

**Critical Factors in the Adoption and Effective Use of  
Technology in the Nonprofit Sector**

By

**Stephen P. Rockwell**

BS, Policy Analysis and Management  
Cornell University, 1999

SUBMITTED TO THE MIT SLOAN SCHOOL OF MANAGEMENT IN PARTIAL  
FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF:

MASTER OF BUSINESS ADMINISTRATION  
AT THE  
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

June 2007

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## **ABSTRACT**

This thesis seeks to determine the critical factors that influence the adoption and effective use of technologies within the nonprofit sector. The analysis places a particular emphasis on the role of funders who finance technology adoption and intermediaries who play the role of catalysts, enablers, and educators in the implementation of and subsequent innovation with technology.

Through reviewing the limited academic literature, surveying industry leaders, and performing cross-organizational and cross-regional comparisons, the thesis details policy recommendations for building ecosystems that can help create tech-savvy nonprofits. These critical success factors include a supportive community of foundations, significant diversity of nonprofit and for profit intermediaries, and involvement of senior leadership of nonprofit organizations. While intermediaries play the linchpin role in the networked system, policy recommendations are provided that specify how all actors can contribute to the construction of ecosystems that facilitate adoption, shared learning and effective use of technology in the nonprofit sector.

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Professor of Information Technologies and Organizational Studies

## Acknowledgements

I would first like to thank God to whom I eternally grateful for the opportunities that he has provided me to follow my passions by serving his greater purpose for this Earth and beyond.

The love and support of my family and friends has been vital through all the ups and downs of trying to balance work, school and organization. Thanks Mom, Dad, Mike, Ruth, Grandma, and everyone in Michigan and Indiana.

I want to give a very special thanks and express my deep appreciation to my thesis advisor Wanda Orlikowski, who without knowing me, took up my thesis project. She has provided tremendous editorial and substantive contribution to this work.

I also want to thank a number of professors who have imparted great knowledge and offered new perspectives that I will take with me into my professional life. In particular I want to acknowledge Paul Osterman, David Gergen, Mary Jo Bane, Richard Parker, Jim Wallis, and Jerry Mechling.

I am much obliged to all of my nonprofit colleagues in both Boston and Philadelphia, in particularly to my bosses, Mary Strasser and Maureen Pompeo, both of whom have believed in me and given me great latitude to explore my passion and build substantive nonprofit technology programs.

I also want to acknowledge the great program partners and mentors: Steve Backman, Bob Leming, Rey Ramsey, Bev Coleman, Alec Ross, Susan Murphy, and Randall Pinkett who have contributed mightily to my professional development.

Thanks to Kety, Mark, Frank, Gary, Rich, David, Chuck, Linda, and the Institute for Progressive Christianity crew for keeping me in your prayers as I finished my academic work over the last couple years.

Thanks to my friends who have tolerated radio silence from me as I finished the work. Brandon, Bap, Dave, Mark, Brian, Garrett, Barney, Freeh, CP, Lorelei, Ben, Corey, Eric, Kim, Kelly, Liz, Julie, Shaun, Shawn, and my Sloan core team.

This work is dedicated to Julissa Pinto De Gracia who has put up with my high levels of stress throughout my educational experience. MIT Sloan brought us together and we now look forward to a lifetime together.

## **Biographical Note on Author**

Stephen is currently a graduate student pursuing a joint MBA/MPA from MIT Sloan School of Management and the Kennedy School of Government at Harvard. Steve is currently a principal at Management Consulting Services where he focuses on technology and strategy. Steve is a co-founder and Director of the Institute for Progressive Christianity (a think tank) and CrossLeft (a blogging and activist organization).

Before coming to Boston, he was in Philadelphia where he founded and managed the Teaming for Technology Initiative at the United Way of Southeastern Pennsylvania serving as Director of Technology Outreach. Teaming for Technology included a non-profit technology consulting practice and a digital inclusion program that provided wireless internet access, training to residents, and content through the a web portal serving low-income population. The city of Philadelphia has since picked up on the initiative with the intention of making the whole city wireless. Prior to joining United Way, he served as an Americorps member serving in a Philadelphia public school. Steve received a BS in policy analysis and management from Cornell University where he served on the Board of Trustees and was President of the student government.

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## I. Executive Summary

A growing interdependency exists amongst government, civil society and the private sector facilitated by information and communication technologies and a networked mode of organization that encourages cross-organization and cross-organizational interdependencies. “Networks allow innovative government officials to discharge government’s important role in solving social problems, by supporting – not supplanting – functioning elements in civil society.”<sup>1</sup> Nonprofit organizations are thought to be able to provide social and health services in a less bureaucratic manner that is closer and more responsive to the client. The de-centralization of services has resulted in innovation in social service delivery often spurred by social entrepreneurs who may be able use limited capital with creativity and sophisticated business practices to achieve social impact.

Despite the growing demand for the services of nonprofit organizations, the civil society sector lags in technology adoption relative to corporations and government. With no access to capital markets and foundation funding directed at programs, limited financial or human resources are available to build the technological capacity of nonprofit organizations. This lack of technological capacity has consequences in terms of organizational efficiency and effectiveness. From a productivity perspective, delays in adoption create significant operating costs as human resources (both staff and

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<sup>1</sup> Goldsmith, Stephen. and Eggers, William D. Governing by Network. Washington DC: The Brookings Institution. 2004, p. 37.

volunteer) are wasted performing mundane tasks such as licking envelopes rather than using the latest email or web communication technologies to communicate with constituencies. From an effectiveness perspective, resources are often unavailable for technologies such as outcomes tracking or case management software that that would improve the ability to deliver on mission.

This thesis seeks to determine the critical factors that influence the adoption and effective use of technologies that may lead to innovation within the sector. The analysis places a particular emphasis on the role of funders who finance technology adoption and intermediaries who play the role of catalysts, enablers, and educators in the adoption of and subsequent innovation with technology. Intermediaries, known as technology assistance providers, not only serve to spur technology adoption through their marketing and training, but also provide management consulting to guide effective use by incorporating technology into management practices, operations, and programs. Furthermore, intermediaries facilitate technology transfer and education to the foundation community, who often lack technical expertise themselves.

Through reviewing the limited academic literature, surveying industry leaders, and performing cross-organizational and cross-regional comparisons, the thesis details policy recommendations for building ecosystems that can help create tech-savvy nonprofits. These critical success factors include a supportive community of foundations, significant diversity of nonprofit and for profit intermediaries, and proper

effective leadership from nonprofit organizations at the executive and board level.

While intermediaries play the linchpin role in the networked system, policy recommendations are provided that specify how all actors can contribute to the construction of ecosystems that facilitate adoption, shared learning and effective use of technology in the nonprofit sector.

## **II. Introduction**

The growing importance of the nonprofit sector and deep connections with the public and private sectors requires a more systematic view of the roles that nonprofits play in delivering technological innovation internally and externally. While the nonprofit sector often struggles to keep pace with technological change, those nonprofits that do master sets of technologies, often deliver increased value through innovative services. In this first section, I seek to give some definition and context to the nonprofit sector in showing the general progression of technological adoption within organizations from acquiring basic infrastructure, to incorporating technology into programs and operations, to developing technological innovation or innovative uses of existing technologies. Beyond the internal organization function, I also describe the various externally-facing roles that nonprofits play in the broader society in assisting the technology adoption and occasionally delivering innovation to other sectors.

### **A. Historical Growth of the Sector and the Nonprofit Technology Industry**

For the last thirty years, the nonprofit sector has grown at dramatic rates. The sector "...is bigger, more politically powerful, and more sophisticated than ever....Nonprofit revenue growth has also outpaced that of the private sector, rising 140 percent between 1977 and 1997 (after adjusting for inflation). This figure is nearly

double the 81 percent growth rate...<sup>2</sup> of the overall economy in the same period. In 1990, the total contributions from individuals, foundations and corporations was \$98 Billion.<sup>3</sup> In 2004, the total amount raised was \$248 Billion with total revenues of \$1 trillion.<sup>4</sup> Much of the revenue growth was driven by the numerical growth in nonprofit organizations. Between 1993 and 2003, the number of nonprofits grew by two thirds to a total of 1.4 million.<sup>5</sup> With such astounding growth, the nonprofit sector is increasingly the central node on networks that provide health and human services, education, arts and culture opportunities, policy development and political activism, community development, and religious and spiritual formation.

Beyond revenue and numerical growth, other factors have increased attention to the nonprofit sector. "The enactment of public policies favoring devolution (the shifting of tasks from the federal to state and local governments) and privatization (the shifting of these tasks from government to secular and religious actors in the private sectors) focused attention on the allocation of tasks between government, for-profit, and nonprofit service providers."<sup>6</sup> Increased resources and increased responsibility for

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<sup>2</sup> Salamon, Lester. The Resilient Sector: The State of Nonprofit America. Brookings. 2003. p.51. in Goldsmith, Stephen and Eggers, William D. Governing by Network. Washington DC: The Brookings Institution. 2004, p. 36.

<sup>3</sup> "The New Nonprofit Almanac." Urban Institute and Independent Sector. (<http://www.independentsector.org/PDFs/NAExecSum.pdf>).

<sup>4</sup> "National Center for Charitable Statistics." Urban Institute. (<http://nccsdataweb.urban.org/NCCS/files/quickFacts.htm>).

<sup>5</sup> National Council on Nonprofit Organizations. "The US Nonprofit Sector." 2003. ([http://www.ncna.org/uploads/documents/live//us\\_sector\\_report\\_2003.pdf](http://www.ncna.org/uploads/documents/live//us_sector_report_2003.pdf))

<sup>6</sup> Dobkin Hall, Peter and Burke, Colin B. "Historical Statistics of the United States Chapter on Voluntary, Nonprofit and Religious Entities and Activities: Underlying Concepts, Concerns and Opportunities."

knitting the social fabric of American life require increased academic, government and private sector attention to the effectiveness of organizations generally, but more particularly with respect to the adoption and use of technology given its increased prominence in organizational processes and society at large.

### *The Creation of a Nonprofit Technology Industry*

Nonprofit growth has skyrocketed within the historical context of rapid technological change that included growing pervasiveness of technology affecting significant and lasting change throughout society. Information and communication technology is now an essential component of organizational communications and operations. While slow to gain traction in the non-profit community, technology has gained a strong foothold in the operations and services of nonprofits. The reach of basic information technology goes well beyond the early adopters and now involves most non-profit organizations to some degree. In order to facilitate this change, nonprofits develop their own internal technological capacity or look for assistance from an emerging and rapidly developing intermediary industry.

Starting in the mid-1990s, intermediaries in the form of independent consultants, and for profit and nonprofit management assistance organizations, moved to meet the demand for technology services using a variety of business models. Some of the earliest

business models were termed “circuit-riding” borrowing from the old ministerial and judicial circuit riders of the 19<sup>th</sup> Century American West. The circuit riding model allowed a highly skilled technology support to be divided amongst multiple low-resource organizations providing an economical means for nonprofit organizations to receive services, training and support. In the late 1990s, established for profit technology companies, IBM and Microsoft, funded nonprofit technology support programs. In the case of Microsoft, it funded the development of a new organization, NPower, which continues to play a dominant role in the nonprofit service delivery structure today. IBM’s program, Teaming for Technology, was formed in collaboration with the Corporation for National Service and United Way, which managed the daily operations. In its heyday in the late nineties and early part of this century, the now defunct initiative worked in 17 regions throughout the country.

Beyond individual circuit riders and company-sponsored initiatives, this growing and emerging industry includes other application service provider companies, in-house technology staff, technology support consultants, and strategic management consultants round out an industry a growing and emerging industry. The industry is now represented by a professional association, the Nonprofit Technology Enterprise Network (N-TEN) that seeks to build strong communities of practice that ensure the latest technology and operational processes are adopted in the sector. The role of these

various intermediaries will be explored in detail in section five as a central critical factor for technology adoption within nonprofit organizations.

## **B. Roles of Technology in Nonprofit Organizations**

Even for minimally capitalized nonprofit organizations, technology increasingly performs vital operational and strategic mission-related functions. Beyond their own infrastructure, nonprofits deliver a variety of technology outreach programs that are particular to the sector and require certain technical abilities beyond those of the average organization. The specific roles of technology within the sector are described below:

- Operations – As with any organization, nonprofits target operating efficiency. In a low-capital environment where funders expect low administrative costs on their philanthropic investments, efficiency is perhaps even more important to civil society actors. Technology plays a critical role in alleviating the administrative burden through “...computer networks [that] allow the production and distribution of services to be organized in dramatically new ways. [Administrative tasks can be] handled with greater ease and effectiveness, often at a dramatically lower cost.”<sup>7</sup> Despite the benefits, nonprofits lag in some basic IT investments beyond basic information and

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<sup>7</sup> Mechling, Jerry. “Leadership Imperatives for Leaders in a Networked World.” Cambridge, MA: The Harvard Policy Group on Network-Enabled Services and Government, Kennedy School of Government. 2000. p.3

communications infrastructure. For example, while most organizations utilize email and maintain a website, many lack outcome tracking databases that provide managers with the necessary data to evaluate and adjust programs. Furthermore, nonprofits also lag other sectors in operational investments in database technology to deliver on business intelligence.

