

OVERCOMING DIGITAL DEPRIVATION

BLANCA GORDO

ABSTRACT

The digital divide reflects the difference between institutional-level Websites and the individual-level exclusions from opportunities to participate, compete and prosper in today's knowledge-based economies. As ability to manipulate this information technology becomes more crucial, the negative result for those excluded is digital deprivation. More solid theoretical frameworks, conceptual blocks and socio-economic metrics are needed to assess the effects of public policy interventions. Special attention is given to the "Plugged In" project in the poorest part of Silicon Valley, a model of public policy intervention aimed at low-income communities at the grass-roots level. This project affords these users the opportunity to experiment and develop expertise to overcome conditions of poverty and inequality.

Blanca Gordo is a doctoral candidate in the Department of City and Regional Planning at the University of California at Berkeley and a Dissertation Fellow at the Public Policy Institute of California in San Francisco.

Acknowledgements:

This research has been supported by the Public Policy Institute of California, a UC MEXUS Dissertation Grant, and from the "Critical Cyberculture Studies: Current Terrains, Future Directions" grant from the Media, Arts and Culture Unit within the Knowledge, Creativity and Freedom Program of the Ford Foundation. Thanks also to Mark Baldassare, Ellen Fernandez-Sacco, Lynne horiuchi, John Robinson and blind reviewers for guidance in editing earlier drafts of this article.

Under which conditions and through what social processes can ethnic social groups residing in poor places benefit from the use of information technology (IT)? This question remains unanswered and is strongly debated among public policy representatives and community technology advocates who address the negative consequences of the 'digital divide' – referred to in this article as 'digital deprivation'. The digital divide reflects the difference between institutional Websites and those individuals who are excluded from opportunities to participate, compete and prosper in today's knowledge-based economies.¹

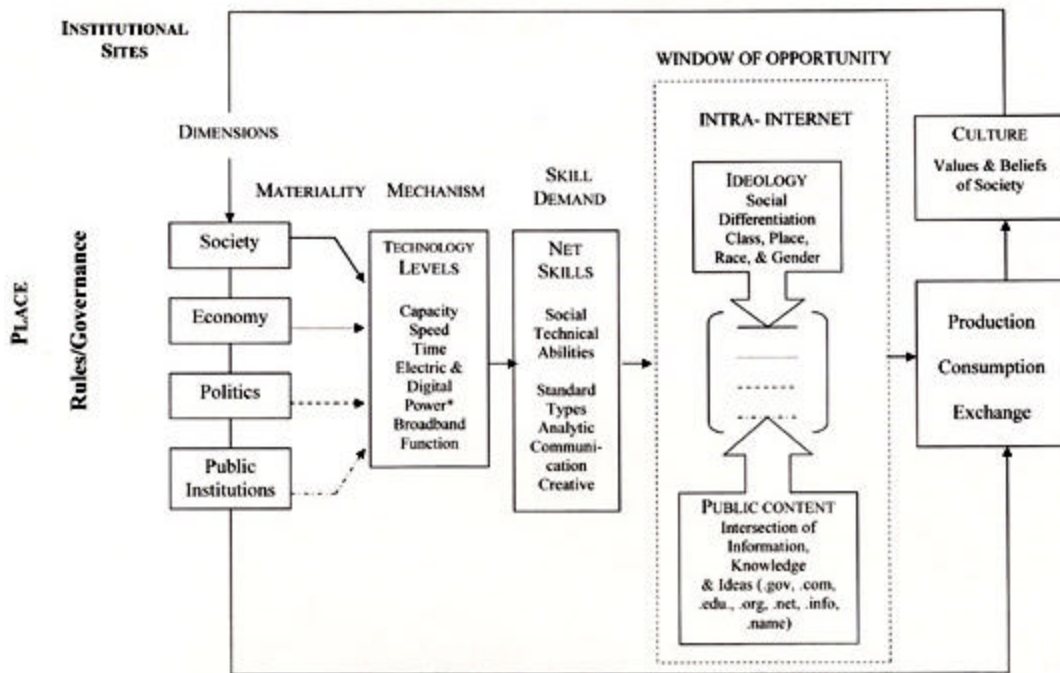
Community technology activists argue that the ability to manipulate information technology's features is a necessary (but insufficient) prerequisite for participation. These supporters argue that policy makers should assist them in reversing digital deprivation. Digital deprivation is a negative consequence of the lack in preparing populations to participate in the net process illustrated in Figure 1.

