THE FEASIBILITY OF CREATING AN INTELLIGENT COMMUNITY

Key Lessons in Principals, Policies and Best Practices

The manufacture of information is now more profitable than the manufacture of industrial goods, thus the information revolution has spearheaded an information age in the twenty first century. The digital divide under these circumstances, was a case of disposable information and technology saturating under-served communities offering no skills training, career development, scholarship opportunities, manufacturing or distribution were the advertising, entertainment, information production, technology and broadcast media industries make generous annual profits. The solution became assist people in cities and towns across the country by creating communities of learning and providing reliable, high-speed access to the internet; intelligent, integrated, multi-media technology and the training and resources to develop themselves according to their needs. We dubbed this solution an "Intelligent Community."

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1. The Feasibility of an Intelligent Community

With collective global information doubling every five years, the means to capture, sort, package, archive, and disseminate that information has become a new industry. The manufacture of information is now more profitable than the manufacture of industrial goods, thus the information revolution has spearheaded an information age in the twenty first century. The "digital divide" under these circumstances, is a case of emerging information and technology saturating under-served communities offering no skills training, career development, scholarship opportunities, manufacturing or even a distribution plant where those advertising, entertainment, information production, technology and broadcast media industries can provide a community based return on investment in recompense for the generous profits they reap annually.

One approach to closing this particular "digital divide" problem is to create an "intelligent community" from a state-of-the-art distribution point. An intelligent community is a technologically connected community of place and/or ideas where distance learning can take many shapes and forms depending on the available hardware and software - from video taping a session and loaning out tapes or CD's through a library archive, to live feed via microwave technology better known as satellite conferencing. An intelligent community model could get residents engaged by supplying beginner training or informational courses supplied through a multi-media/video distribution point that could be accessed via TV or computer.

One of Boston's most technology deficient communities, where a sustainable model of an intelligent community should be built and tested is Roxbury, MA, USA. When we talk about

closing the digital divide in Roxbury, we are not just talking about access to computers, we are talking about quality access to the Internet and/or designing a network infrastructure to increase the economic empowerment of Roxbury's residents and their skills capacity to participate in the new Information Economy.

Roxbury has recently been the beneficiary of an entrepreneurial visionary who left his estate in trust to the City of Boston almost 100 years ago, to enhance the economic benefit of its residents. Mayor Thomas Menino decided to use that trust to support his technology initiative connecting schools, community centers and libraries. And after three years of planning, forty community-based organizations were selected as beneficiaries for the Timothy Smith Trust. The Trust provided funding for the state-of-the-art technology for the next twenty years via this endowment. These beneficiaries have been designated as Timothy Smith Computer Learning and Education Centers. The average Timothy Smith Learning center has approximately 15 workstations including professional quality furniture, computers, software and peripherals such as printers and scanners. Over the next 20 years, the project in its entirety is estimated to be worth a $25 million dollar capital investment. The types of centers funded range from churches and medical clinics to YMCA's and social welfare agencies. Most of the site managers/trainers have backgrounds in business administration and/or social work.

With a 20-year endowment in place for technology, software and furniture; Roxbury has three quarters of the pie needed to take advantage of opportunities in information technologies; we only need to raise the final piece of the pie - corporate support. The 20-year endowment for technology, furniture and software means there is no technology limitation to how one creates,

stores, distributes and archives information. Future developmental training and instructional choices remain with the expertise of the professors producing and telecasting courses and the receptivity of students retrieving that information. Once the intelligent community in Roxbury is completed, it can become a community of ideas that will serve as a model for other communities globally.

2. Integrating Technology And Education With Communities

There are fundamental changes taking place in communities when the market drives corporations to build a metropolis for technology use and industry growth right on the edge of its boundaries. Boston's community neighborhoods have a rich history as a source of labor in the shipping, maritime and manufacturing industries. With puddingstone mines now closed, and shipping and manufacturing dispersed to more economically viable cities and means, Boston's neighborhoods are facing the daunting task of learning to participate in a burgeoning Information Economy with industrial economy education and skill sets. One might ask, how difficult could it be to find work and opportunities to support a family in this major city?

Metropolitan regions bring together the infrastructure, human capital and skills, the concentrations of world-class universities, high level service industries, the social and cultural facilities, the venture capital, and the "quality of life" advantages that information, digital and media industries require. They foster dynamism, creativity and innovation. They help insulate against the risks and volatilities of globalizing markets. And their sheer energy and diversity drives all leading-edge markets for electronic goods, service and E-commerce. Such assets mean that successful metropolitan regions are, in effect, the furnaces of the digital world.

Stephen Graham,[1] Visiting Professor, MIT 2000

However, the architecture of economic segregation has been historically entwined with the architecture of information technology. Business requires that telematics infrastructures: telephone, fiber, ISDN, satellite and cable networks get placed in economically viable neighborhoods, so that information technologies built upon these networks give those who have access economical, social and intellectual benefits. But those who do not have access are left in exile, leaving poor communities under-served and attempting to straddle the chasm called the "digital divide."