- Strategic Support to Mission - Beyond efficiency, technology adoption can improve the ability of an organization to achieve its mission. Technology can be used for “strategic innovation, not simply tactical automation.”<sup>8</sup> For example, supplying victims of domestic abuse with cell phones can dramatically increase feelings of security. Constituent relationship management systems can provide individually targeted messaging to volunteers and donors to greatly improve the yield of donations of time and money. Fewer nonprofits engage in the strategic use of technology to further their mission than adopt technology for tactical operations.
- Digital Divide Programs - Many organizations build technological infrastructure or provide training to communities that suffer from disparities in access to technology. These programs focus on providing access to hardware and software while educating and training. In order to provide the

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<sup>8</sup> Ibid. p. 7.

basic infrastructure and skills, digital divide programs must be facile in their use of technology.

- Innovation through Social Entrepreneurs – Social entrepreneurship has become a standard part of the lexicon in identifying innovation in the nonprofit sector. While not all social entrepreneurship is technology related, much of the technological infrastructure is driven by social entrepreneurs. Jan Fagerber describes innovation in business as “...new products, new methods of production, new sources of supply, the exploitation of new markets, and new ways to organize business.”<sup>9</sup> The entrepreneur is “...the person or organizational unit responsible for combining the factors necessary...to be able to turn an invention into an innovation[:]...knowledge, capabilities, skills, and resources.”<sup>10</sup> Overlaying the social good aspect onto this construct, the social entrepreneur either develops technology or applies existing technology in new ways to solve problems. Such entrepreneurs build a specific type of organization that delivers new technology or generate innovative uses of technology.

### **C. Progression of Technological Adoption and Innovation**

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<sup>9</sup> Fagerber, Jan and Godinho, Manuel M. “Innovation: A Guide to the Literature” in The Oxford Handbook of Innovation. New York: Oxford University Press, 2005. p.6.

<sup>10</sup> Ibid. p.5.

The central argument of this thesis is that organization leadership combined with supportive funding and intermediary ecosystems can guide the adoption and effective use of technology. Furthermore, some subset of technology-savvy social entrepreneurs will innovate by creating new technology or creating new applications of existing technologies to solve the unique social problems of civil society. Other nonprofits will also spur innovation in the private sector through building technological infrastructure or improving the human capital of a region through education and training programs.

Despite evidence that nonprofits are often central to technological development, public policy efforts and academic research focus almost exclusively on the role of state actors and the private sector in spurring innovation. These analyses tend to examine structural elements such as intellectual property, regulatory and tax regimes, education policy, accessibility to capital and markets, and other characteristics of the domestic private sector. The third sector is largely missing in the policy and academic discussions on technological development, perhaps understandingly so given the relatively lower IT investment levels.

The dominant presence of nonprofits in education within higher education and increasingly within primary and secondary education through charter schools and after school programs, ensure a central role in technology adoption, training and knowledge transfer, often with measurable economic benefit. Perhaps less understood is the degree to which technological innovation occurs within the sector and what spillover

effects exist across the networks of organizations. Network behavior provides some guidance as to economic benefits given the nature of the symbiotic relationships. “To maximize their potential, these networks often move both horizontally and vertically. Not only do they engage services across sectors, but they also employ the concepts of devolution that involve units of government and programs that are closest to the customer.”<sup>11</sup> Civil society networked with other sectors transfers knowledge, technology, and to a lesser extent capital between and amongst actors. These networked interdependencies provide the basis for technological innovation in the third sector and explain the value of nonprofit education and technological infrastructure efforts in supporting innovation in business and government.

Connections with other sectors increasingly are vital to not only for the nonprofit sector that seeks funding and expertise from business and government, but also to the other sectors that rely on the third sector for vital services. These “networks allow innovative government officials to discharge government important role in solving social problems by supporting – not supplanting functioning elements of civil society.”<sup>12</sup> Such an approach is enabled by information technology that facilitates communications and transactions with speed and ease previously unimaginable.

Indeed, the latest Web 2.0 technologies (discussed in section 4) such as social

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<sup>11</sup> Goldsmith, Stephen. and Eggers, William D. Governing by Network. Washington DC: The Brookings Institution. 2004, p. 37.

<sup>12</sup> Goldsmith, Stephen. and Eggers, William D. Governing by Network. Washington DC: The Brookings Institution. 2004, p. 37.

networking sites, blogs, RSS streams and aggregators are oriented toward building and sustaining networks. However, technology is only part of the equation. “The Information Technology Revolution DID NOT create the Network Society. But without information technology, the Network Society would not exist.”<sup>13</sup> The latest technologies lead not only to innovation within the sector but to cross-sector innovation facilitated by networks that blur traditional organizational responsibilities.

As a word of caution, the emphasis on achieving a level of sophistication leading to innovation may not be appropriate for all nonprofit organizations, especially the preponderance of organizations with operating budgets less than \$100,000. For these lower capacity actors, effectively incorporating new technologies may be all that is necessary for effective delivery of services. While innovating is the final step of a process built upon successful adoption and subsequent effective use of new technology, not all organizations may be interested in or capable of delivering or deriving value from innovation. All nonprofits can and should derive value from adopting and using technologies.

#### **D. How Nonprofits Define and Generate Value from IT**

Defining value is a difficult task because of the double bottom line of nonprofit organizations. While nonprofits have the same requirements of the private sector to

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<sup>13</sup> Castells, Manuel. “An Introduction to the Information Age.” in Webster, Frank. The Information Society Reader. New York: Routledge, 2004. p. 139.

operate efficiently in order to lower costs, the varied missions and desired outcomes of nonprofits do not readily lend themselves to a standard definition of value.

Civil society is therefore left to derive a broad notion of the social benefits created from programs and activities. "Social Value is created when resources, inputs, processes or policies are combined to generate improvements in the lives of individuals or society as a whole. It is in this arena that most nonprofits justify their existence, and unfortunately it is at this level that one has the most difficulty measuring the true value created."<sup>14</sup> Beyond the variation between programs and organizations, social indicators are problematic because of the lack of precision and inability to develop causal measures (was the program responsible for the change?), or with data that can be compared across different sectors (is improved nutrition program more or less valuable than increased test scores?). In order to avoid such conundrums, social policy analysis attempts to quantify the changes economically.

One such determination of IT value is the measurable economic benefit derived through the creation of additional value towards building a "new economy." Manuel Castells identifies three elements of the new economies: "productivity derived from the application of knowledge and the practice of innovation, competitiveness operat[ing] in

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<sup>14</sup> Emerson, Jed. et.al. "Social Return on Investment (SROI): Exploring Aspects of Value Creation." Harvard Business Working Knowledge. (<http://hbswk.hbs.edu/archive/1957.html#graph>) 2001.

a global environment, and a new organizational form which is networking.”<sup>15</sup> As discussed above, nonprofits can and do play an active role in fostering all three elements yielding greater networking amongst sectors, improved competitiveness and increased economic growth to the target population and the society as a whole.

#### *The Value of Each Role for IT in Nonprofit Sector*

The role of nonprofits in creating IT value through technological innovation must be considered inclusively of all relevant roles of nonprofits: the direct development of innovation, the dissemination of technology through digital divide programs, and education leading to improved human capital. In this section, each potential nonprofit function is explored with a particular emphasis on social entrepreneurs as innovators.

#### *Nonprofit as Innovator - Social Entrepreneurs*

Innovation occurs throughout civil society, but most notably and most often from social entrepreneurs. The argument that social entrepreneurs are the nexus of technological innovation is consistent with what occurs within the private sector. As described above, the social entrepreneur either develops technology or applies existing technology in new ways to solve problems. Such entrepreneurs build their own organizations or exist within established large NGOs as “intrapreneurs.”

Despite functional similarities to the private sector, economic drivers are rarely the immediate motivations for action among social entrepreneurs. Indeed, most

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<sup>15</sup> Castells, Manuel. “The Information City, The New Economy, and The Network Society.” In Webster, Frank, ed. The Information Society Reader. New York: Routledge, 2004. pp. 151-153.

nonprofit organizations are content to operate programs that ameliorate a social ill, often very specifically defined and bounded. Such tendencies are changing because “the nonprofit sector has grown dramatically in recent decades. Its is bigger, more powerful, and more sophisticated than ever.”<sup>16</sup> The proliferation of nonprofit organizations means increased competition for foundation or government funding. Established organizations could rely on connections and reputation quality services, but upstart nonprofits, much like private sector businesses, must innovate to attract funding and differentiate themselves from established players. These exceptional organizations are called social entrepreneurs, defined as individuals or organizations “...that create innovative solutions to immediate social problems and mobilize the ideas capacities, resources, and social arrangements required for sustainable social transformations.”<sup>17</sup> Not all the innovation produced by such actors is technological, but the social entrepreneurs, “...act as change agents for society, seizing opportunities others miss and improving systems, inventing new approaches, and creating solutions to change society for the better.”<sup>18</sup> Such framing of engagement with social problems leaves them more likely to perform technological innovation than a highly bureaucratized larger NGO.

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<sup>16</sup> Salamon, Lester. The Resilient Sector: The State of Nonprofit America. Washington DC: Brookings Institution, 2003. p. 51

<sup>17</sup> Alvord, Sarah H., Brown, L. David, Letts, Christine W. “Social Entrepreneurship and Societal Transformation.” The Journal of Applied Behavioral Science, Vol. 40 No. 3, September 2004. p.262.

<sup>18</sup> “What is a Social Entrepreneur?” Ashoka ([http://www.ashoka.org/fellows/social\\_entrepreneur.cfm](http://www.ashoka.org/fellows/social_entrepreneur.cfm)).

While such social entrepreneurs do not normally have the capital for significant technology development, they can apply the process of innovation to adopt existing technologies for social ends. In some cases, private foundations or governments do provide the capital for technology innovation development and the subsequent scaling of the solution. “While a business entrepreneur might create entirely new industries, a social entrepreneur comes up with new solutions to social problems and then implements them on a large scale.”<sup>19</sup> This scaling of technological social solutions can create the measurable economic impact necessary for assessing innovation and thereby the social value of IT.

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<sup>19</sup> Ibid.

### **III. Literature Review**

#### **A. Research on IT Adoption and Use**

The research community gives a great deal of attention to how technology is adopted and used in the private sector and how it leads to innovation. While some of those lessons do translate to the nonprofit sector, others are less appropriate. The following is not an exhaustive literature review, but a discussion of key lessons derived from the research on the private sector that can be applied to the civil society.

Dr. Peter Weill, Director of MIT's Center for Information Systems Research, notes that companies that "...link their IT investment strategies to their business strategies are well-placed to outrun their competitors along desired performance dimensions...In effect, IT savvy yields a substantial financial premium."<sup>20</sup> For nonprofits, the gains may be both financial and mission-oriented in terms of the double bottom line within which most nonprofits must function. Those nonprofits that adopt technology the fastest, use it most effectively, and develop their own innovations will tend to perform with greater social impact and efficient operations. Those funders who incorporate technology into their grantmaking will likely see more positive program outcome results.

In a recent paper, Weill and his colleague suggest that organizations can achieve what they call "IT –savvy" in both their practices and competencies. The indicators they identify for IT-savvy practices include:

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<sup>20</sup> Weil, Peter and Aral, Sinan. "Generating Premium Returns on Your IT Investments. MIT Sloan Management Review, April 2006 p.42.

- *IT for Internal and External Communication* – The intensity of electronic communication media (such as email, intranets and wireless devices) used for internal and external communications and work practices.
- *Internet Use* – The extent of Internet-based architecture (i.e., open platforms) in place for key functions such as sales force management, employee performance measurement, training and post-sales customer support.
- *Digital transactions* – The percent of transactions with both suppliers and customers that are executed digitally.

The indicators they identify for IT-savvy competencies include:

- *Companywide IT skills* – The extent of technical and business skills of IT people, the extent of IT skills of business people, and the ability to hire skilled IT people.
- *Management Involvement* – The degree of senior management commitment to IT projects and the degree of business unit involvement in IT decisions.<sup>21</sup>

Such indicators of IT-savvy practices and competencies can apply as well to nonprofit organizations. For example, nonprofits can increase the transactions with donors and clients that are being executed digitally. This IT-savvy practice could lower

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<sup>21</sup> Ibid. p.44.

unit costs for fundraising and service delivery, creating a more efficient operation. Similarly on the competency side, senior management can stop leaving IT-related decisions to their IT people, and become fully engaged with making the strategic IT decisions that will provide the most cost savings and/or social return on investment.

