) service, however anecdotal data suggest that the high cost of DSL is a major deterrent to its use.
- A number of efforts, like the Technology Goes Home initiative of the City of Boston, supported in part by the Digital Bridge Foundation, are beginning to address this major need. Their efforts are aided by the donations of equipment by businesses such as HiQ Computers, which donated the first 1,000 computers to launch the initiative. In addition to providing computer access, the program also provides training and support to recipients through over 60 community-based organizations in six different locations in Boston.
- Recently, FleetBoston donated 600 computers to its customers through its Community Link program.
- A partnership of ABCD's Dorchester Family Services, East West Foundation (now part of Youth Build Boston) and Tent City Technology Center has placed 1,250 refurbished computers in people's homes and provided them with training and technology support.
- The Kellogg Foundation has funded a study of the use and impact of technology on families, and has provided 100 computers for the tenants of Camfield Estates housing development in Lower Roxbury. It has also provided a grant to the Dudley Street Neighborhood Initiative to assess current and future preferences of residents with respect to computers.
- *nquilinos Boricuas en Accion (IBA)* is working on comprehensive strategies that aim to provide residents of Villa Victoria with computer and Internet access, computer training and workforce skills development. About 200 Homes have been wired and have received computers and printers as well as high-speed internet access. IBA is also working to develop web content that will link its residents to services and information.

A focus on youth

In 1996, the City of Boston embarked on the then seemingly impossible task of providing the Boston Public Schools with technology infrastructure and equipment. With donations of support, expertise and state-of-the-art equipment from businesses such as 3Com, America Online, Microsoft, Verizon Communications, Arnold Communications, Keane (part of Lucent Technologies), Target Software, Intel Corp, HiQ Computers and Foley, Hoag and Eliot, as well as from trade associations like The International Brotherhood of Electrical Workers, all 130 Boston public schools had high speed Internet access by 1998 — a national first. The ratio of students to computers in Boston Public Schools (BPS),

which was 63 to 1 in 1996, is now at 6 to 1. The goal is to provide one computer for every four students and one computer for every teacher by the year 2001. More than 80% of all BPS teachers have been trained to integrate technology in teaching and learning.

Some examples of ongoing efforts:

- TechTots, a program that teaches computer skills and understanding to preschoolers offers opportunities at inner-city daycare centers. Its scope, however, is limited due to inadequate resources.
- Through TechBoston, an initiative of the Boston Public Schools, over 1,500 high school students are now taking courses in Web design, networking, desktop operation, robotics or network design, and helping with network management at their schools. In 1999, TechBoston also placed over 35 teenagers in paid internships with businesses in the Boston area. Other efforts initiated by TechBoston also include encouraging middle school girls to opt for more science and math advanced placement courses, to involving middle school students in robotics and web design, and is placing TechBoston students in community based organizations through a new effort called Tech Corps, to fulfill community service requirements while also addressing the crucial technology support needs of communities.
- CISCO Networking Academy is opening centers in some area schools to expose young people to technology skills and encourage them to pursue higher education in the technical fields.
- Youth Tech Entrepreneurs is providing technology training to over 300 students in 8 high schools in the Greater Boston area and connecting them with community based organizations (CBOs). Students provide support to CBOs (that are in dire need of technical staff) through community service requirements during the school year and paid internships over the summer.
- Media and Technology Charter School offers innovative approaches to teaching kids that employ media as a way of expressing and getting excited about their ideas while encouraging them towards college careers in technology fields.
- Several after-school efforts ranging from middle school students who learn robotics at the Paraclete Center in South Boston, to the Roxbury Boys and Girls Club, the Codman Square Technology Center, the YMCA, BNN-TV etc. are some examples of places where young people are learning multi-media and computer and Internet technology skills.

Workforce development, training and skills enhancement

The urgent need for a skilled workforce has spurred many efforts from industry, nonprofit organizations, government and academia. Efforts to increase comfort and familiarity with technology are helping people, particularly new immigrants and non English speaking populations connect with others in their community and participate in political discourse —deepening democratic processes while at the same time gaining critical basic skills for participation in the workforce. Several community technology centers, in addition to offering computer and Internet access, now also provide opportunities ranging from basic computer literacy to technology skills development by linking up with volunteers and professional organizations. Technology centers such as those run by the Urban League of Eastern Massachusetts, Tent City, IBA and Jewish Vocational Services are hiring trained IT staff to provide job skills training, and several others are partnering with workforce development groups such as Cityskills.org to provide training. Many workforce development organizations are also

providing technology skills and training and linking them with adult basic and English for Speakers of Other Languages (ESOL) education. Local universities and community colleges are gearing up to provide additional courses in programming and web development.

Some examples of ongoing efforts:

- Organizations such as Codman Square Health Center are working to combine issues of technology access by providing services and information through the Technology Goes Home Initiative.
- Dudley Street Neighborhood and Youth Build are working towards assessing comprehensive strategies for building a community technology infrastructure.
- Organizations such as the Women's Education and Industrial Union are working with Virtually Wired (a consortium of public, private and nonprofit organizations) to research career ladders and develop networks among organizations working on technology related issues.
- Several workforce development groups such as Jobs for Youth, Jewish Vocational Services, social service organizations such as the Urban League and community development corporations like Grove Hall Neighborhood Development Corporation, Allston Brighton Community Development Corporation and Jamaica Plain Neighborhood Development Corporation are providing technology focused workforce development training.
- High-tech industries have developed a number of programming and technology training programs. The Cisco Networking Academy provides training for both students and instructors. There are eight Cisco Academy sites in Boston.
- A partnership between the American Computer Foundation and a consortium of high-tech industries led by CISCO Systems and CBOs are working to develop a workforce development training in community settings.
- Academy, Xintru, World Education and ITI Tech, as well as distance learning resources that offer industry-leading certifications from Cisco, Microsoft, CompTIA, A+, Novell and Lotus, are surfacing at a rapid pace. These private institutions, however, provide technology skill building at costs that may be unaffordable to low income populations.