In general, supporters of community technology are asking institutions to create new technological opportunities in certification, training and education. However, facing competing demands and declines in public funds, public policy makers are asking how community technology service is different than any other development strategy. The debate continues without clear theoretical frameworks, conceptual building blocks and social technical metrics to address the problem. Public policy and community technology advocates thus say that the poor need the same IT resources that most Americans can take for granted.

Using a case study grounded in these ideas, this article begins with the point that current conceptions of the digital divide are flawed in that they do not account for the ways in which network technology is incorporated into the net process.² In order to find solutions to poverty and technology, then, one needs greater understanding of the functions of new IT in society. Viewing technology as part of a social and productive process, as in Figure 1, locates these productive functions in an 'Intra-Internet' – a new technology that is an extension of society that both operates within its institutional processes and as a mechanism regulated by the state. This recognition highlights the imbalance in access as a net loss to an American society, already stratified by race, class, space and disability.

The second part of this article suggests the need for a comprehensive discipline of digital divide studies that takes account of social structures. There is described a community technology development program in practice – Plugged In, located in East Palo Alto, California. If one can learn anything about interventions under extreme conditions of wealth vs. poverty, it could be from this well-structured experiment within Silicon Valley. Plugged In is recognized as perhaps the most innovative and cutting edge Community Technology Center (CTC) in the country. This case, then, provides an

FIGURE 1: THE NET PROCESS TECHNOLOGY AS A SOCIAL PROCESS



*Digital Power is a concept created by John Seely Brown (2003) to measure the pace of change of the digital infrastructure. Digital Power: is a function of computing, communication, storage, and content.

information-rich attempt to support community economic development goals, serving a population that is diverse in economics and ethnicity.³ This project meets several important criteria⁴:

- 1) *Beneficiaries in extreme poverty.* This organization is serving urban residents in areas high in poverty and unemployment.
- 2) *Uniqueness.* The project uses novel and innovative approaches applicable in other communities.⁵
- 3) *Measurable community outcomes.* The project has delineated community outcomes that are tangible, attainable and novel.
- 4) *Longevity and size.* Plugged In has over ten years in operation to provide lessons and it has leveraged ample matching funds.

How is Plugged In structured to support community economic development goals? Inductive research and use of the qualitative and explanatory case study method were triangulated using different sources of evidence, data and information gathered through interviews and focus groups

with CTCs staff, participants and partners. Respondents were chosen by “snowball sampling” of current and past participants and program affiliates. Site visits of field observation, public documents (e.g. annual reports, archival email documents, Web pages, video and TV clips), and related literature searches were also conducted.

The purpose was to explore in greater detail the experience of community technology projects that implement potentially promising practices. The case study is designed to provide information on: 1) the specific problems the center is designed to address; 2) the technical approach that is used to ameliorate these problems; 3) the structure of the CTC programs and 4) the way in which services are delivered and accessed.

Theme analysis provides meaningful insights and allows one to build a qualitative model to address research question about the processes by which the poor can benefit from the use of IT. The article ends with the claim that this case study shows how CTCs have the potential to support economic development at the community level when it employs community technology development programs. The work of *Plugged In* reflects a new strategy of community economic development, consistent with information society concepts.