Sociological research on technology adoption, use and innovation in firms translates the broader research into organizational development terms. Many nonprofit staff are not well-versed in IT because they have had less exposure to it than employees in the for-profit world. The nature of technological change within organizations often requires significant changes in the organization's work processes and structure. MIT Sloan School of Management Professor Wanda Orlikowski argues that traditional modes of thinking about technological adoption and change "...may have been appropriate for organizations that were relatively stable and bounded and whose functionality was sufficiently fixed for detailed specification. Today however, given more turbulent, flexible and uncertain organizational and environment conditions, such a model is less appropriate."<sup>22</sup> Nonprofits operating in difficult resource-constrained environments where annual funding is less than predictable and client needs are evolving often struggle with the addition dynamically changing nature of IT. Sophisticated management must strategically manage such factors in a way that not only plan for what Orlikowski calls "anticipated challenges" that reflect

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<sup>22</sup> Orlikowski, Wanda and Hofman, J. Debra. "An Improvisational Model for Change Management: The Case of Groupware Technologies." MIT Sloan Management Review. Winter 1997. p.12.

management's strategic investments in IT, but also "emergent challenges" that arise spontaneously as technologies are used in novel and unanticipated ways, and "opportunistic challenges" that arise through use but are leveraged strategically. In dealing with such challenges, executives must understand that technologies "will interact with cognitive and structural elements, and that these elements will have significant implications for the adoption, understanding, and early use of technology."<sup>23</sup> In short, nonprofit decisions makers must anticipate what training and change in work processes are necessary to incorporate new technology in the present, while keeping one eye on are necessary to incorporate new technology in the present, while keeping one eye on a the future (one to two year time horizon) to take advantage of emergent changes in use as well as new technologies. As in the corporate world, those nonprofits that demonstrate appropriate IT-savvy, will be more likely to succeed in delivering social return in an economically efficient manner.

## **B. Research on IT Adoption by Intermediaries**

The intermediary community has conducted most of the limited research in the field of nonprofit technology. The professional association of this industry, the Nonprofit Technology Enterprise Network (N-TEN), recently conducted a survey with a non-randomized sample to determine how nonprofits access the human capital necessary for effective technology adoption and use. The report determined that there

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<sup>23</sup> Orlikowski, Wanda J. "Learning from Notes" in Proceedings of the Computer-Supported Conference on Cooperative Work. Toronto: November 1992. pp. 362-369.

was great variance within the sector, even amongst organizations of the same budget size. Such investment variance largely accounted for differences in adoption of technology. “‘Early Adopters’ and ‘Fast Followers’ invested substantially more in all aspects of their IT infrastructure.”<sup>24</sup> The survey also determined disparities in technology adoption based on size as “...smaller organizations appear to be notably behind on the IT adoption curve – indicating a substantial organizational digital divide.”<sup>25</sup> Such an organizational divide occurs with small organizations with budgets less than \$500,000. Capacity and capital constraints do not allow for investment in and outsourcing of technical expertise as is the case with larger nonprofit organizations.

A 2003 report by Summit Collaborative, a for-profit intermediary made recommendations to the funding community for effective strategic technology grantmaking. The researchers surveyed the foundation community to determine how funders were addressing technology within their grant portfolio. The study cited six drivers that influenced strategic technology grantmaking:

1. **Determined Leadership** – *the vision and fortitude to promote and support appropriate mission-driven technology use and innovation.*
2. **Active Learning** – *assessment and evaluation that drives nonprofit technology grantmaking, support and use.*

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<sup>24</sup> Quinn, Laura S. and Verclas, Katrin. “Nonprofit IT Staffing: Spending, Salaries and Infrastructure for Success.” NTEN, 2006. p.3 ([http://nten.org/uploads/NTEN\\_ITstaffing\\_survey.pdf](http://nten.org/uploads/NTEN_ITstaffing_survey.pdf))

<sup>25</sup> Ibid. p.3.

**3. Dynamic Collaboration** – *nonprofits, intermediaries and funders working together to leverage experience and resources.*

**4. Strategic Technology Use** – *appropriate, mission-based use of technology.*

**5. Holistic Infrastructure** – *servers, processors, software, networks – AND the people and skills to make it all work.*

**6. Effective Intermediaries** – *people, organizations and services that support nonprofit use of technology.*<sup>26</sup>

The recommendations are notable in that they embrace a systems approach encompassing the ecosystem of organizations, corporate and foundation funders, and intermediaries who work to ensure effective use of technology grant investments. A closer examination of the roles of each player is provided in the next section.

This intermediary research is by no means comprehensive in addressing the multi-faceted challenges that nonprofits face in effectively adopting and using new technologies. Even less research has been done on how nonprofits actually innovate. This research looks towards intermediaries and funders as key points of leverage in the IT adoption life cycle, but there are a number of other potential factors to be considered including:

- The size, diversity, and interconnectedness of intermediary organizations.

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<sup>26</sup> Osten, Marc, Smith, Jillaine, Stuart, Rob. "From Obstacles to Opportunities: Six Interlocking Opportunities of Strategic Technology Grantmaking." March 2003 p. 4  
(<http://gems.imelda.soceco.org/nten/reportkellogglinks030703.pdf>)

- The types of arrangements and amount of funding determined by foundations within a region.
- Involvement levels of private sector companies and employees in board-level strategic management and technology transference at the operational level.

The effectiveness of implementation is a more difficult metric to study.

Operational efficiencies could be measured in terms of administrative costs. If technology implementations are delivering on their promise, administrative costs should be lower over time. Administrative costs measures should be included in cross-organizational and cross-regional studies. Mission-based outcome improvement is substantially more difficult to measure given the variety of organizations and missions. Technology offers new possibilities in creating data sets from specific government or foundation initiatives in which outcomes are shared across organizations. Also, community indicators such as reduction in crime or improved decreased incidents of school absenteeism could be measured in a specific region or neighborhood. Community indicators do not so much measure specific organizational performance, but rather the performance of the network of organizations. The newest technologies invite such an emphasis on networks rather than individual organizations. Thus community indicators are becoming more appropriate measures of nonprofit technology performance. I now turn to the decidedly less ambitious goal of examining

the critical factors of nonprofit technology adoption and use through a study of cross-regional comparisons.

## **IV. Cross- Regional Comparison Survey Analysis and Results**

### **A. Background to the Survey**

As part to this research, I developed a survey for a deeper examination of the critical factors associated with adoption and implementation of technology in nonprofits. The survey focused on two primary areas:

- Determining the degree to which intermediaries are used, and their effectiveness in delivering technology services to nonprofits
- Examining the effect of differences in funding and intermediary community support across regions, and the extent to which these differences influence organizational proficiency and the perception of the nonprofit sector's proficiency.

The survey examined these factors across organizations and regions, thus allowing for comparisons where varying arrangements exist. These factors can offer a better picture of the elements necessary to develop a technology assistance ecosystem. The technologies examined in this survey included: online donation processing tools, customer relationship management databases, and Web 2.0 technologies such as blogging (for use as a communications mechanism to stakeholders). While the survey examines adoption and use, it does not attempt to determine whether organizations developed innovations using existing technologies. While such data would be valuable,

standardized metrics for effectiveness and innovation in the nonprofit sector have yet to be developed.

The survey instrument was delivered as a web survey over a two month period from February 14<sup>th</sup> to April 14<sup>th</sup>, 2007. The survey was reviewed and approved for use by MIT's Committee on the Use of Humans as Experimental Subjects (COUHES). See Appendix A for the survey in its entirety.

### *Characteristics of the Sample*

The sample includes large, mid-size and small nonprofit organizations (based on operating budget size) to account for capital differences and the ability to invest in technologies. The sample was not selected at random, but rather respondents were identified through existing professional, personal and online networks, and invited to participate through a personal email message. The survey data are thus not representative of all nonprofits, and consequently conclusions will be drawn with caution. Nonetheless, the survey does provide a good deal of descriptive information about the nonprofit sector surveyed in each of the regions selected.

The survey was sent to 300 nonprofit staff and a few funders (150 in MA, 75 in PA, and 75 in SF). Of these, 120 respondents completed the survey: 60 respondents from Greater Boston and the Massachusetts region; 30 from Philadelphia and the Delaware Valley region; and 30 from San Francisco and the Bay Area region. Each

regional subgroup is large enough to provide sufficient statistical power for the analysis.

### Organization Type by Content Area

The types of organizations surveyed largely represent the national nonprofit sector with a few exceptions. Arts and culture organizations which represent with just 10.7% of the nations nonprofit but 19.2% of the sample.<sup>27</sup> Similarly, human service organizations are slightly underrepresented (34.5% in nation, compared to 23.4% in the sample). These differences are unlikely to affect the data much as there was little difference in the data from for arts organizations and providers of human service.

Table 1 below gives the complete accounting of organizational type by content area, as represented in the sample.

<b>Table 1: Type of Organization by Content Area</b>		
<b>Type of Organization</b>	<b>Response Percent</b>	<b>Response Total</b>
Arts	19.2%	23
Community Service/Volunteering	6.7%	8
Economic Development	4.2%	5
Education	13.3%	16
Environment	4.2%	5
Health and Human Service	16.7%	20
Housing and	1.7%	2

<sup>27</sup> "The Nonprofit Sector in Brief, Facts and Figures from the 2007 Nonprofit Almanac." The National Center for Charitable Statistics of the Urban Institute. 2007. p.3 ([http://www.urban.org/UploadedPDF/311373\\_nonprofit\\_sector.pdf](http://www.urban.org/UploadedPDF/311373_nonprofit_sector.pdf))

Homelessness		
Immigration	0.8%	1
Job Training	1.7%	2
Legal Assistance	2.5%	3
Media	1.7%	2
Religion and Faith Based	1.7%	2
Other	25.8%	31
<b>Total</b>	<b>100.0%</b>	<b>120</b>

### Size of Organization by Operating Budget

In terms of operating budget size, the sample is skewed towards larger organizations. In the United States, 42% of nonprofit organizations have operating budgets below \$100,000, while such organizations only represent 8.4% of the sample.<sup>28</sup> On the other end of the distribution, organizations with more than \$5 million in annual operating income represent 6.7% of all nonprofits while making up 27.7% of the sample.<sup>29</sup> Despite this skewing, the sample fairly accurately reflects the middle of the distribution as organizations from \$250,000 up to \$1 million in operating budget make up 20% of the national population and 24% of the sample.<sup>30</sup> Table 2 provides the distribution of firms, by budget, represented in the sample.

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<sup>28</sup> Ibid. p 4.

<sup>29</sup> Ibid p.4

<sup>30</sup> Ibid p.4

The operating budget skew should have a fairly significant affect on the results. We can reasonably assume than organizations with larger budgets, have more working capital to invest in technology than organizations with smaller budgets. Observations about organizational proficiency with technology is likely be more optimistic in the sample than in the general population of nonprofits. Larger organizations would have the resources to hire nonprofit technology assistance providers to facilitate the adoption and use of technology. Similarly, well-resourced organizations by nature of their status within the nonprofit sector have made greater inroads into the funding community and are more likely to perceive a higher availability of funding for technology.

<b>Table 2: Organizational Operating Budget Size</b>		
<b>Org. Operating Budget</b>	<b>Response Percent</b>	<b>Response Total</b>
Less than \$25,000	2.5%	3
\$25,000 - \$100,000	5.9%	7
\$100,000 - \$250,000	10.9%	13
\$250,000 - \$1 million	24.4%	29
\$1 million - \$5 million	28.6%	34
Over \$5 million	27.7%	33
Total	100%	119

**B. Perceptions of Organizational and Sector Wide Proficiency**

Important differences exist in nonprofit staff’s perceptions of their organization’s proficiency with technology relative to that of the sector. In general, organizational members rate their access to technology and effective staff usage of technology quite highly. As shown Table 3, the availability of technology was rated as moderately sufficient in this survey. Staff usage of technology was slightly above moderate. The Delaware Valley had the highest ratings for technology availability and internal usage, while Great Boston/Massachusetts had the lowest availability of technology and San Francisco had the lowest degree of internal usage of technology.

Table 3: Organizational and Sector Proficiency (1 Low, 5 High)				
Organizational Proficiency	Boston/Mass	San Francisco/Bay	Delaware Valley	Overall
Technology Availability	3.2	3.33	3.85	3.36
Staff Usage of Technology	3.51	3.37	3.85	3.56
<b>Sector Proficiency</b>	2.66	2.96	2.76	2.75

Organizations gave much lower marks to the sector in general, creating an interesting dichotomy between staff’s feelings their own organization (generally positive) and those of the sector in general. While technology is available and nonprofits are using it within their organization, the perception is that the sector in general is lagging in technological proficiency. Cross-regional differences in sentiment about organizational proficiency correlate very little with how nonprofits feel about their local sectors. For example, while nonprofits in Delaware Valley/Philadelphia maintain the highest organizational ratings, their ranking of the sector as a whole are average. San Francisco nonprofit staff rate their sector’s proficiency the highest while members in Greater Boston/Massachusetts ranks their sector the least proficient.