The information highway must not be an overpass that gives only its shadow to the neighborhoods or an expressway through rural villages and around reservations. Our task is to make sure that there are on and off ramps to and from all communities. Therefore, the under-served should be invited to learn as much as possible about the technology, become politically aware of its implications and benefits, and acquire the skills in using the tools as a vehicle for politics, economics, and the financing of the systems. After which, we must form the networks that will join the millions of people in the process of making the technology a vehicle for all to drive, and the information highway the road most traveled.

Mel King, Community Fellows Program, DUSP, MIT 1990

3. The Astonishing Current Growth in Electronic Communications is Reinventing Community.

There are variances on the measurement of "astonishing" for the current growth in electronic communications. Several relatively popular distribution point references include the computer measure, where machines purchased today may be outdated within three years; another is the communications infrastructure measure; where wireless technology in three short years has dominated the global market; and the speed of merger measure where telephone, cable and technology companies have merged to provide a variety of single point of service opportunities such as Internet, telephone and cable products through one vendor, and finally the impact measure where local communities try to get residents caught up with the pace of training and information so they can participate in economic trends.

The growth of electronic communications is also causing new opportunities for small business to compete with major corporations in a global market place by bringing a technological transformation to the way business and leadership interact with community; i.e. one example is Internet radio. It would not be possible for one to own or run a successful all poetry or all fishing radio station in any major city in the US; however, globally a large enough community of interest can be attracted to financially sustain a highly specialized art form, hobby, or eccentric learning format.

According to Bill Mitchell, Dean, School of Architecture and Planning, MIT[2],” electronic infrastructures and resulting telecommunications shape cities, communities and societies by

underpinning the relationships between them." Bill Mitchell believes that network infrastructures are crucial for growth in size and complexity of cities because they distribute resources and opportunities. As the distribution of resources and opportunities take place, network infrastructures transform cities, not only in growth and larger populations, but they redistribute resources and opportunities. Mitchell's examples point to the fundamental changes that take place in communities when the market drives corporations to build a metropolis for technology use and industry growth in a city center. The effect is a resulting fragmentation and recombination of established urban patterns, which recombine to reinvent communities. Throughout history for instance, piped water decentralized bathing; electronic power decentralized tasks performed at sites of water; the telephone allowed the separation of management from production sites; and transportation distanced housing from work.

If we use Bill Mitchell's perspective as a framework for examining Boston's communities, the shifts and changes going on at the community level can be charted and measured. The easiest barometer is the sudden emergency call for a shift in teaching, training, and curriculum in the public schools system exacerbated by the controversy over the MCAS exams. The exams were designed to bring our children up to world-class standards in education, but because the public schools have been entrenched with the reluctance to change for so long - the teachers were not ready for the required skill sets and had no way to prepare their students. A call to action led to a call for transformation in training teachers, sending school representatives to citywide meetings, curriculum development opportunities, and a variety of trainings; resulting in a base for preparing students which targets all schools. The projected outcome will mean that Boston can, once again, boast of world-class public school training. This is an optimistic outcome directly

associated with a fragmentation of habits, derivative from established patterns of remedial skills and high dropout rates to a complete recombination in teacher and student training. The challenge before us now is how do we keep under-served communities connected and involved enough to participate in an information-based global economy?

4. Reinvented into an Intelligent Community

Smart Communities Consultant Walter Siembab[3] and Telecom City Designer Anthony Townsend[4], have created models which take different approaches to addressing the problems of under-served communities. Siembab designed a tele-village to replace the need for most auto and public transit. He emphasized that the right mix of electronic and face-to-face meetings could mean a tremendous savings in travel and interaction costs if government, transportation and civics institutions such as churches, public institutions, libraries and schools all became routinized into short distances of travel. Examples he gave for potential savings in commuting were related to $500 million dollars being spent on building 2½ miles of highway in LA and by pointing out that Boston's "Big Dig" was costing its taxpayers much more. Siembab emphasized replacing increased building and automobile transportation with technology by re-making centralized organizations like shopping malls into information technology access and distributor organizations. We can put mobility, economic development, redevelopment of communities, and civic government in one central location to enable people to access easily by walking. His model, "The Blue Line Televillage" used this collective strategy. It was designed in a mall space that citizens could access via public transportation to train in a variety of new technologies for any number of reasons, including small business development.

Anthony Townsend on the other hand, designed a corporate model calling it Telecom City, where he used an abandoned industrial site bordering three towns in Massachusetts. Telecom City included an applied research institute, lifelong learning skills center, a product commercialization center, an advanced manufacturing center and a strategic business services center. Townsend's model was designed and proposed to investors interested in the underpinnings of an entire infrastructure for intelligent development. Aspects of both models need to be included in the telematics infrastructure of an "intelligent community." The City of Boston Trust Timothy Smith Endowment creates the opportunity to build a long-term, sustainable model of an intelligent community in Roxbury that combines both Walter Siembab and Anthony Townsend's models.