THE BUSH ADMINISTRATION’S SIMPLISTIC FRAMEWORK FOR THE DIGITAL DIVIDE

In general, community technology agents are limited by the weak institutional conception of the digital divide problem. The 2002 NTIA publication *A Nation Online: How Americans are Expanding their Use of the Internet* is used to justify the Bush administration’s funding cuts for the Technology Opportunities Program and the Community Technology Center (CTC) Project – because Internet use is increasing, regardless of factors such as income, education, age, race, ethnicity or gender. According to the NTIA, these populations have increased Internet use by up to 30 percent, thus implying that redistribution steps are unnecessary.⁶

The NTIA report presents an overly simplistic assessment of a complex social situation. First, the analysis presumes that simply having a computer and an online connection is an opportunity that makes possible entry in the path of development, the opportunity to consume or create content that can ultimately solve the problems of the poor. Yet the problems that face the poor in quest of development are far greater than the mere provision of connection or of access; they are, rather, grounded in social practice with an eye toward changing how technology can be integrated within poor communities.⁷

In time, knowledge of rule-making agencies will inform policy communities struggling to affect populations left out of the process. Long-standing intellectual traditions in social theory, poverty and stratification literature in the field of inequality could take into account of structures and mechanisms that generate inequality. Research should be based on structures in change.⁸

The United States Congress has enacted the Children's Internet Protection Act (CIPA) in 2001 with the stipulation of filters or firewalls to protect children from viewing pornography. Although such filters often block valuable knowledge that has nothing to do with pornography, the federal E-rate program gives discounts to public institutions that meet CIPA certification requirements. Libraries also employ firewalls to reduce email and obstruct use by setting time limits by authentication software. Historically, society has seldom given poor people ownership over the tools of production.

BUILDING A DISCIPLINE OF DIGITAL DIVIDE STUDIES

Developing scholarship on the 'digital divide' is complicated by missing or limited datasets. In general, comprehensive longitudinal surveys have yet to collect adequate data on how technology factors affect the poor. In its 2010 count, the U.S. Census Bureau will not collect crucial information to assess digital deprivation. Any information about home technologies, such as computers and Internet, provides useful indicators for knowing who is making productive use of IT.⁹ Even the Current Population Survey (CPS) data for NTIA are limited by the questions they fail to ask and by simple "yes-no" responses to aspects it does ask about.

One may be able to build a field of digital divide study by identifying a set of core intellectual questions rich in theoretical importance and empirical relevance. In developing this field, one can't ignore spatial organization as an integral area of study, as population imbalances are layered onto uneven intra- and inter-regional development at global scale.¹⁰

Deterioration of the built environment continues and is intensified in pockets of poverty. One must be careful not to recreate old theoretical frameworks that embed ideology of social differentiation by race, class, place and disability. Using terms such as "information poor" or "low-asset communities" may unintentionally underestimate internal capacity or potential contribution of people – or rely on cultural beliefs that people with few monetary resources are not adept enough to justify the investment. Environmental issues arise when populations living in poor places do not only not own productive technology, but receive a disproportionate share of technology waste dumping in their back yards.¹¹

Precisely because society uses information technology for economic benefit, it matters if one is able to manipulate the productive function of technology. Competitive pressures have driven businesses and public institutions to adopt a wide range of network technology and computer systems to improve productivity, maintain both internal and external communications, manage production, and offer customers new services (Castells, 1996). Today's IT represent most important enabling tools to build new jobs with social technical abilities, including low wage occupations. Across industrial sectors, the ability to use technology is a prerequisite to attaining and retaining

employment. Krueger (1993) argues that workers who use computers on the job have— other characteristics, held constant —higher earnings than those who do not. His estimates suggest that workers who use computers on their job earn 10 to 15 percent higher wages. Moreover, Krueger argues that the expansion in computer use in the 1980s can account for one third to one half of the increase in the rate of return to education.

Even more, governments, public and private institutions, and learning structures are also adjusting their service delivery arrangements that require such skills. Governments are integrating technology to provide constituents convenient service. Education institutions are using technologies to enhance learning. Political processes provide new ways of representation, participation, transfer of voice and election through network technology. People in the social arena are using technology for social engagement to maintain ties. Without the opportunity to become involved in the net process, one can expect a high percentage of digital deprivation in poor places. The deprived will continue to face unemployment and be subjected to informal networks that often take advantage or manipulate them.