**C. Perceptions of Funders and Intermediaries**

Adequacy of Funding for Technology

The regional perceptions correlate very closely with sentiments about the adequacy of funding for technology. Nonprofits in the Greater Boston/Massachusetts

region cite the largest problems with the technology funding. As one member of the Boston/ Massachusetts nonprofit sector noted, "I suspect they do not realize just how much easier their jobs in these areas would be if they were able to invest in technology and perhaps more important, training. There is grossly inadequate availability of funding for such endeavors." Another respondent decried the effect that such limited funding had on the organization: "We were unable to secure technology funding from any foundation in the Boston area during a critical time in our organization's growth. It appeared that technology and infrastructure were low on the priority list." Of all respondents who answered the question, 91% of nonprofits in Boston said funding for technology was inadequate in Boston, compared with 79% of nonprofits in Philadelphia and only 38% of nonprofits in San Francisco. This stark contrast in the perception of funding availability (and actual funding differences) between Boston and San Francisco has real consequences for the efficiency and effectiveness of technology as we will see in Section D below.

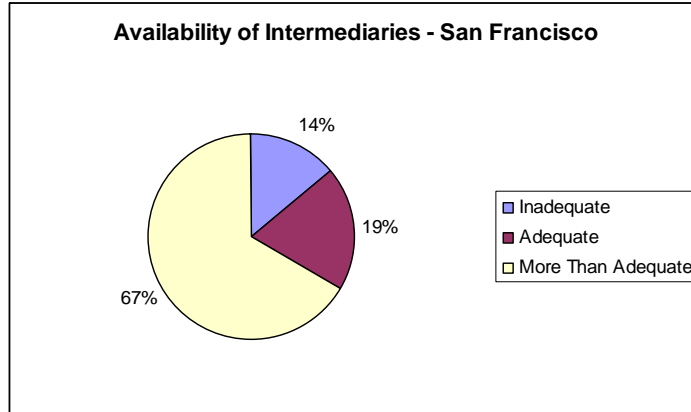
#### Adequacy and Effectiveness of Intermediary Support

Over 80 percent of nonprofits report using intermediaries for a variety of technology projects, ranging from basic technology support to sophisticated installation and training on Constituent Relationship Management (CRM) systems. Intermediaries, largely in the form of nonprofit technology intermediaries, enjoy high ratings of their effectiveness with an overall rating of 3.88 on a 1 - 5 Likert scale. San Francisco

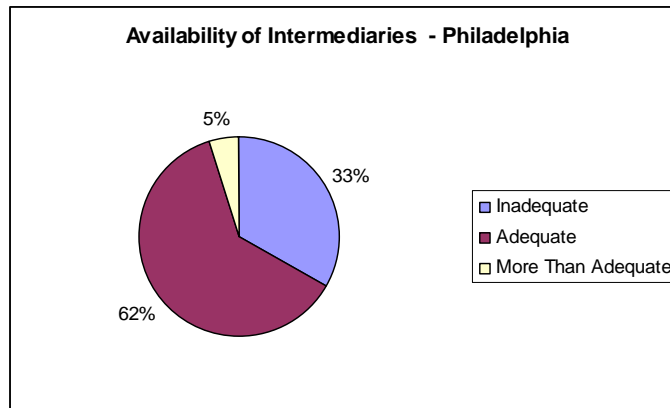
nonprofits gave their intermediary community the highest ranking while the Delaware Valley nonprofits rank their intermediaries relatively lower.

<b>Table 4: Intermediary Quality Rating</b>			
<b>Boston/Mass</b>	<b>San Francisco/Bay</b>	<b>Delaware Valley</b>	<b>Overall</b>
3.95	4.06	3.66	3.88

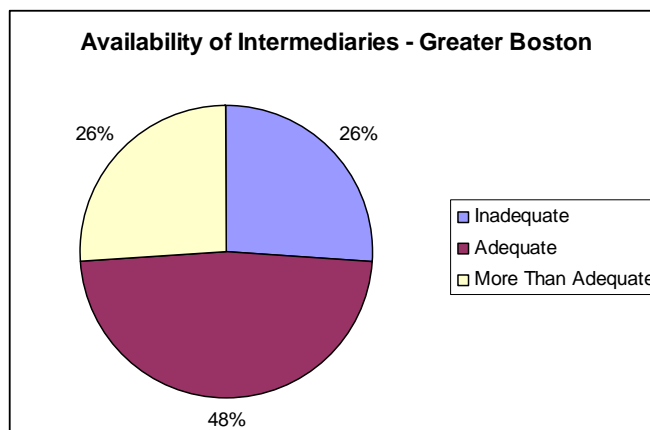
Not only do intermediaries get high rankings from their nonprofit clients, but they are general viewed as widely available to the nonprofit sector. As can be seen in Figures 1, 2 and 3 below, 86 percent of San Francisco nonprofits, 75 percent of nonprofits in Boston and 66 percent s of organizations in the Delaware Valley report the availability of intermediaries as either adequate or more than adequate. For the minority of respondents who viewed intermediary availability as inadequate, the pricing of these services and availability of funding were core issues. As one respondent noted: “There are technology consultants, but they are cost prohibitive, so effectively availability is inadequate.” Another explained: “We need money to upgrade technology; technology assistance/consulting will be sufficient once we obtain funding.” Clearly cost considerations on the supply side and funding on the demand side serve as limiting factors to using intermediaries which are generally in wide supply.



**Figure 1**



**Figure 2**



**Figure 3**

The quality of intermediaries correlates with the perceived availability of intermediaries. For example, two thirds of Bay Area nonprofits reported more than adequate intermediary services while also giving them the highest quality ratings. Similarly, Philadelphia nonprofit reported the highest degree of inadequate intermediary availability and the lowest quality ratings. In the next section, we will address whether and how these differences in the availability of funding and intermediaries affect technology adoption.

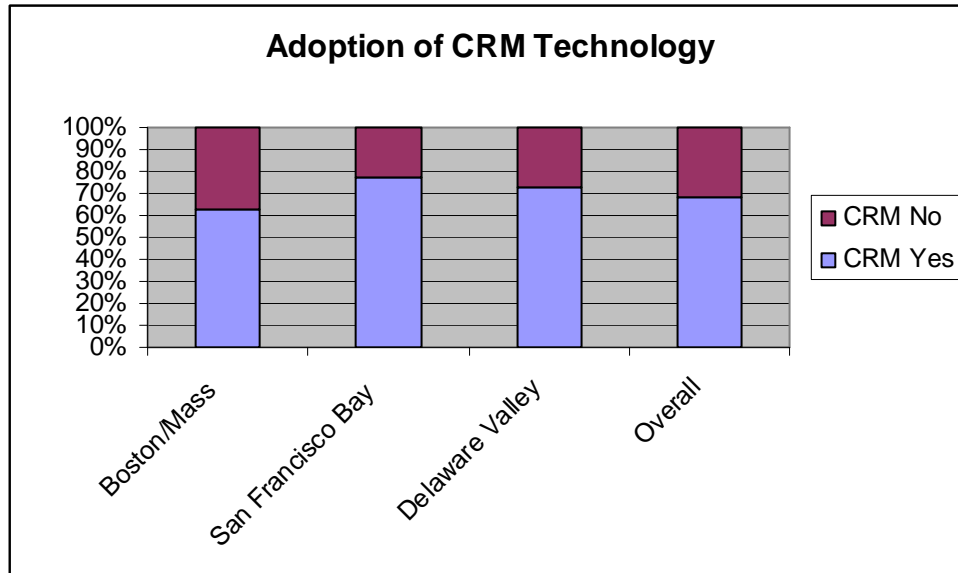
#### **D. Technology Adoption – Cross-Region Comparison**

##### *Technology Adoption Rates*

The most basic question nonprofits were asked about IT was whether they had actually adopted the particular technologies. In general, the San Francisco Bay area nonprofits experienced the highest rates of technology adoption (with one exception) while Greater Boston/Massachusetts region saw the lowest adoption rates. Such a story would seemingly follow from the perceived lack of availability of technology funding.

##### CRM

Constituent Relationship Management (CRM) software had the greatest rate of adoption. The business case for accurately keeping data on donors is vital for nonprofit organizations that depend on donations for their livelihood. Figure 4 shows the adoption of CRM technology among the three regions' nonprofits.



**Figure 4**

Beneath the overall adoption rates, there is wide variance in the sophistication of the technology employed. Nearly a quarter of organizations surveyed are still using a spreadsheet to maintain contacts, whereas the most sophisticated nonprofits are using systems with similar sophistication to CRM databases in the private sector. Indeed, a number of organizations reported using some of the very same tools such as salesforce.com. Many organizations are also using homegrown systems and have yet to adopt the tools that are more broadly available industry-wide.

### Online Donation Processing

September 11 served as a watershed moment for online donation processing. Before that time, online donation systems were fairly common but not very well utilized. Much of the hundreds of millions of dollars contribute to victims of September

11<sup>th</sup> victims was given online. This experience and the growing comfort of donors with online transaction security increased the likelihood of online donations to nonprofits.

As can be seen in Figure 5 below, Philadelphia area nonprofits have the highest adoption rates of online donation software (75%). Greater Boston nonprofits again rank last at 61 percent. Interestingly, online donations is one area where nonprofits in the San Francisco Bay area are not the sector leaders. The data provide insufficient information to account for this difference.

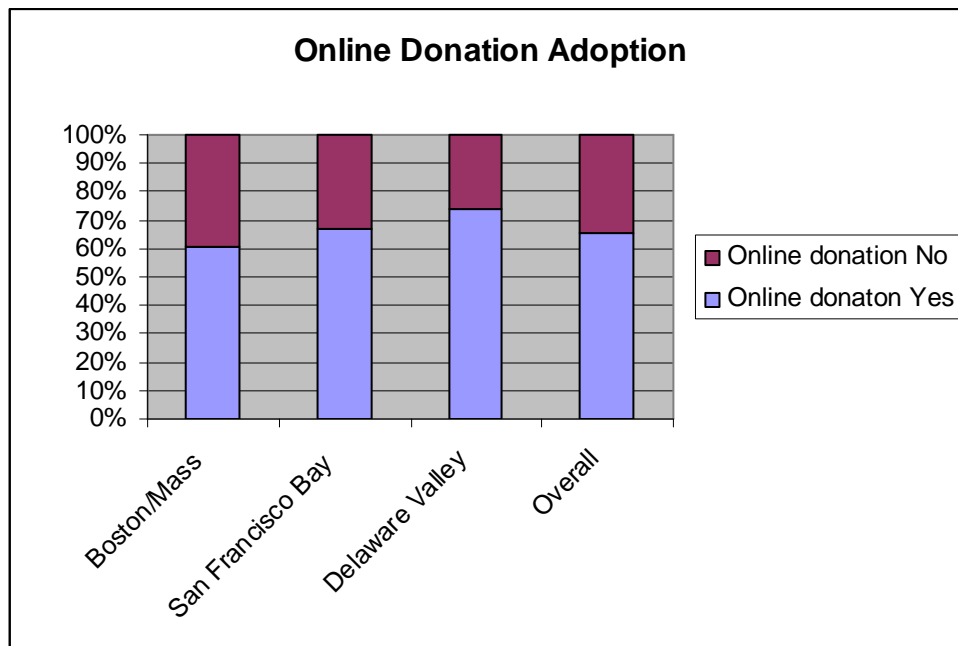
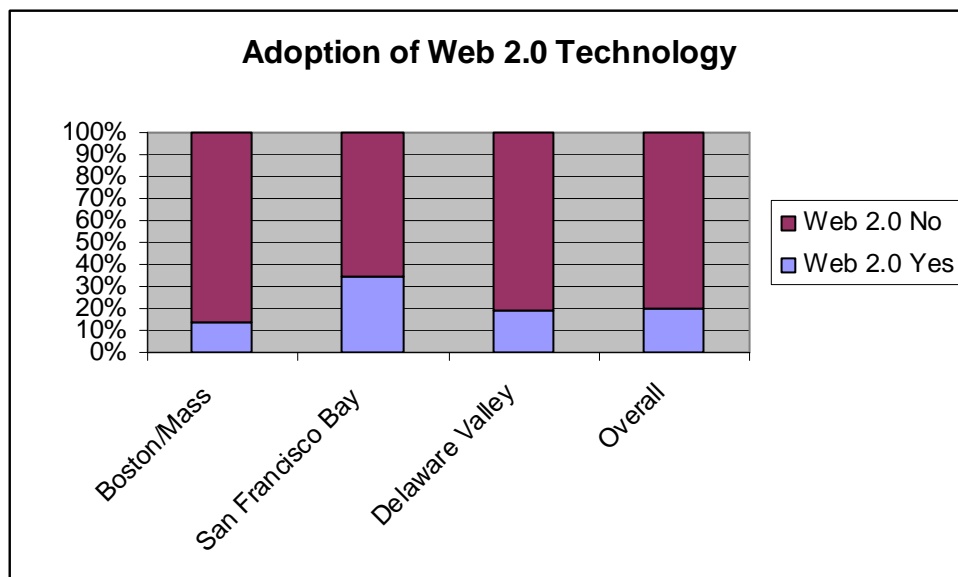


Figure 5

### Web 2.0 Technology

As may be expected, Web 2.0 technologies such as blogging, social networking and podcasting have the lowest adoption rates among nonprofits. These technologies represent the latest wave of technological change within the last four years. As can be

seen in Figure 6 below, San Francisco area nonprofits are leading the way with a third of nonprofit organizations using Web 2.0 in their operations. The Greater Boston/Massachusetts region ranks lowest with just over 10 percent adoption, while Delaware Valley nonprofits are at the mean with 20% adoption. These rates will likely rise over the coming years as social networking becomes a dominant form of organizing political campaigns and mobilizing social change.