Increased building and transportation has already been negated by placing the technology centers within close proximity to each other. An intranet infrastructure will actually connect the community-based-organizations (CBO's) so that public service and training information can be easily accessed using the endowed technology; in this way the networked CBO's can become one community sharing data and resources intelligently. Because one site is located at Roxbury Community College, other colleges by way of mission or articulation agreement, can be linked to offer graduating residents a wide variety of matriculation and cross registration programs. At the same time this intelligent community will create off-campus classrooms through an extranet. This extranet community has the potential serve as a research institute, lifelong learning skills center, a product commercialization center, advanced manufacturing center and a strategic business services center, as proffered by Townsend's model.

Within the proposed intelligent community is an opportunity to transform how Roxbury Community College teaches and communicates by using the Timothy Smith sites as satellite campuses which offer live and on-line courses using the intelligent community infrastructure, supporting both the college and CBO missions. The endowment puts Roxbury Community College in the position of a supportive hub or central site where the other sites funded can receive the credentialing necessary for course credits as satellite campuses of the college. Were the economy can turn on a dime, this endowment for technology, software and furniture is assured because only the interest on the original trust is being allocated over the next 20 years.

With technology, software and furniture sustained, distance learning will be assured and can be designed from a state-of-the-art distribution vantage point. Distance learning can take many shapes and forms - from video taping a session and loaning out the tapes/CD's through a library archive, to live feed via microwave technology better known as “satellite conferencing” or “courses on demand” through a multi-media/video distribution and management. Digital media and integrated technology guarantees there is no limitation to how one creates, stores, distributes and archives information. The choices remain with the audio and video expertise of the professors producing and telecasting the courses and the students retrieving that information.

With the first phase of the endowment (selecting sites) closed as of September1999, and the second phase, site development underway from January 2000 -2002; it has become crucial to understand how telematics infrastructures are planned, organized and implemented.

In order to base a telematics infrastructure on the goal of a networked intelligent community in Roxbury, we looked at the types of centers funded, and their infrastructure resources. A needs assessment of Roxbury's technologically funded sites was taken. At the time, most of the site managers/trainers had no real understanding of telematics, intelligent communities, multi-media, mass media, digital electronics, global organizing, or competitive intelligence. Getting these sites connected to a central hub to network with each other, and keeping the hub connected to - and involved in Boston's metropolitan development, will require both the right mix of electronic and face-to-face meetings with government, transportation and public service institutions that will support the intelligent community.

5. In Search of Community, Can We Network Ourselves?

Because a lack of understanding around the issues and applications of policy, planning and design for an intelligent community have been a stumbling block for the development of Roxbury's Timothy Smith Sites, a conference was designed at MIT with the general goal of gathering the funded community organizations to explore several difficult questions. How do we keep our organizations and community connected and involved enough to actively participate in the information economy? And what policies have to be in place for the successful design and sustainability of Roxbury's Timothy Smith sites to serve as an intelligent community?

After a morning needs assessment was taken, it became obvious that getting all of the sites wired with high-speed Internet access would have to be the first order of business. The sites shared infinite issues around the politics and capacity of internet service as providers based on city

infrastructure, building/facilty problems and the cost of provider services. The choices: fiber, ISDN, phone, cable, satellite or wireless were limited by each of the Timothy Smith site's older buildings, architectural geographics and neighborhood population density. One solution, according to both Siembab and Townsend's models, would be to design the infrastructure as a project and propose it to service providers who can be sold on its worth as a long-term service investment.

During the second half of the conference, Timothy Smith site managers met in four groups and discussed what they had learned, what they needed, and how we should design a schedule for the coming months as a group to meet those needs. A collection of notes from each group defined a list, which include the following fifty-two (52) basic needs:

1. Strengthening of after school programs
2. Renovation of buildings and spaces
3. Learning to use computers to create programs for kids
4. Creating partnerships for internet, e-rate & government discounts
5. Getting related curriculum materials
6. Bringing parents through job readiness training
7. Sharing resources through between site connectivity
8. General group purchasing
9. Collaboration with grant writing
10. Standardizing curriculum
11. Networking sessions and support for administrators

12. Satellite access

13. DSL connections

14. Distance learning applied to conferencing

15. Breaking down barriers between trainers, educators and learners

16. Team teaching with seminars and over a web site

17. Supportive curriculum and training for MCAS testing

18. Connecting communications with the group as a whole

19. Setting up a structure for committees and weekly meetings

20. Support with outreach targeting Roxbury residents via demographic group

21. Hardware repairs, maintenance, and technology proficient staffing

22. System assessment and tech support

23. Financial support and/or service resources

24. Advanced program development and expansion

25. E-learning capability

26. Professional development to enhance and upgrade staff knowledge

27. Best protection practices with virus threats

28. Desktop publishing workshops

29. Meetings that do not take a full day

30. Group payment of tech support staff to serve all sites

31. Site manager's needing control over site project and its development

32. Educating site administrators about program level needs and development

33. Setting a baseline commonality with site technology and staffing

34. E-mail for all sites

35. Marketing for open access

36. Shared resources and information on best practices in purchasing

37. GED program support

38. Referrals across Timothy Smith network

39. Developing a Timothy Smith directory

40. Priority issues of staffing and funding

41. Crisis referral

42. Information, training and preparation for going global

43. Internet scavenger hunt

44. Knowing what is available among sites

45. Sharing basic knowledge among sites

46. Subject based meetings - should go forward on a topic basis for future

47. Better use of on-line community(ies)

48. Bulletin board Q & A

49. An established Timothy Smith site organization

50. Merits needed to continue as a site and as a group

51. Discussion of structure and/or partnerships with IITE

52. Implementation of user databases

The forty (40) Timothy Smith sites are operating as autonomous sites with the desire to collaborate. The first attempt to connect all 40 sites was with a group e-mail service. However, approximately 1/3 of the site managers did not know how to access the internet and another 1/3 didn't have access. Therefore a series of internet workshops was designed to get everyone on the