Building the technology capacity of nonprofit organizations

For nonprofit organizations, technology provides an avenue to inform constituents about their services and opportunities, engage in decision-making, manage their organizations more effectively, provide on-line services and referrals, and build connections with funders, volunteers and donors. Funders have begun receiving an increasing number of technology capacity-building requests from nonprofit organizations. These requests vary from hardware and software to personnel for managing information systems to program management, outreach, client services, and technology training and workforce development programs.

Some examples of ongoing efforts:

- Major organizations such as the United Way of Massachusetts Bay have focused on building the technology capacity of nonprofit organizations. In addition to providing support for technology needs, United Way has also carried out a technology needs assessment of over 147 of its grantee organizations.

- MASSCAP, the Massachusetts community action program directors' association carried out a detailed assessment of their 25 member community action agencies to understand the information service needs of the organizations. The 1999 study funded in part by the Boston Foundation has resulted in strategies that are leading to action on training and support.
- Volunteer organizations such as City Year and Americorps, as well as industry groups such as Cisco Systems are providing volunteer staff support at community technology centers and nonprofit organizations.
- The urgent need for information technology capacity among nonprofit organizations has also resulted in the development of new philanthropic institutions such as the TechFoundation, which, in addition to providing grant funds is also coordinating educational series for members of the nonprofit community.
- Funders and Technology/Management support providers are teaming up to coordinate the development of a network of capacity builders called MassNET. Coordinated by Associated Grant Makers (AGM) and TechFoundation the mission of MassNET is to enhance the effectiveness of the nonprofit sector by providing services that encourage and expand the sector's strategic use of technology.

The information provided here is by no means a complete cataloging of local efforts. It is intended to give just a flavor of the richness of activities in the region. It illustrates the urgency of perceived need to bring the local population into the 21st century economy. It also highlights opportunities and innovative program efforts that the Boston Foundation hopes to support in various ways. We welcome individuals, businesses, organizations and institutions to join with us in this exciting endeavor.

List of references and information sources:

Benton Foundation website: www.benton.org. Washington, DC.

Beyond the Information Revolution. The Atlantic Monthly. Drucker, Peter. 1999.

Bridging the Digital Divide. FleetBank Financial Foundation. 2001

Bridging the Gap: Information Technology Skills for a New Millennium. Information Technology Association of America. March 2000.

Building the 21st Century Workforce: Upgrading the IT skills of the Current Workforce. Information Technology Association of America. 1998.

Falling Through the Net: Toward Digital Inclusion. National Telecommunications and Information Administration. August 2000.

Futurework – Trends and Challenges for Work in the 21st Century. US Department of Labor. 1999.

More than Bit Players: How Information Technology Will Change the Ways Nonprofits and Foundations Thrive in the Information Age. Andrew Blau. A report for the Surdna Foundation. www@surdna.org. May 2001.

New Skills for the New Economy: Adult Education's Key Role in Sustaining Economic Growth and Expanding Opportunity. Massachusetts Institute for a New Commonwealth, (MassINC). December 2000

Nonprofit Quarterly. Third Sector New England. Fall 2000.

Participants of the Boston Foundation technology roundtable series:

- Education and Youth Development. February 13, 2001.
- Adult Workforce and Skills Development. January 29, 2001.
- Technology capacity Building for Nonprofits. March 7, 2001 and March 21, 2001.

Massachusetts Innovation Index. Massachusetts Technology Collaborative. 2000.

The Third Wave. Alvin Toffler. Bantam Books. 1991.

The Wisdom of Our Choices: Boston's Indicators for Progress, Change and Sustainability. The Boston Foundation. October 2000.

2000 Boston Annual Survey. Center for Survey Research. University of Massachusetts, Boston.

When Can You Start? Building Better Information Technology Skills and Careers. Information Technology Association of America. 1998.

12 'Best Bet' Websites for Nonprofits

(Compiled by Summit Consulting Collaborative)

The Foundation Center – Links to Nonprofit Resources

http://fdncenter.org/research/npr_links/index.html

TechSoup.org

<http://www.techsoup.org>

Benton Best Practices Toolkit

<http://benton.org>

Helping.org

<http://helping.org>

Management Assistance Program – Library

<http://www.mapnp.org/library>

The Nonprofit Resource Center

<http://www.not-for-profit.org/index.html>

One Northwest

<http://www.onenw.org/toolkit/>

Alliance for Nonprofit Management

<http://www.allianceonline.org/>

Summit Consulting Collaborative

<http://www.summitcollaborative.com/resources.html>

The Innovation Network

<http://www.innonet.org>

The Internet Nonprofit Center

<http://www.nonprofits.org>

NPower

<http://www.npower.org>