**Figure 6**

*Time of Adoption*

While San Francisco Bay Area nonprofits generally have adopted technology at a greater rate than other regions, the years since adoption tell a more complicated story. Table 5 below shows the average number of years since the organization adopted a technology for those organizations that acquired it (those nonprofits who did not adopt the technology are not include in these numbers). Thus the organizations who adopted

the technology the earliest have the most number of years since adoption. While Bay Area nonprofits as a whole adopt new technology at higher rates, the data show that these organizations adopted the technology more recently.

Table 5: Average Years Since Adoption				
Technology	Boston/Mass	San Francisco/Bay	Delaware Valley	Overall
CRM	4.41	3.69	4.19	4.16
Online Donation	2.02	2.53	3.66	2.58
Web 2.0	0.75	1.5	2.2	1.39

There are a number of possible explanations for this phenomenon. One explanation may be that because San Francisco Bay Area nonprofits are doing a better job of getting their late adopters up to speed, it skews their distribution to include these organizations. As a result, the data for San Francisco include both early and later adopters. In contrast, the data only contain early adopters in Boston as late comers have yet to adopt the technology. That being said, it is important to note that the earlier adopters in each region are keeping up with national trends. It's the mid to late adopters in regions such as Boston that appear to be the most at risk in terms of lost productivity and program effectiveness.

*Adoption Rates Correlation with Funding and Intermediary Availability*

The descriptive data thus far have demonstrated that the regions with the highest perceived availability of funding and highest quality intermediaries are those

that adopt technology at the highest rate. We now consider how strong this relationship is with a greater degree of precision by looking at correlations.

In developing an explanatory model for technology adoption, we need to attempt to identify critical factors. A potential model would be:

$Y = aX + bY + cZ + E$ , where Y is adoption time, a is the effect of funding, b is effect of intermediary intervention, c is organizational capacity and E is the error term.

To test such a model, the correlation data would have to indicate a relationship between adoption time and the identified factors. The correlations suggest, however, that there is still much work to do to develop a coherent model. The correlations between technology adoption and the availability of both intermediaries and funding are quite weak. Intermediary competencies mattered somewhat for the earlier technologies of CRM and online donation processing, while the funding environment had a somewhat stronger relationship with Web 2.0 technologies. Funding had almost no effect on the adoption of earlier technologies indicating that funding may be important earlier in the lifecycle of technology, but less important as the technology matures and is adopted widely in the sector as standard business practice.

While clear cross-regional differences exist, the actual effect of the funding environment and intermediary support on the individual organization's adoption of technology is relatively small. This would indicate that other factors such as organizational size, leadership, or other intangibles may have more to do with technology adoption. In testing for the effect of organizational size, essentially no

correlation was found except in the case of online donation processing. It seems that leadership and initiative at the individual organization level is tough to measure, but such social entrepreneurship is likely to have more of an effect on the adoption and effective use of technology. I will give greater attention to these intangibles in the next section.

## V. Case Studies

In order to examine some of the intangible affects of leadership and network, I explore a number of case studies involving both intermediaries and nonprofit organizations. In describing the nonprofit case studies, I also attempt to highlight the nonprofit sector's various roles in contributing to technological innovation both within the sector and in support of innovation by the private and public sectors.

### A. Intermediaries

#### *NPower – The Multi-role Intermediary*

NPower was founded in Seattle in 1998 with funding from Microsoft. Its mission is to “is to ensure that all nonprofit organizations can use technology to better serve their communities.”<sup>31</sup> After a successful implementation, NPower decided to expand to 12 other cities across the United States. Microsoft agreed to make a major long-term investment of \$250,000 over three years if matched by the local funding community. In many localities such new money provided a catalyzing and convening effect for local funding communities that had not previously made significant investments in intermediaries. In many communities, Microsoft money largely crowded out existing local intermediaries, relegating them to industry specific niches such as One Northwest in Washington that focuses solely on environmental groups. With NPower's network well-established at the local level, the national organization works to deliver sector

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<sup>31</sup> (<http://www.npower.org/about/index.htm>)

wide research and convening. NPower acts as a hub for the provision of technology infrastructure and support to their local nonprofit community. NPower at the national and local levels represents what significant investments in intermediaries can deliver to local nonprofit communities in terms of strategic management assistance, thought leadership, training and convening.

*Database Designs Associates – The Solutions Provider*

Database Designs Associates, a for-profit company, was founded in 1989 to provide management assistance and advanced database and web solutions to nonprofit organizations. It almost exclusively serves the Greater Boston nonprofit community. Most solutions providers focus on supplying applications, yet Database Designs derives its revenue from custom development to suit the particular needs of the client organization. While the company's longevity points to a market need for custom development, the company is in the process of shifting its focusing towards "integrating existing solutions from application service providers and open source communities. We are also training on the new Web 2.0 technologies that the Boston nonprofit community has yet to adopt."<sup>32</sup> Database Designs is reflects the fact that even the largest nonprofit organizations outsource technical capabilities. The company also represents the catalyzing role that intermediaries can play in facilitating the adoption of technology.

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<sup>32</sup> Backman, Steven. President of Database Designs. Personal Interview, January 10, 2007.

### *Teaming for Technology – The Volunteer Intermediary*

Teaming for Technology (T4T) was founded in 1996 as a national partnership between United Way of America, IBM, and the Corporation for National and Community Service. Its goal was to provide both technology assistance and support to nonprofits and to build technological infrastructure accessible to low-income communities. The program originally operated in 17 communities throughout the nation, but most communities have ended their programs due to lack of resources and a lack of vision for the sustained growth within the local United Way structure. While a national framework was established, local T4T sites developed their own desired outcomes, activities, and partnerships to pursue impact in their local communities. Most of the local programs leveraged United Way and the Americorps VISTA program to develop volunteer-based technology support and training programs. Such episodic volunteer programs met basic needs such as shepherding many organizations through their first encounters with information technology. As organization needs shifted to strategy and more sophisticated technology, T4T programs struggled to survive. Most of the local programs failed to extend their funding base beyond IBM and United Way. For all intents and purposes, T4T does not exist a decade later as a result of poor

funding support for the intermediary and the inability of a volunteer driven program to provide strategic management of nonprofit technology.<sup>33</sup>

## **B. Organizations**

While my analysis has ramifications for public policy and funding within the nonprofit sector there are also significant externalities for the broader society. These result from the roles that nonprofit organizations often play in delivering factor inputs such as human capital and infrastructure to the private sector towards the development of technological innovation. These roles are discussed below to provide the nonprofit community's reach into the broader society's adoption of technology and delivery of technological innovation.

### *Building the necessary technological infrastructure – Digital Divide Programs*

Most nonprofits do not have the capacity in terms of human and financial capital to develop technological innovation, but many nonprofit organizations facilitate private sector effort innovation through building community access to technological infrastructure. Such infrastructure and training efforts are termed “digital divide projects” because they focus on the disparities in access to technology. These programs focus on providing access to hardware and software while also educating and training

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<sup>33</sup> In the spirit of full disclosure, the author managed a later implementation of a local T4T site at the United Way of Southeastern Pennsylvania from 2000-2004. The program moved beyond volunteers and expanded its funding base, but the program has failed to be sustained in any recognizable form today.

disadvantaged communities. By providing the basic infrastructure and skills, digital divide programs facilitate innovation in other sectors of the economy.

Throughout the late 1990s while the dot com boom was in full swing, there was a growing chorus of social commentators who decried the existence of a growing digital divide. This division argues that those without the necessary economic means cannot access the Internet and its promise of improved social, political, and economic relationships. The nonprofit community, government and foundation funders, and the private sector responded with a myriad of programs, largely based around providing economic access to low-income and other disadvantaged populations through public access labs called Community Technology Centers (CTCs). These “CTCs are generally nonprofit, locally-based organizations that provide IT to groups that do not get access to it in other ways.”<sup>34</sup> With limited resources, civil society actors have not been able to deliver the technology to the last mile into the homes. Rather investments have been directed at schools, libraries or community centers where a computer lab is established for public access.

The community technology center movement is criticized on multiple fronts in terms of the level of access provided and the role of the institution in building community. The technology access provided by a CTC is not equal to those with those

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<sup>34</sup> Davies, S., Schwartz, A., Servon, L., & Pinkett, R.. Community Technology Centers as Catalysts for Community Change. New York, NY: Ford Foundation. (2003) p. 6.  
([http://www.bctpartners.com/resources/CTCs\\_as\\_Catalysts.pdf](http://www.bctpartners.com/resources/CTCs_as_Catalysts.pdf))

with computers and Internet in their home. As such, community technology centers do not provide the ideal mechanisms for access. “What we are really trying to do is connect folks to the mainstream economy, and you do that through the Internet,” [Rockwell] said. ‘Middle income folks pay their bills in their pajamas online at 6 o'clock in the morning. That same level of access should be provided to low-income people.’<sup>35</sup> Without access from the individual’s home, the economic and educational benefits often go unrealized. The other criticism leveled at CTCs is that they must broaden their missions as public places to become more relevant in addressing economic and social issues beyond access to technology. “A key group of CTCs has the intellectual capacity to take on broader community issues—they understand the benefits and can make the mental leap from what they are doing now to funding broader activities. However, they do not have the organizational and resource capacity—in terms of space, funds, or staff—to take on this work.”<sup>36</sup>

Such criticisms have largely altered the focus of digital divide programs towards providing technology directly to individuals. Innovation in the private sector has created an environment of declining costs of factor inputs such as storage, free open source software, and transmission of data that has allowed for digital divide programs targeted at individual families and students. With technology being delivered to the

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<sup>35</sup> United Way to bring wireless Internet to poor neighborhoods. USA Today. March 18, 2003. ([http://www.usatoday.com/tech/news/2003-03-18-wifi-poor\\_x.htm](http://www.usatoday.com/tech/news/2003-03-18-wifi-poor_x.htm)).

<sup>36</sup> Davies, S., Schwartz, A., Servon, L., & Pinkett, R.. Community Technology Centers as Catalysts for Community Change. New York, NY: Ford Foundation. (2003) p. 25.

home, CTCs have moved away from serving as access provider to serving a distribution, support, and training role.

*Digital Divide Case: MIT Media Lab's \$100 Lap Top.*

The most prominent example of this new direction in digital divide efforts delivering technology to the home is the MIT Media Lab's \$100 Laptop Program. The mission of this organization is "to develop a low-cost laptop—the "\$100 Laptop"—a technology that could revolutionize how we educate the world's children. Our goal is to provide children around the world with new opportunities to explore, experiment, and express themselves."<sup>37</sup> The premise is that individual students paired with technology will offer "...both a window and a tool: a window into the world and a tool with which to think. They are a wonderful way for all children to learn learning through independent interaction and exploration."<sup>38</sup>

It is premature to do a full evaluation of the \$100 Lap Top Project, but the project offers the highest-profile case of introducing technology that is key to participating in the knowledge economy into developing countries. Early implementations in Vietnam, Laos and Nigeria are being examined to determine how the project is transferring the technology to the local population including education, training and social networks that are being applied to ensure successful adoption and use of the technology. What remains to be seen is the nature and quantity of the innovation that result from the introduction of

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<sup>37</sup> The One Laptop Per Child Wiki. (<http://wiki.laptop.org/go/Home>).

<sup>38</sup> Ibid.

the technology. While those results are too preliminary for inclusion in this thesis, the project founders believe that past digital divide projects demonstrate positive economic and social impact. “Our experiences in virtually every pilot we have either studied or run over the past 40 years suggests that the impact of empowering children, their teachers, families, and communities with computation and communication has a net positive impact on learning, social cohesion, local economies, etc.”<sup>39</sup>

### *Human Capital Improvement*

Nonprofits often play an educational and facilitative role for private sector innovation. Some civil society actors choose to just focus on the education front, participating in both primary education and vocational training. Over the last two decades, many of these efforts have focused on the technology training. With respect to facilitation, this role encompasses a multitude of activities including the establishment of social networks (trade associations, cooperatives, learning networks), change management initiatives or consulting, and technology transfer of existing technologies into a population. Given the weak evaluation measures employed by the civil sector, the economic benefits of education, training, and networking are not fully understood, but there is a small, and growing body of research that is instructive towards the technological innovation of the third sector as a whole as described in the economic outcomes in the case below.

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<sup>39</sup> Ibid.

*Human Capital Case: Plan Puebla*

Plan Puebla is not a project in which technological innovation was central, but rather the education and networking of farmers allowed them to apply existing innovation to improve crop yields. During the 1960s, agricultural researchers introduced existing agricultural technology in an innovative manner by “focusing on small, farmer-oriented cooperatives and providing supporting activities.”<sup>40</sup> The effort included both education and technology transfer to farmers to improve crop yields of maize by 62% among 47,000 Mexican farmers. Perhaps most astonishingly, family income increased by 252%. The case is exemplary of precise measurement of the economic benefits of innovation, which is rarely well captured even in the private sector. By establishing cooperatives, social networks were developed that could serve as learning networks that focused on the non-technical change management issues such as cultural accommodation and education.