same intelligent community page. These workshops will include the history of the internet, its use and access, free e-mail, list serves, e-groups, and domain service providers. The curriculum package will include a take home CD burned with a free internet service provider (ISP) such as NetZero, a browser, i.e. Netscape, and NetMeeting for easy installation. Free service providers will be used until the community centers can generate the funds and expertise necessary to operate and sustain a cyberspace office.

After spending a year in Fellowship at MIT doing the research and practical work needed to reorganize, sustain and implement an organization flexible and creative enough to be dedicated to meeting, supporting and sustaining such goals at the pace of economic change, the final phase of documentation was filed to move the intelligent community model from a research project to an expanded service in a not-for-profit corporation. The Institute for the Integration of Technology and Education (IITE), was created to help residents and CBO's manage the learning curve of change from place-based analogic resources to cyberspace resources with strategies and plans for the assessment, organizing, planning, development, design and sustainability as an intelligent community. The mission of IITE is to help individuals and organizations use instructional technology to build capacity to participate in the rapidly changing information economy. IITE will approach capacity building through infrastructure/classroom design, curriculum development and applied usage. An alliance has been formed between the City of Boston Trust Timothy Smith Foundation, the Institute for the Integration of Technology and Education and Roxbury Community College to build satellite conference center. The Alliance is meeting regularly to create a hub where mixed media production and distribution can be managed and transmitted using both internet and microwave technology.

6. Why Roxbury as an Intelligent Community?

As a group, CBO's like the Timothy Smith funded sites in Roxbury have strengths that many small businesses do not. The fund makes them technologically wealthy for twenty-years, and each site performs a service much like the departments in a college or corporation. When the Timothy Smith sites come together they will form a micro-university of service delivery capacity, with a variety of advantages that larger organizations and institutions of higher learning cannot provide, such as one point of access for many types of social enterprise services.

Community based organizations know their clients and their families, and can vouch for them, provide resources for them and coach them through their growth and development. CBO's are the personal trainers and political brokers of the low-income community. Some CBO's have been in Roxbury for almost 100 years. Like it or not, as Timothy Smith sites, the CBO products and services delivery list also includes access to technology, curriculum and training; and if they can master the infrastructure and connectivity, they will bring their clients into rapidly emerging regional, national and global marketplaces.

What can other cities or towns possibly do to be more prepared? On the boundaries of Roxbury, conglomerates are building towers for merchandising and community organizations have not been invited to the table. So, how do these CBO's make sure the corporations are fair to the residents in the communities they serve?

One solution would be for CBO's to take a different approach to their client base and begin to define their needs as a market segment. They can meet those definitions with a well thought out and structured plan that will take residents into the year 2020 and beyond. If these CBO's gather their statistics, charts, files and databases, and organize that data into meaningful information and display it competitively in a promotional and development campaign - they can present their position to neighboring corporations in a way corporations understand. Once linkage and understanding takes place, corporations and CBO's will be able to network and plan around their economic needs before the burgeoning information economy fully and negatively impacts the community. These findings can be brought back to community residents with an interesting, provocative and intelligent promotional and developmental campaign.

What policies would have to be in place? Communities need to be informed about the boundaries of corporate expansion in the context of requiring community protection, technology integration and connectivity engagement. Mandates should also require a quarterly reporting on how corporations are working to make their investments in the information economy benefit the community with a show of best practices. Open information and public awareness campaigns using media to educate residents should be utilized.

What practices should be pursued? Business is taking over education where the schools leave off, and the parents of children who invest in the technology are seeing their dollars leave their community with a nominal percentage of return. If cities and townships are required by law to invest an equivalent percentage of citizen's tax dollars back into the cities and townships, shouldn't business be held to the same standard? And if cities and townships benefit by clean

streets, better schools, and facilities, wouldn't business also benefit from a community investment of their dollars by training and hiring its consumers? Successful programs will require monitoring and quarterly reporting of corporate investment into community and social enterprise activities.

7. Alliance with Roxbury Community College

Connecting local schools, community centers and libraries that are working to empower disadvantaged groups to kindred individuals in communities and organizations globally will enable each to see and experience a broadening kaleidoscope of perspectives. For instance: imagine what will happen if youths, adults, and senior citizen pioneers from different countries working on similar efforts share ideas and strategies to solve one community problem such as racial or religious harmony? Global synergy would create "out-of-the-box" thinking suddenly owned by the group and solutions could be tried by all involved. What works could be turned into curricula and what doesn't work could be sent back to the drawing board. This dialogue, sharing and understanding, will create civic engagement and promote global equity. Such a combination of intergenerational, international, civic and civil rights engagement will create natural segues ripe for dialogue on health, education, economics and other priority issues.

One such relationship is developing through a strategic alliance between The Institute (IITE), Roxbury Community College (RCC), and the City of Boston Trust Timothy Smith Foundation. This alliance will serve as the hub network for the proposed intelligent community and satellite conference center for distance learning on the site of Roxbury Community College. RCC is

providing space and utilities; IITE is providing capacity building through infrastructure/classroom design, curriculum development and applied usage; and the City of Boston Trust provides the technology, software and furniture. The space that has been designed to be used 50% of the time by the students, staff and faculty of Roxbury Community College and 50% of the time by community residents who are not students or members of the college. The idea is to familiarize residents including families, community practitioners and students with the range of equipment and training that comprise the technology age and the burgeoning information age, and to matriculate them into college and competitive careers over time.

Research for IITE actually ran from 1984 - 1994, with direct alternative education services in English literacy using applied methods in broadcast media. However, technology markets created a change in industry requiring service providers to expand into job readiness training. So after some 50 short-term projects with a variety of community-based organizations, IITE incorporated in 1995 to include organizational capacity building for CBO's to keep up with the demand to build/design their own high-technology infrastructure and classrooms. By 1999, IITE had formed consultative relationships with a number of community-based organizations and academic institutions, bringing substantial funding to optimize and tie technological capacity to support human service agency programs and service missions. And finally, increased technological capacity created an immediate demand for instructional training integrating technology and education which IITE designs as part of a Public Relations and Marketing workshop and seminar series for administrators, trainers and human service agency constituents.

RCC's goal as part of the alliance is to create distance learning educational opportunities for students locally, regionally and globally. Roxbury Community College serves the higher education and community learning needs of all greater Boston area residents. RCC particularly addresses special community interests for those who have been historically deprived of, and now aggressively seek, quality public education, and social and cultural enrichment. RCC's participation in the alliance came about because of the vision of President Dr. Grace Carolyn Brown to offer distance learning to the colleges current and potential students. Alliance discussions around training schools, community centers and libraries have evolved to the inclusion of broadcast media, music and theater arts in developing the Timothy Smith Computer Learning Center, and a Satellite Conference Center at Roxbury Community College. Satellite conferencing has set the stage for the types of technology and software to be purchased to produce print, radio, TV, film, and music from performances which will eventually be transferred to CD, Internet or live feed for PictureTel and satellite conference productions.

The City of Boston Trust Timothy Smith Foundation goals illustrate Mayor Thomas M. Menino's technology initiative to connect schools, community centers and libraries. The Smith Fund for "Old Roxbury" is a vehicle to bring the benefits of computer technology to as wide a population within the target area as possible. Once established these centers will provide in total more than 1 million hours of computer access to be utilized for a variety of programs including job training, educational enrichment and open access.

The mid-range and long-term goals of the alliance are to help communities to help themselves enhance their quality of life through collaborative efforts using the intelligent community

medium to build cultural bridges for ongoing dialogue between communities locally, regionally, nationally and internationally. Because every community is in some stage of working on its goals and needs, natural partnerships can be formed with corporations and organizations to extend civic efforts underway by providing on-line networking opportunities, classrooms, workshops and conferences where they can compare notes and develop new ideas.

Collaborative projects will be created through an intranet for community advocates, a virtual office space, which allows direct connectivity between user sites regardless of community or country. Community advocates locally and abroad can dialogue, share research, evaluate and identify effective strategies, best practices and obtain better information on what works and why. This intranet will be both a center for sharing ideas and resources as well as a forum for advocates to heal and develop their professional skills.

In addition, a client extranet will allow community advocates to create virtual classrooms, workshops and demonstration spaces to engage community residents. In this way advocates can give communities access to valuable information and services by assisting them in developing a wide array of skills as knowledge workers. One classroom lesson plan might include video streaming outtakes from broadcast news or findings from the "Truth Hearings" in South Africa which invite residents from around the world to observe lessons, ask questions, and compare similar experiences. Other classroom sessions might include democracy issues where jury panels are held between countries to discuss the power of the emerging global medium to benefit society. Also included will be curricula on the strengthening of communities and economies

through development efforts such as entrepreneurship to lower significant disparities such as trade between countries in low-income and minority populations.

What policies would have to be in place for the successful design and sustainability of Roxbury's intelligent community? One of my graduate student classmates at MIT, Tunua Thrash,[5] presented an excellent model using corporate resources to leverage community technology. Her strategy was to have city and state mandates for public/private ventures designed to include the complete participation of intelligent communities a requirement to do business in Boston and/or Massachusetts. Drawing the funding from a percentage of allocated corporate taxes would be a seamless consistent cash flow protecting the city/state investment in infrastructure and planning; as well as developing intelligent community understanding, capacity and linkages. Representatives from intelligent communities also need to be completely involved at the board level in the design and development of projects with investors, city officials and involved institutions.