*Social Entrepreneurship Case: Wireless Philadelphia.*

In 2002, United Way of Southeastern Pennsylvania, an established nonprofit that had created a sub-unit for technological innovation, embarked on a large scale project to build wireless neighborhood networks in two low-income communities in Philadelphia. Wireless radio Internet technology was relatively new and applying the technology to a

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<sup>40</sup> Alvord, Sarah H., Brown, L. David, Letts, Christine W. “Social Entrepreneurship and Societal Transformation.” *The Journal of Applied Behavioral Science*, Vol. 40 No. 3, September 2004. p. 266.

neighborhood was so novel that it befuddled even the top Cisco engineers who were engaged as volunteers during the planning and testing efforts. With Cisco's support and government and private sector funding, United Way built the first wireless neighborhood networks. "For less than a dial-up connection (\$5 to \$10 per month), the United Way of Southeastern Pennsylvania install[ed] two hotspots in a twenty square block area of the West Powelton and Haddington sections of West Philadelphia. The users are either residents of the People's Emergency Center homeless shelter or clients of the Philadelphians Concerned About Housing community group."<sup>41</sup>

The project was originally conceived as a digital divide project. As CTCs grew in numbers and sophistication, it became clear that they were providing inadequate access to low-income students and parents who needed to have access in their homes, equal to the access provided to the majority of Americans. The project used sobering data to make the case that technological innovation was needed to address the last mile issue.

Using the city of Philadelphia as an example, the project demonstrated that the market fails to provide access to large segments of the population. An estimate of how many families lacked technology access was obtained by taking the total number of families from the 2000 Census, and multiplying this number by the percentage of families lacking access at each income level, as determined by the Department of

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<sup>41</sup> Sutherland, Ed. "WiFi for Everyone." WiFi Planet. April 2003 (<http://www.wi-fiplanet.com/columns/article.php/2177251>).

Commerce’s “A Nation Online” Report from September 2004.<sup>42</sup> Technology access was defined as having an Internet connection in the household. The data assume that access rates in Philadelphia mirror national averages.

<b>Table 6: Technology Access</b>			
<b>Income Level</b>	<b>Number of Families</b>	<b>National Percentage without Access</b>	<b>Number of Families without Access</b>
Less than \$15,000	59,319	74.1	43955
\$15,000 - \$24,999	47,302	65.6	31030
\$25,000 - \$34,999	48,170	54.7	26349
\$35,000 - \$49,999	63,185	41.7	26348
\$50,000 - \$74,999	63,412	31.1	19721
\$75,000 & above	60,573	19.6	11872
<b>Total</b>	<b>341,961</b>		<b>159,275</b>

The social, political and economic implications of a city where half the residents are disconnected are significant, and serve as powerful rationale for the construction of municipal wireless networks.

At the same time that social service providers came to an understanding of this home access issue, wireless Internet technology hit the market. Community technology practitioners began to examine applications for wireless technology to provide home access. After a number of pilot developments around the country, municipalities began to invest in wireless internet access provision for their entire communities.

The state and federal government provided seed capital under established digital divide funding programs. The long-term plan according to the director of technology

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<sup>42</sup> A Nation Online (<http://www.ntia.doc.gov/reports/anol/NationOnlineBroadband04.htm>). US Department of Commerce: 2004.

outreach for the United Way of Southeastern Pennsylvania was “to have a wireless coverage blanket in neighborhoods where people probably couldn't afford the service on their own.”<sup>43</sup>

Over the two years of the program, two neighborhood WLANs were constructed and over 250 families received computers and training in basic computer skills. Many more families who already had computers were connected to the networks as well. The initiative also focused on providing content that would assist families in reaching the economic mainstream through a services web portal ([www.thebeehive.org/philly](http://www.thebeehive.org/philly)). The portal was geared towards low literacy populations and aimed to provide education and information on quality of life topics ranging from financial literacy to child care. The work was highlighted by the Washington Post<sup>44</sup>, the Associated Press<sup>45</sup>, and the trade press<sup>46</sup> (WiFi Planet and others). In each article, the program staff and clients interviewed made the case for wireless networks as a mean to overcome inequity and assist the alleviation of poverty among low-income families.

Despite the emphasis on digital divide, the project represents the type of social entrepreneurship that uses cross-sector networking to scale projects and achieve economic impact. In 2005, the city government of Philadelphia announced plans to

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<sup>43</sup> United Way to bring wireless Internet to poor neighborhoods. USA Today. March 18, 2003. ([http://www.usatoday.com/tech/news/2003-03-18-wifi-poor\\_x.htm](http://www.usatoday.com/tech/news/2003-03-18-wifi-poor_x.htm)).

<sup>44</sup> “Program Aids Urban Poor In Accessing The Internet” Washington Post (<http://www.washingtonpost.com/ac2/wp-dyn/A50706-2004Aug8?language=printe>): August 8, 2004.

<sup>45</sup> Associated Press article ran in a number of publications and websites and can be seen here: [http://www.usatoday.com/tech/news/2003-03-18-wifi-poor\\_x.htm](http://www.usatoday.com/tech/news/2003-03-18-wifi-poor_x.htm)

<sup>46</sup> 802.11 Planet, Now WiFi Planet (<http://www.80211-planet.com/columns/article.php/2177251>)

build a municipal wireless network. The emphasis for such public investment was placed on the economic development of a depressed inner city. The business plan states, “The benefits of making this transformative technology investment are broad and far reaching. First and foremost, the City embraced this initiative to remain a competitive location for businesses, a world-class center for education, and an attraction for visitors.”<sup>47</sup> Other articulate benefits of the project included increased human capital through technical skills proficiency and improved city services. Benefits such as improved access to information and increased social connections within the community were looked upon as secondary and more difficult to measure than the economic benefits to the city (See Appendix B for more rationale).

As of April 2007, much of the network is installed and research is required to determine the degree to which anticipate economic benefits have accrued from the investment. The network is built and maintained by Earthlink, a private sector Internet Service Provider that has staked much of its future on providing services through Municipal Wireless Networks. In this case, the nonprofit sector lead the innovation by acting as a social entrepreneur and spurring the adoption of technology by the government and private sector. Much like private sector innovation, the entrepreneur’s initial innovation was adopted by larger entities with the necessary capital to scale the innovation. “According to Free Press, about 300 municipalities

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<sup>47</sup> Wireless Philadelphia. “Wireless Philadelphia Business Plan.” ([http://www.wirelessphiladelphia.org/pdfs/Wireless\\_Phila\\_Business\\_Plan\\_.pdf](http://www.wirelessphiladelphia.org/pdfs/Wireless_Phila_Business_Plan_.pdf)) p. 8.

around the country are undertaking broadband experiments, but only a few dozen are doing full-scale networks like Philadelphia's."<sup>48</sup> Cities that fail to develop the proper vision, leadership and consensus around municipal may be left behind and thus less able to reach the point of large-scale network deployment.

The complex interaction of leadership from social entrepreneurs, technology, providers, nonprofits and funders will continue to drive and shift existing trends of public private partnerships and reduced cost or free access to technology.

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<sup>48</sup> Ibid.

## **VI. Critical Factors for Nonprofit Technology Adoption and Use**

The available literature, the survey, and the case studies identify three critical factors that influence the adoption and use of technology: facilitation by intermediaries in a variety of roles, support from the funding community, and strong executive leadership and board governance. These constitute key components of regional philanthropic ecosystems as the data suggest that sectors including these factors adopt technology at a more rapid pace than those where such factors are missing. Each of these factors is now discussed.

### **A. Facilitation by Intermediaries**

At the center of nonprofit technology networks, intermediaries exist in a number of important roles facilitating the adoption and effective use of technology. Over eighty percent of nonprofits reported using intermediaries for technology implementation. Those communities where the supply of technology assistance is adequate see more rapid technology adoption.

A cottage industry of for-profit solutions providers and nonprofit technology assistance providers (NTAPs) has emerged to bridge the gaps in capacity within nonprofit organizations. These intermediaries often play key roles in creating awareness of new technologies, building the human resource capacity of nonprofits through training, and assisting in the implementation of projects. The rest of the industry is largely made up of for-profit application service providers, smaller

developer and support organizations, traditional management assistance intermediaries, and independent consultants. The professional association for the industry, N-TEN, draws some 800 people to its annual conference, a number that has grown annually for the last decade indicating a growing industry for technology assistance intermediaries. The various roles of technology assistance intermediaries are described below:

- Technology Transfer and Support – The most basic role is to provide access to hardware, software and network technologies. As few small nonprofits have the human resources to support technology infrastructures, support is either provided by less than reliable volunteers or technology support organizations. In the mid-nineties, the nonprofit technology assistance community organically developed the concept of a circuit rider (similar to the roving judiciary in the nineteenth century), where independent consultants aggregate support for many small organizations offering regularly scheduled technology maintenance visits and availability for emergency support. The organization gains the benefit of ongoing technology support without having to invest in hiring a full-time resource.
- Solutions Provider – Solutions aimed at the entire nonprofit sector, or those offering individualized development are provided by mainly for-profit development firms and application service providers. Application service

providers offer a hosted environment for such solutions as website management, constituency relationship management, content management systems, email, and donor databases. A number of firms and consultants provide systems integration expertise to bring together disparate systems.

The availability of open source solutions has increased the availability of free software, but has increased the need for systems integration.

- Management Assistance – The strategic management of technology requires technology investments that relate to both the nonprofits' operations and mission. Independent consultants, for-profit and nonprofit management consulting firms, and some volunteer driven programs provide these services. Often these entities begin their engagements with a strategic technology plan. For example, NPower developed a software program called TechAtlas, ([www.techatlas.org](http://www.techatlas.org)) that seeks to codify the strategic technology planning process. Beyond the planning process, these organizations provide strategic services such as vendor selection and management, systems integration, and communications support. Management assistance intermediaries often act as a Chief Information Officer in organizations that have lack such capacity.
- Innovation – Through providing the base technological infrastructure, intermediaries provide the platform for social entrepreneurs to innovate. In

the Wireless Philadelphia case, the technological infrastructure of United Way and its agencies allowed for individuals to take the technology to the next level delivering technology to achieve mission-based outcomes.

- Funding Aggregator – In rare cases, intermediaries serve as a funding aggregator for specific initiatives. In these cases, multiple foundations and other funders target technology support to multiple organizations through an intermediary who realizes certain scale economies in providing technology support and management assistance.
- Conveners – Similar to the funding aggregator role, some intermediaries convene stakeholders to build communities of practice around a particular technology or set of technology-related issues. They also build cross-sector coalitions to address systemic areas of concern. An example of such an effort is the TechXchange Coalition, which was formed by intermediaries in Philadelphia in 2003 to better communicate the technology needs of nonprofits to the funding community. The effort involved 20 regional intermediary organizations and included corporate support from IBM. The group aggregated market studies, released a regional strategic plan, and convened funders to establish an agenda.

- Trainer – Intermediaries often play the role of trainer leveraging their own expertise to offer skill-based trainings or strategic symposia for decision-makers.
- Volunteer Human Capital Transfer - A number of volunteer engagement programs offer project-based technology transfer. Such projects may include a technology assessment, strategic plan, or a new website. Such episodic engagements often leave nonprofits with technology that they do not have the capacity to manage or with a strategy that largely goes unfulfilled.

## **B. Support from Funding Community**

Lack of financial resources is one of the reasons nonprofit technology adoption and innovation lags that among businesses and, to a lesser degree, governments.

Without access to the capital markets for investment and with human resources focused on front-line program staffing rather than staff that would add to administrative overhead, nonprofits often delay technology adoption until the technology is both commoditized (thus, lower cost) and proven (thus, easier to incorporate). Despite these central constraints characteristic of the sector, many nonprofits overcome them and develop innovative uses of technology (e.g., enhancing the organizational health of NGOs or increasing the effectiveness of nonprofits' direct services). This section examines the funding opportunities represented by foundations, governments, and the private sector.

### 1. *Foundations*

Public and private foundations are the most important sources of capital that can help nonprofit organizations overcome the barriers to technological adoption and innovation. Foundations normally assist nonprofits by including funding for basic IT infrastructure as part of program grants but may also fund specific technology innovation. Funding innovation that incorporates technology into service delivery fits well within the standard foundation funding model, which includes money for seeding innovative programs. Foundations also have a role to play in funding research and evaluation to ensure that the nonprofit sector understands how to achieve effective innovations and ensure that those solutions scale.

### 2. *Governments*

As demonstrated in the Wireless Philadelphia case, governments can play a significant role in not only seeding innovation with start-up capital but also spurring innovation. Both seeding and scaling are necessary forms of funding that is directed at innovation. In the Philadelphia case, the local government in partnership with the private sector provided the necessary capital to scale. This inter-sector cooperation around funding and technology transfer provides a model for government planners seeking to stimulate an innovative new economy.