What "Best Practices" will keep our communities connected and involved enough to participate in the information economy? Electronic communications can be used to foster relationships between community and corporations through a core group of community representatives relating and working together. The communities first must prepare themselves by getting connected using available copper wire (telephone) and free Internet providers until they can do better. With this connectivity, community centers can work together on a weekly basis to research product development, giving them a competitive edge in a global environment. Using methods for applied usage of new technologies, technology canters can build capacity among

themselves to train a skilled and literate workforce of knowledge workers. Then CBO's collaborate to matriculate graduates into Boston's world renowned academic institutions.

8. Why Push Transforming Skills for an Information Economy?

B. Keith Fulton, Director of National Technology Policy Programs for The National Urban League6 stated, "It is up to the community practitioner to give meaning to the words digital divide, using technological and community frame works in scope and context to explain the problems and solutions of community building."

Fulton's statement brought me back to several observations from years ago - that can now be defined. Outside of schools, youths turned consumers had taken to new technology in droves. In the movie theaters, for instance, look at how many line up to put their money in the video vending games. In order for a child to master a video game vending machine, it takes an average of $30 a month, over 6 a month period to learn one game well enough to stay on it for 20 minutes without loosing money. Lets say the average cost of learning one game is around $150 semi-annually, per child. Ten children using one game will invest $1,500 annually. However, if you observe the after school teens, in places of business that have video vending machines, at least 10 teens per day invest their money, bringing the tally closer to $15,000 annually per machine. As a parent, I have seen my 3 children in line with 10 others waiting for someone to loose so they could put my money in. The Timothy Smith funded Roxbury Boys and Girls Club for example, installed 9 stand-alone video machine games that cost 25 cents per game, as a fundraiser with a population of 200 members, the games took in nearly $1,200 during the first few months. The

average per capita income for these families is about $20,000 annually. Think about the child's skills gained on this investment in newer, faster, better games over time. Public video vending machines do not provide urban communities with a return on investment. There is no relationship between money spent, skills gained, education or employment.

Home video games are in the same category, children are hooked on Nintendo and other sophisticated computer games, making no distinction between learning and play. Older kids have their TV's, VCR's, DVD's, CD players, MP3 players, boom boxes, camcorders, beepers, cell phones and PC's. Without realizing it entire families are investing in information technology through the entertainment industry, and through their investment are supporting and advancing the information industry toward the latest versions of high - tech software and technology without a return on investment. Corporations are benefiting from youth consumption and boredom, creating a booming US economy; and yet, offering no economic return for this unquestioned loyalty. The money parents have spent on these games (disposable technology and software) would be better invested in their child's skills development. If corporations invested in communities, they could introduce entertainment technology design and development as a curriculum and course requirement; replacing not only the dismantled trade and home economics classes in middle and high schools; but introducing career courses in higher education, giving parents and communities a return on their investment.

As a community practitioner to giving meaning to the words digital divide, a second observation comes to mind. Although our education system has been a public one for over a century, only its means of delivery, the schools have been public. The books they use are written for profit by

private individuals, and are published by for profit corporations The other links in the education chain have always been for profit: i.e. supplies, manufacturing, distribution, and the delivery of services. What is important in both of these cases is corporations need to be held accountable by the families, communities and schools that support them. The divide in both cases is disposable information saturating communities offering no skills training, career development, scholarship opportunities, manufacturing or even a distribution plant were the publishing, advertising, entertainment, software, information, technology and broadcast media industries make generous annual profits.

Fulton stated: "Elements of support to a successful program including: vision, leadership, infrastructure (both hardware and wires as well as an infusion of new methods and best practices), have to be built into the program design supported by both the corporation and/or technologically elite and the community. Innovative content and curriculum, professional development and upkeep, not just the people that keep the systems going but people who have an eye on the future, and evaluation should support program design. All of this could be done in a cyberspace world and integrated into the culture of under-served communities. The information nervous system is more than an underlying place, were we need to help people to help themselves. We need to reinforce workforce development, education and opportunity as well as civic engagement. If you look at a map that details the telecommunications infrastructure you'll find that the concentration of connectivity is in the corporate sector, and on that same map there might be one provider of connectivity in poor communities. What this means is there is no competition for services in poor communities and therefore poor communities are at the mercy of the vendor."

Ceasar McDowell, Executive Director, CRCP, MIT7 asked "What is it that the technologically elite can bring to the table? As we think about the issue of the digital divide, we have a tendency to think about infrastructure and access but not information or its mining, editing, packaging, licensing, distribution and use. Major corporations are no longer required to have public interests in mind. If the public is not at the table discussing the fundamental issues of what is right and wrong, the notions of culture and justice won't have anything to do with repairing the underlying structure of the digital divide."

Corporate issues in transforming how to do business in communities not only begin with consumption, who is able to afford the purchase of high technology, and what they are allowed to do with it. There are issues in production, what income groups or communities are able to take advantage of training in professional technology and software and can they help us produce new models. Other issues spread into dissemination, what income groups or communities do or should have access to jobs and careers that are opening in this field, is it easier to train locally, or abroad, do they partner with colleges or create their own universities and training schools based on the growth and pace of market demands?