### 3. *Private Sector*

Private companies may play a funding role and serve as a source for technology transfer. Such technology transfer can come in the form of donated hardware and software as well as volunteer training and consulting. Such transfer is not without risks to the nonprofit organizations and the sector at large. When technology companies force their own set of technology standards on the nonprofits, implementations are not open to local innovation. In these cases, proprietary standards and intellectual property are transferred to make the technology available for use without further development, thus creating dependencies in the sector. For example, Microsoft has dumped its software in the US nonprofit sector and in the NGO sectors of developing countries, most notably India. As a result, Microsoft's actions have slowed the adoption of open source software. Companies that transfer their technology or provide funding should do so under open standards if not open source so that the local civil society can learn to work with and adapt the technology within their cultural and economic contexts.

### **C. Executive Leadership and Good Governance**

Leadership is a key ingredient in bringing about change. Executives and nonprofit boards that embrace technological change as a strategic opportunity will find themselves ahead of the technology adoption curve and well positioned to utilize technology to innovate service delivery. Effective nonprofit leaders and boards do not let technology decisions rest solely with the IT staff, but rather engage with the strategic

implications afforded by the new IT capabilities. Such leaders are often considered social entrepreneurs as discussed above.

In each of the cases reviewed above, a committed leader or group of leaders on a board, became intimately involved in the technology strategy of the organization and looked to apply new technologies to solve social problems. Intermediaries were critical in building the basic infrastructure and transferring new technologies and ideas about how to effectively utilize the technology. Similarly, funders took some risks as they sought to invest in these initiatives and support such social entrepreneurs.

## VII. Policy Recommendations

As much academic research and thought leadership about technology indicates, intermediaries are vital partners with funders, the private sector, and the nonprofit community serving as catalysts for technology adoption and support. The role of technology will only continue to grow in organizational operations, being used strategically to serve the mission of particular organizations or facilitating the community outcomes of a network of agencies. Those nonprofits and funders who ignore technology or believe the purchase of new hardware or new applications is sufficient, incur significant risks for organizational and sector-wide effectiveness.

Technology assistance providers would not have been founded nor will they continue to exist without broad-based support for their role in building organizations and regional networks that offer technology transfer, adoption and support. Indeed, such support will need to increase as nonprofit organizations attempts to adapt to a networked world where constituents place greater demands for more sophisticated technology-driven resources. “As John F. Kennedy emphasized during his 1960 presidential campaign, there is a new world to be won...”<sup>49</sup> and technology assistance providers are vital to ushering in this new world to the nonprofit sector. Specific policy recommendations for each of the actors are made below.

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<sup>49</sup> Mechling, Jerry. “Leadership Imperatives for Leaders in a Networked World.” Cambridge, MA: The Harvard Policy Group on Network-Enabled Services and Government, Kennedy School of Government. 2000. p.13

## A. Recommendations for Nonprofit Sector Actors

From a review of the case studies, survey data, and examining the existing role of intermediaries in the ecosystem of nonprofit technology development, it is clear that each stakeholder must strengthen their commitment to the sector. Funders should strengthen and diversify their investment portfolios, while intermediaries should do more knowledge transfer and network support in their role as nodes in the network. Nonprofits should properly budget resources to develop effective strategies for technology implementation. If such policies are pursued, the nonprofit sector will be able to position itself to overcome deficiencies in human and financial capital to efficiently deliver services and more effectively incorporate technology into mission-related program execution.

### *Recommendations for the Funding Community*

1. Increase overall funding for technology. Over two thirds of the nonprofits surveyed reported that available funding available was inadequate, while less than fifteen percent said funding was adequate or more than adequate. However, stark regional differences exist as over 90% of nonprofits surveyed in the Boston area feel that funding availability was inadequate, whereas just 38% of San Francisco nonprofits had a similar sentiment. The low capital environment in which nonprofits must contend is further exacerbated by the lack of interest or focus from foundations and the corporate community.

Technology funding represents a small portion of the total giving of most funders. Indeed, most funders do not invest at all in technology projects and programs. For example the largest community foundation in the country, the Boston Foundation, maintains funding guidelines that state they generally do not fund "...technology capacity building for individual nonprofit organizations."<sup>50</sup>

Most funders can and should play a role in improving the technology capacity of the nonprofit sector by accepting and encouraging proposals with a technology line item, similar to general administrative expenses.

Foundations should support technology infrastructure, even if proposals are strictly program-related and do not ostensibly involve technology. Effective human assets generally require technology support in the form of email and web access, hardware and software, and telecommunications – technologies that are common in most modern work environments.

2. Focus limited resources at system solutions and intermediaries who speed the adoption of such technologies. While foundations should fund the individual capacity of organizations through normal program funding, foundations should also enable intermediaries to introduce new technologies and support existing infrastructure. Over eighty percent of the surveyed nonprofits

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<sup>50</sup> "The Boston Foundation Grant Guidelines" TBF Website  
(<http://www.tbf.org/fund/fund-L2.asp?id=1596#NP>)

reported using an intermediary in the past, and most nonprofits rate their experiences as moderate to very good. Those communities that rely on a critical mass of intermediaries see increased adoption rates and more robust use of technology in mission-related programs. Funders should commit to the operational support of at least three to four intermediaries in large metropolitan areas. National funders should provide early and mid stage capital to organizations that realize scale economies by creating sector-wide technology solutions, including in particular open source infrastructure such as donor databases and constituent relationship management systems.

3. Utilize the expertise of technology assistance providers in IT investment decisions. Even the largest foundations, rarely have in-house technical expertise for technology related investments. Technology assistance intermediaries can be “...an important source of knowledge, access, and experience in serving the technology needs of the local nonprofit sector. [Intermediaries have] the potential to assist the funding community in leveraging or advising on investment in technology related programs.”<sup>51</sup>

Formal networks of funders, intermediaries, and nonprofits should be formed at the regional level to mirror the activity of N-TEN at the national level. In many cases these networks have formed, though mostly as informal social

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<sup>51</sup> Rockwell, Stephen, Vakharia, Neville, Del Bianco, Ashley. “Greater Philadelphia Regional Strategic Plan for Technology Assistance.” TechXchange Coalition. Unpublished. p. 19.

networks. In this convening role, intermediaries can introduce new technologies, advise on investments and suggest network-wide initiatives.

*Recommendations for Nonprofit Technology Assistance Providers*

1. Ensure greater accountability by evaluating impact. Intermediaries must open themselves up to greater accountability and scrutiny from nonprofit customers and funders. Because technology assistance providers operate in a market where the participants have limited knowledge, metrics for success should be clearly communicated to stakeholders. To its credit, the technology assistance industry has periodically produced such benchmarks for success. For example, the Benton Foundation and NPower released a report in 2002 entitled “Technology Literacy Benchmarks for Nonprofit Organizations,”<sup>52</sup> and some intermediaries have employed benchmarking techniques. A complication is that technology metrics are a moving target because of the extremely fast changing pace of technology. For example, the Benton/NPower report says nothing about Web 2.0 capabilities as they were not widely available five years ago. Intermediaries have a responsibility as they introduce new technologies to continue to help set metrics for success at the organizational and sector levels.

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<sup>52</sup> (<http://www.artsandbusinessphila.org/documents/Technology%20Literacy%20Benchmarks.pdf>).

2. Empower customers to make strategic IT decisions. The overarching goal in service provision must be to transfer enough knowledge so that nonprofit decision makers are able to make effective strategic decisions without having to understand the nuts and bolts of the technology. Metrics for success aid this knowledge transfer, but often intermediaries must encourage strategic thinking to restructure operational, communication, and programmatic processes for an organization. Technology is not the driver of organizational strategy, but rather provides critical capabilities to further the organization's strategies toward achieving the mission. Consulting engagements should focus less on the technology and more on developing capacities for reflection and reorganization to ensure that the nonprofits take advantage of new capabilities while understanding the risks of adopting new technologies.
3. Leverage technology to develop networks of practice. The newest web technologies present a number of unique opportunities and challenges for nonprofits. "According to recent research and understanding, the use of the Internet [leads to] a reinforcement of social contacts and relationships and to more arrangements for meetings."<sup>53</sup> Technology assistance providers should leverage existing social networking technologies to build online and offline communities of practice that support innovative and ongoing community

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<sup>53</sup> Van Dijk, Jan A.G.M. The Deepening Divide: Inequality in the Information Society. London: Sage Publications, 2005. p. 157.

learning for nonprofit and intermediary staff. NTEN supports some local and online organizing through social clubs and email lists. Techsoup.org maintains online nonprofit technology discussions as well. Extending these existing services and delivering new Web 2.0 enabled services will provide additional value to nonprofits.

*Recommendations for the Nonprofit Organizations as Customers of NTAP services*

1. Leaders should not leave IT decisions to the IT people. Leaders with limited knowledge or expertise about information technology tend to delegate IT decisions to the CIO, IT staff or technology consultants. Leaders do not need technical expertise to be able to manage IT at the strategic level. As concluded in Peter Weill's research, including IT decision making during strategic planning and other organizational decision making, ensures that more effective returns on the IT investment are realized.
2. Move away from episodic engagement with IT to ongoing strategic management. Nonprofit organizations must focus more attention on the strategic management of technology and less on the technical proficiencies required for development and support. Those technical capabilities that are not core to the organization's mission should almost always be outsourced (see below). Nonprofit leaders must move away from thinking about technology as an episodic engagement (e.g., the database project, the new

website, the installation of new server, etc.) to managing the technology by the objectives of the organization (i.e., to provide individually targeted communication with stakeholders, to establish website content management processes, to deliver client-driven communication capability, etc.).

Volunteers typically cannot deliver on long-term strategic goals, so they tend to concentrate on one-off projects. As such, their focus and activities should be reoriented towards non-strategic projects.

3. Outsource those technologies that are not core to the mission. Cultural norms within the nonprofit sector encourage leaders to want their own IT infrastructure. In a resource-constrained environment, reliance on donated technologies and volunteer support often seems more cost effective than spending precious resources. Indeed, for some smaller organizations, donations may be the only means to IT infrastructure. However, nonprofits must also account for the soft costs of staff time spent trying to make old equipment functional, figuring out how to change donated websites, and the general downtime associated with infrastructure that is not working or operating inefficiently. Most nonprofits could benefit in terms of efficiency and effectiveness through outsourcing their IT support and management. Effective outsourcing requires that nonprofits move away from relying on volunteers or volunteer-driven intermediaries to deliver on mission-critical

technologies. Outsourcing in partnership with other organizations through sharing back-end technological infrastructure such as email systems can increase purchasing power and eliminate redundancy within sectors.

4. Develop network thinking with other organizations and stakeholders to share resources and solve problems. The mission-orientation of nonprofits gives each organization a unique sense of purpose. As a result, true partnerships in which resources are shared or problems are solved collaboratively are rare. IT can be both an enabler (as with social networking sites) and a motivator (because of technology's high cost barriers) for building partnerships and sharing technologies. The complexity of the problems and the technologies which nonprofits must contend with require partnerships and a new mode of network thinking in which leaders work to overcome traditional organizational boundaries and mindsets to achieve economic efficiencies and effectiveness.
5. Budget effectively for IT. Given the financial constraints of nonprofit organizations, technology is often an after-thought in the budgeting process, if a budget for IT exists at all. Nonprofits, even small nonprofits with budgets under \$500,000, must have a technology budget and effectively manage it. "Many IT-related projects still require multi-year support through development, maintenance, and eventual retirement. An annual or biennial

budget cycle may miss longer-term opportunities and fail to account for a system's full lifecycle."<sup>54</sup> Managers should take a long-term budget view of technology that incorporates initial investment and subsequent upgrades support, while also ensuring flexibility for investments in new technologies.

## **B. Moving from Infrastructure to Innovation**

As the nonprofit ecosystem better funds and manages infrastructure, nonprofits can begin to make the move from effective use to innovation. The Wireless Philadelphia case demonstrated that nonprofits can deliver on innovation and provide infrastructure in economically depressed regions or populations to assist those communities in moving to a knowledge economy. Economic policy makers looking to build a knowledge economy should consider the nonprofit sector as an essential part of the innovation ecosystem as providers of infrastructure and human capital. Such an inclusion should extend beyond the universities to more tightly networking civil society with other sectors.

While research in innovation within the private sector is plentiful, little academic research has been conducted on how NGOs use technology effectively, let alone how these organizations innovate and promote innovation outside their own sector. Most of the research focuses on social entrepreneurship, and this often "stands for

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<sup>54</sup> Mechling, Jerry. "Leadership Imperatives for Leaders in a Networked World: Imperative 4: Improve Budget and Financing." Cambridge, MA: The Harvard Policy Group on Network-Enabled Services and Government. 2000. p.13

‘innovative’ or ‘competitive.’”<sup>55</sup> The case material examined social entrepreneurship in which technological innovation is employed to derive a certain social and economic benefit. Digital divide programs expand access to technological infrastructure in conjunction with education and training programs to improve access to information, pedagogical processes, and technological skills. A combination of domestic and international programs were highlighted to complete the picture of nonprofit organizations as innovative actors who provide the social and economic context by which the transfer of skills or frameworks leads to local innovation. Government planners, foundations, and concerned members of the private sector must do more to build partnerships, including financing civil society, to encourage social entrepreneurship, which produces the basic infrastructure that is seen to lead to innovate new economies.

### *Creating social entrepreneurs*

Beyond funding, economic planners must set the conditions for innovation in civil society by creating an environment for social entrepreneurship. “Social entrepreneurship describes a set of behaviors that are exceptional. These behaviors should be encouraged and rewarded in those who have the capabilities and

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<sup>55</sup> Pusser, Brian, Et. Al. “Entrepreneurial Activity in Nonprofit Institutions: A Portrait of Continuing Education.” In New Directions for Higher Education. Vol. 2005, Issue 129. p. 28.

temperament for this kind of work. We could use many more of them.”<sup>56</sup> Technology can be a catalyst for social entrepreneurship, especially within community-based organizations, because IT creates opportunities for committed socially-minded leaders to innovate in environments with limited resources. Creating competitive processes, rather than relying on established networks for receiving government funding, foundation and private sector sources do a good deal to level the playing field for aspiring entrepreneurs. While these organizations are generally innovative, social entrepreneurs generally have lower organizational capacity than traditional NGOs. As leadership is identified through competitive funding processes, those innovative organizations must be supported by nonprofit technology assistance providers with ongoing education and management assistance.

*The Effect of Web 2.0: From Organization To Network*

Web 2.0 technologies such as social networking, blogging, and podcasting create multi-modal networks where all are consumers and all can be producers of content. Like with technologies before Web 2.0, nonprofits have been slow to understand how their operational processes and organizing strategies can utilize what is new on the Web. Even as staff and constituents across economic strata become familiar with the new technologies in their everyday lives, nonprofits have seen the new tools to be beyond their grasp. However, as costs and barriers to entry fall, the training and

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<sup>56</sup> Dees, J. Gregory. “The Meaning of Social Entrepreneurship.” First Nations Technology Council. p. 6. (<http://www.fntc.info/files/documents/The%20meaning%20of%20Social%20Entreneurship.pdf>)

strategic gaps outweigh the technology as the limiting factors. For example, by allowing volunteers to blog (maintain an online diary) about their experiences with an organization, volunteers can share the importance, mission and work of the organization in potentially more relevant and meaningful ways than has been possible with traditional fundraising communications. By connecting such online and offline activities across similar organizations and volunteers, new communities can be formed and mobilized for social change through the informal arrangements and bonds of a social network. The technology to accomplish such things exists; effective access, understanding, use, and support do not.

Nonprofits are not yet positioned to engage their constituencies in these innovative multi-modal conversations and activities that are occurring in other sectors. Intermediaries will be vital yet again to the adoption and effective integration of these technologies into nonprofit operations. Indeed, with the need to deepen connections with donors and volunteers, the uses of these new technologies and practices may be more necessary than ever in the nonprofit sector (and may even surpass that in the private sector). "To maximize their potential, these networks often move both horizontally and vertically. Not only do they engage services across sectors, but they

also employ the concepts of devolution...<sup>57</sup> that represent the new paradigm of relationships between sectors.

Beyond providing the enabling technologies, intermediaries will be important nodes on the network that convene the appropriate organizations, leverage strategic expertise and advocate on behalf of additional resources from funders and governments for the support of community goals in the network. Thought leaders amongst the various actors can use these various policy recommendations to catalyze a new era in developing the common good as networks of concerned individuals and organizations lead social change. Indeed, solving the enormous issues of our day such as combating the AIDS crisis, eradicating poverty, and solving global warming can not be solved by one nonprofit, one foundation, or even one country. These issues require a network of like-minded organizations, working together both formally and informally, leveraging strengths while eliminating inefficiencies. The use of technology and intermediaries as catalysts for effective use of the technology will be central to building the capacity of networks to better achieve their mission through great technology-driven efficiency and innovation.

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<sup>57</sup> Goldsmith, Stephen and Eggers, William D. Governing by Network. Washington DC: The Brookings Institution. 2004, p. 37

## VIII. Appendices

### Appendix A. Survey Instrument: Nonprofit Technology Adoption and Use Study

1. You have been asked to participate in a research study conducted by Stephen Rockwell, from the Sloan School of Management at the Massachusetts Institute of Technology (M.I.T.). The results of this survey will be used in a Master's Thesis as part of Stephen Rockwell's MBA program. You were selected as a possible participant in this study because of your leadership in the nonprofit sector and your general awareness of the role technology in the nonprofit sector. Your participation in this study is completely voluntary and you are free to choose whether to be in it or not. If you choose to be in this study, you may subsequently withdraw from it at any time without penalty or consequences of any kind. Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission or as required by law. The aggregated information will be provided as part of a Master's Thesis and no individual information will be made publicly available. Specific consent for use of individual information will be solicited if necessary. If you volunteer to participate in this study, we would ask you to do the following things:

- Indicate your agreement to participate in the web survey by clicking on the appropriate box below.
- Complete the following web survey. The survey should take approximately 10 minutes. This study will provide the nonprofit sector will detail critical factors for successful adoption and effective use of technology within the nonprofit community.

If you have any questions or concerns about the research, please feel free to contact Stephen Rockwell [stephenr@mit.edu](mailto:stephenr@mit.edu), 215-317-1865 with any questions or concerns.

**By clicking here, I agree to participate in this study and indicate my understanding of the procedures described above.**

2. Your Name:

Page 2: Nonprofit Technology Adoption and Effectiveness Study

3. Your Job Title:

4. Organization Name:

5. Type of Organization: (If a relevant choice is not available, please specify in the text box below)

- Arts
- Community Service/Volunteering
- Consulting
- Disability
- Economic Development
- Education
- Environment
- Health and Human Services
- Housing and Homelessness
- Human Rights and Civil Liberties
- Immigration
- Job Training
- Legal Assistance
- Media
- Poverty and Hunger
- Religion and Faith-based
- Wildlife and Animal Welfare
- Other: \_\_\_\_\_

6. Where is your Organization located?

- Delaware Valley – Philadelphia
- Greater Boston
- San Francisco Bay Area
- Other: \_\_\_\_\_

7. When was your Organization founded?

- Less than a year ago
- 1 – 5 years ago
- 6 – 10 years ago
- 11 – 15 years ago
- 16 – 20 years ago
- More than 20 years ago

8. How many paid staff does your organization have?

- No paid staff
- One staff
- 2 – 10 staff
- 11 – 30 staff

- 31 – 50 staff
- 51 – 100 staff
- More than 100 staff

9. What's is your organization's operating budget?

- Less than \$25,000
- \$25,000 - \$100,000
- \$100,000 - \$250,000
- \$250,000 - \$1 million
- \$1 million - \$5 million
- More than \$5 million

### **Page 3: Your Organization's Adoption and Use of Technology**

10. What do you feel is the overall rating of the amount of technology available in your organization?

- 1 Not at all sufficient
- 2
- 3 Moderately sufficient
- 4
- 5 Very sufficient

11. What do you feel is the overall rating of the usage of technology by the staff and volunteers within your organization?

- 1 Minimal usage
- 2
- 3 Moderate Usage
- 4
- 5 Maximum usage

12. Does your organization have the capability to accept donations online?

- Yes
- No

13. If your answer to the previous question was yes, what year did your organization begin using the online donation technology?

- Less than a year ago
- Between 1 – 2 years ago
- Between 2 – 3 years ago
- Between 3 – 5 years ago

- More than 5 years ago.

14. Does your organization use any technology for constituent relationship management (CRM)?

- Yes
- No

15. If your answer to the previous question was yes, what technology are you currently using for CRM?

- MS Excel or other Spreadsheet
- CivicCRM
- Kinterra
- Convio
- MS Access database
- Other (please specify)

16. If you use technology for CRM, when did your organization start using it?

- Less than a year ago
- Between 1 – 2 years ago
- Between 2 – 3 years ago
- Between 3 – 5 years ago
- More than 5 years ago

17. Does your organization use Web 2.0 technologies such as blogging, podcasting, RSS streams or social networking tools?

- Yes
- No

18. If your answer to the previous question was yes, when did your organization begin using the Web 2.0 technologies?

- Less than a year ago
- Between 1 – 2 years ago
- Between 2 – 3 years ago
- Between 3 – 5 years ago
- More than 5 years ago

19. To the best of your knowledge, how many times in the past has your organization used a technology consultant or an intermediary for the adoption of a new technology in your organization?

- Never

- 1 – 3 times
- 4 - 6 times
- 7 – 10 times
- More than 10 times

20. If you have used a technology consultant or intermediary in the past, please describe the services that they provided:

21. If you have used a technology consultant and/or intermediary in the past, how do you rate their overall performance in helping your organization adopt the technologies?

- 1 Very Poor
- 2
- 3 Moderate
- 4
- 5 Very Good

#### **Page 4: The Nonprofit's Sector Adoption and Use of Technology**

22. What do you feel is the nonprofit sector's overall proficiency with technology.

- 1 Not proficient
- 2
- 3 Somewhat proficient
- 4
- 5 Very proficient

23. Overall, would you say that funding for technology in your region is

- Inadequate
- Adequate
- More than Adequate
- Don't know

24. Overall, would you say that the availability of technology consultants or intermediaries in your region is:

- Inadequate
- Adequate
- More than Adequate
- Don't know

25. Please share anything else about the state of nonprofit technology or technology assistance/consulting in your region?

## Appendix B: Social Entrepreneurship Case: Rationale for Municipal Wireless Networks

*Digital Divide arguments* claim in their most optimistic form that the provision of Internet access ultimately will alleviate existing socio-economic divides. In less enthusiastic assessments, proponents state that Internet access is necessary to ensure that existing conditions of inequality and poverty are not further exacerbated by unequal technology provision. Across the spectrum of such arguments, many commentators choose to focus on the education and economic aspects of inequality in order to demonstrate how the provision of technology specifically will assist disadvantaged populations.

- *Education:* Numerous academic studies indicate that when students do have access to technology, it “can have a positive influence on students at risk of failure.”<sup>58</sup> With so many students failing to graduate from schools in low-income neighborhoods (as many as two-thirds of the students in the Philadelphia case), the provision of technology could reinforce classroom education, improve communication among parents and teachers, and provide a valuable resource for both research and learning.

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<sup>58</sup> Hall, Georgia and Israel, Laura. Using Technology to Support Academic Achievement for At-Risk Teens During Out-of-School time: Literature Review. (<http://www.americconnects.net/research/litrevNIOST.pdf>) America Connects Consortium at Educational Development Center: 2004. p.8.

- *Economic:* Poor communities already outside the mainstream economy become even more isolated without access to e-commerce that has helped to improve information for consumers and kept prices lower. Families with limited resources can stretch their dollars further through online commerce. Beyond improved connections to the mainstream economy as consumers, contact with the computer and the Internet will improve the skill sets for participation in the new economy workforce. Finally, state and local governments are using technology to improve delivery of social services including eligibility determination. Access to the Internet can increase a family's ability to access the social service system to take advantage of all the poverty alleviation programs available to them.
- *Economic development* – Increasingly, broadband access to the home is being looked at as an indicator of development. “The United States ranked 12<sup>th</sup> in the world at the end of 2004, a figure that is falling, not rising, according to the Organisation for Economic Co-Operation and Development.”<sup>59</sup> Internet penetration into the home assumes a population that is more facile with technology, students who understand computers and seek engineering and computer science education, and small business owners that use e-commerce

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<sup>59</sup> Duryee, Tricia. “U.S. cities weigh broadband access.” Seattle Times: May 30, 2005.

to expand their businesses. “Leonard Ray, president of the Fiber to the Home Council, which supports the development of high-speed Internet, said ‘providing access is important beyond telecommuting or sending videos of your daughter to your grandparents. It goes to the productivity and security of this country years down the road,’ he said. ‘Will this country have the electronic infrastructure to remain on top?’”<sup>60</sup> Ensuring access will help cities and the nation to remain economically competitive.

- *Universal Internet access is a public good:* Ensuring ubiquitous Internet access has tremendous positive societal externalities beyond economic development. Post-Katrina New Orleans provides an example as the city government determined that WiFi access would assist the rebuilding process, encourage residents to come back to the city, and assist in future emergency response situations.
- *Internet access should be viewed as a utility like other city services:* “‘Increasingly, city officials view broadband in the 21<sup>st</sup> century the same way they viewed electricity 100 years ago and telephone service 50 years ago. It's falling into the category of a necessary and essential social service,’ said Ben Scott, policy director of Free Press, a nonprofit group that favors the development of

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<sup>60</sup> Ibid.

municipal wireless.”<sup>61</sup> Similar to sewer, electric, water, and home heating, Internet access is another utility necessary for successful participation in society. Programs such as LIHEAP that help low-income families pay for heating in the winter, could be created for Internet access if municipalities considered Internet a utility.

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<sup>61</sup> Mohammed, Arshad. “Philadelphia to Be City of Wireless Web.” Washingtonpost.com: October 5, 2005.