With all of these corporate - community issues, how do residents from historically labor industry communities like "Old Roxbury," get involved in the transitioning of skills to meet the competitive economics of the Information Economy? When do industrial labor communities participate in the Global Frontier? And what are the policies and practices for transforming an industrial labor force?

What policies would have to be in place? The state of Massachusetts and the city of Boston need to set a standard for corporations to support and empower local communities beginning with a definition for the difference between exploitation and capitalism in community investment.

What practices? Projects and programs preparing communities as a consumer base and as a workforce should be included in a wide variety of career training, from software development to social investment opportunities in other countries. Corporate investment programs, funding and evaluation should be on the forefront of developing these programs.

9. Business Needs Investment In Community for its Success

B. Keith Fulton advised, "Lets not get too lost in the problems and overlook the opportunities in sustaining the work. The opportunity is connectivity to people, places, things and institutions. Connectivity assumes you have the power and the know-how to participate in connectivity. Even powerful organizations risk marginalization if they can't participate in the connectivity. Non-profits tend to be behind the curve, dot-coms far outnumber dot-orgs on the Internet. The information highway is only important for a smooth connectivity to a quality road."

The advantages business would have if it invested in community include: smart consumers, an educated workforce, convenient local support services, well kept surrounding streets and walkways, and interesting cultural places to eat.

Christian Jock, Head of Mass Geographic Information Systems (GIS) and the Community Preservation Initiative[8] demonstrated, "The best-case scenarios for democracy have business and community involvement participating in economic development. It's about trying to help people at the community level make decisions about their lives and futures. We give people the information they need about development so that they can make the best decisions possible. Information about urban economic development includes: land and zoning, build factors of residential lots, developable land, open space, redevelopment, soil, wetlands, retail, and absolute and partial building constraints. This information is intended to inform and motivate local decision makers about potential impacts of residential and commercial growth; and encourage them to consider alternatives if future growth is in a town under legal environmental constraints. Benefit from GIS technology is also greatest at the local level where a majority of land use decisions are made often by volunteer board members who have a little extra time to research the issues or check the facts brought before them. There is a community dynamic involved when people cluster around the maps; and legislators come out to meet and greet residents, mapping helps people who are not spatially literate to see what is going on in their communities. The obvious weakness is when you are talking about where growth could occur. People want to know exactly what is going on. The other thing is that people are not always going to get every thing they want, practical and business considerations interfere with the community ideal. But how do we engage people to understand that as a region, they have interests that go beyond their immediate needs? In order for us to get towns and community involved, an education process for residents has to take place through targeting specific groups, teaching them the potential and then having those people assist with getting the information out to the residents. It is not a top down methodology, it has to come from a grass roots philosophy."

Michael Batty, Center for Advanced Spatial Analysis, University College London[9], explained more extensively the economic changes taking place toward a global economy. "There is a need to get grips on the massive restructuring that is going on with all kinds of activities leading income away from town centers, toward out-of-town or edge-of-town, unconventional, retailing outlets, ether within a country or abroad. Technology is creating a dynamic which allows people to do business anywhere in the world and the revenue that city/community/town centers depend on is rapidly leaving for other destinations. A factor has been labeled urban sprawl. There is a need for the development of a new kind of urban geography as a prelude to new kinds of urban policy, which will enable various levels of community sustainability to be met. A geography defining community residents ability to earn livable wages as we move toward a global economy."

10. Economic Survival in an Information Society

According to Professor Stephen Graham[1], "Communities are becoming gentrified at an enormously fast pace, usurping the relationships of those long-lived neighborhoods. Not all cities can keep up with these community changes, but of those who can, many have lost their old world charm to become lean and mean business machines focusing on multi-media. The digital divide is not just between the haves and have nots, but between those who need to meet in person and those who need to be lean and mean. What is cost effective is not necessarily conducive to bringing people together."

Michael Moss, Airport Facilities and Maritime Cargo, NY [10], further explains, "We have changed the concept of time with transportation and air cargo. Overnight, Federal Express can take 500,00 packages of information and ship it so people can now order from any place in the world and receive it within a relatively short period of time. Maritime cargo is information intensive and we can set up a warehouse at the port, with all of the items in stock and none of it shipped to stores, but directly to consumers. This direct shipping methodology is having an effect on the growth of cities.

In addition, creative capital, research, and development funds are coming from interstate banking, which has now become the norm. Banks located the mid-west can own more business than those who pay the higher rates in the urban cities. The more electronic communication we have the more types of possibilities we have for face-to-face interaction, venture capital investment and research laboratories.

Intellect and cities don't necessarily work, if the cities aren't connected to universities, the cities lag behind. Creative venues like the music industry bring together creative discourse and this discourse launches more creative thinking, creative capital, research, development funds, and start-ups. Cities are now 24-hour environments, and this has become the time for competitiveness. Even the hotel industries are changing by their single unit meeting room size, in favor of the communal room size where people can network, and creative interaction can take place, which brings in more capital investment. The focus needs to be in building intellectual capital, ideas, supportive environments, and other ways of assisting people who need resources.

Community organizations can provide support to this workforce through connectivity, and 24-hour innovation is the key. There is a continuous changing nature within cities, and people have to keep up. Technology needs to be placed in areas where those who have the least access can get involved or at least be connected.

Public schools are following a mode were the teachers don't know how to use the technology, and are keeping it from the children who need to learn to use it. The result is that the children are not learning at the rate necessary to keep pace. Although, there is concern with under-served communities, and keeping them connected in such a way that they can participate in the information society; government does not need to blanket-fund these discrepancies; it is better attended by smaller agencies which can articulate the specific needs of the individual and support them."

In the past, community based organizations, agencies and other service providers (CBO's) have had the charge of bringing services and resources to people overwhelmed with hard labor or undermining circumstances to deal with economic transitions. The CBO role was primarily tri-fold: economic sustainability for community residents via job readiness training; resource stability via specialized needs projects and programs; and housing stability via affordable housing in combination with the above. Almost all of these services were supported by corporate/city/state/federal grants with time limits, which were given to programs that provided emergency services to community residents using grass roots methods. CBO's have perfected the articulation of specific needs in under-served communities and are poised to help community residents with supplemental services such as child/elder care, heath care, GED, professional level training and matriculation into college.

11. The Internet as a Community Infrastructure

If the free flow of information is the foundation of democracy, then access to information is the cornerstone of democracy. Merging computer technology with education (both in school and after school), will greatly enhance under-served children's access to information. In enhancing access to information it is important to recognize that personal computers are the tools needed to unlock that access.

Mel King, MIT, 1994

Graduate student, Myoung-Gu Kang[12], Department of Urban Studies and Planning 1999, explained the integration of cyberspace and community this way. "The function of information technology in cyberspace can allow all of the people to have the information to participate in

their own governance, using two-way communication if it is done right. For example, an impartial party "UCLA," created a project using a website to inform people, tenants in this case, how their taxes were used. The tenants, once seeing and understanding the information, were able to participate in spending their tax dollars. In other cases, information from world governments, was published in similar web sites, and brought to local citizens who learned to participate in methods, updates and other policy issues - such as the pricing and housing increases for land in Korea. With easy access to education using the Internet, people can now have the information and power to decide and vote around all kinds of issues, that effect community development."

While distance learning means conducting classes or training sessions using communications technologies to reach people geographically distant from the instructor or presenter; global networking enables trainers and educators to understand, acquire and hone awareness, cultural/social etiquette and competitive intelligence techniques. Both distance learning and global networking skills are needed to reach a culturally unfamiliar audience, professional workforce, or to rapidly train\educate a regional multi-cultural population, or provide professional level courses globally.

Once the intelligent community in Roxbury is completed, it can become a shared community of ideas and democracy that will serve as a model for other communities. It is natural for a fragmentation and recombination ideas to impact other communities. Many of the Timothy Smith sites are already directly related to the proposed 200 HUD regional sites, as well as the 4,500 CTC Net sites in the US.

What policies would have to be in place? There needs to be a regional collaborative between communities, corporations, academic institutions, cities and states to review the national and global applications of technology, in order to apply information technology locally. This collaborative can clarify what is needed in community and corporate development as it relates to economics in a workforce development program.

What practices? Support for and a continuation of meetings that have begun which discuss computers and/or access; schools and MCAS; libraries and integrated support systems; and trades and the transition of skills. The collaborative should be at the table with agencies around the issue of unilateral services delivery for metriculation into colleges and careers with corporations, foundations, city and government.

12. A Model For Reinventing Skills For Competitive Practices in an Information Economy

What should be involved in a model for reinventing skills for competitive practices in an information economy? And, how can corporations engage in community building and yet respect the boundaries of community during development?

First, community-based organizations have to learn the new game of "information development," and its rules of engagement. There is a new language that includes terms like knowledge management and information assets, which mean gathering and analyzing records and projects for daily and/or crisis management, and then there is competitive crisis management. Market

Services is another term used meaning inquiry management, conducting survey analysis and administering that analysis toward fundraising and sales programs. Information development professionals also use phrases like the integration of core information into relevant context to detect and clarify cloudy issues. CBO's need to do research and reporting of investment analysis, meaning feedback on how the grant moneys were spent in a glamorous publication, CD or overhead presentation. And they need to collect and manage information for project development and distribution, including GIS information mapping and systems analysis. The CBO must learn the competitive practices used to navigate, compete, practice and sustain itself in an information economy.

Training services have been set up by IITE to provide awareness of the information economy through workshops designed to build individual and organizational capacity. IITE services include training in an intelligent community on-line to practice the use of virtual networking, shared applications and ensure access to equal information. With IITE professional development services, trainers and educators can transition into technology-assisted delivery using shared applications and video conferencing. IITE's training services meet a wide range of needs including: infrastructure/classroom design, curriculum development and applied usage.

What policies would have to be in place for the success of this model? With a city investment of technology, and a state investment of space; the city and state need to protect their investments with sustainable baseline funding for infrastructure research, development to secure the networks that support the connections between the sites over the length of the endowment.

What practices? City, corporate, community, academic institutions need to collaborate on administering the infrastructure, research and development of the intelligent community with requirements to keep the connections and applied usage state-of-the-art..

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