This refuels an “opportunity divide”, the imbalance between benefit and continued disadvantage of ethnic groups residing in poor places, with unskilled populations. One cannot assume that members of ethnic groups residing in poor places can become IT innovators and producers on their own. One consistent finding in the NTIA surveys is that minority social groups like Blacks, Latinos, disabled people, with low-income earnings and incomplete education in poor places are twice as likely to depend on public access points like libraries to use Internet technologies.

According to the NTIA data, these populations are already less likely to have access to technology at home and at work. Few have access to the small amount of community technology resources available in their community—so they can produce public content as in Figure 1, the raw material at the intersection of relevant information, knowledge and ideas produced and extended by formal institutions to society and through the net (i.e. .gov, .com, .edu, .org, .net, .biz, .info, and .name). Public content includes knowledge about institutions, procedures and rules that mediate opportunity for social advancement providing added advantages. However, with limited technology services, digital divide populations do not have equal opportunity for a competitive edge.

According to the NTIA (2002) report, approximately 60 percent of Asian Americans and Whites use the Internet, compared to 40 percent of blacks and 32 percent of Latinos. More rigorous study of the impact of the net process on the disconnected poor is needed. To discern the severity of this social problem, one needs to develop sophisticated socio-economic metrics that consider technology levels, institutional regulations, governance structures and the social technical skills needed. Even more, measures need to be developed that identify

the different levels and degrees of technology connection with change such as: electric and digital power, function, broadband, capacity, speed and time.

Thus, a cell phone or computer doesn't work without electricity that has a standard cost in dollar amount. Brown's (2003) concept of 'digital power' measures the pace of change of the digital infrastructure, and a function of: computing (Moore's Law which doubles every 18 months) X communication (fiber law which doubles every 9 months) X storage (disk law which doubles every 12 months) X content (community law which is 2^n where n is the number of people).

One could also begin to evaluate the quality (or lack) of technology by function. For instance, a hotmail.com or yahoo.com account is not the same as Eudora or Outlook, which provides many more automated features that may translate into time efficiency. Free email software imposes limits and is more open to spam that can cap storage capacity. There is a popular claim that the poor need social not technical skills and identifying benchmark indicators for their measurement is essential.¹²

COMMUNITY TECHNOLOGY DEVELOPMENT IN PRACTICE

In the growing literature of "local technology development", attention is given to nonprofit organizations committed to: 1) economic development, 2) social engagement, 3) political participation and representation, 4) re-organization and re-structuring of failing institutions 5) cultural preservation and 6) using network technologies to aid development. However, this field of study is new and unpaved; and it hasn't uncovered the extent to which their service coincides with the new demands of community economic development. One also can't specify what factors affect an agency's ability to accomplish their goals and sustain service through economic recession and declining public-private funds – by distinguishing inputs, internal dynamics, rule making and external factors that influence or determine certain positive outcomes.

While there is little question that the poor need social and technical infrastructures, the crucial question remains how can one best develop economic and social strategies to facilitate development for the poor. To address this question, the strategy and governance structure of one of the most influential community technology programs in the country, Plugged In, is now examined.

Plugged In was first incorporated in 1992 by young social entrepreneurs concerned about digital deprivation. Its founder, Bart Decrem, persuaded community representatives to address the lack of market opportunity in East Palo Alto (EPA). Over a ten-year period, the one-person organization with a seed fund of \$25,000 has evolved into a one million-dollar budget supporting strategic network partnerships of corporate, university, non-profit, government, and community partners, with experiments to uncover and create institutional processes that could reverse exclusion and poverty. The mission is to assist

populations living in poor places to participate in knowledge-based economies through the development of human capital and place-based development.

For the Plugged In directorate, technology markets are a necessary component, though insufficient for exploiting available technology. The core goals of the agency (as described at www.pluggedin.org) are to create chances for economic benefit, social engagement, institutional legitimacy and political participation based on technology within poor places. Through experimentation, Plugged In has created a new form of community economic development to battle low rates of technology adoption, poverty, unprofitable economic markets, social disorder and lack of unified public institutions.¹³ using variable funding streams (from corporations, private foundations, government and individual donations).

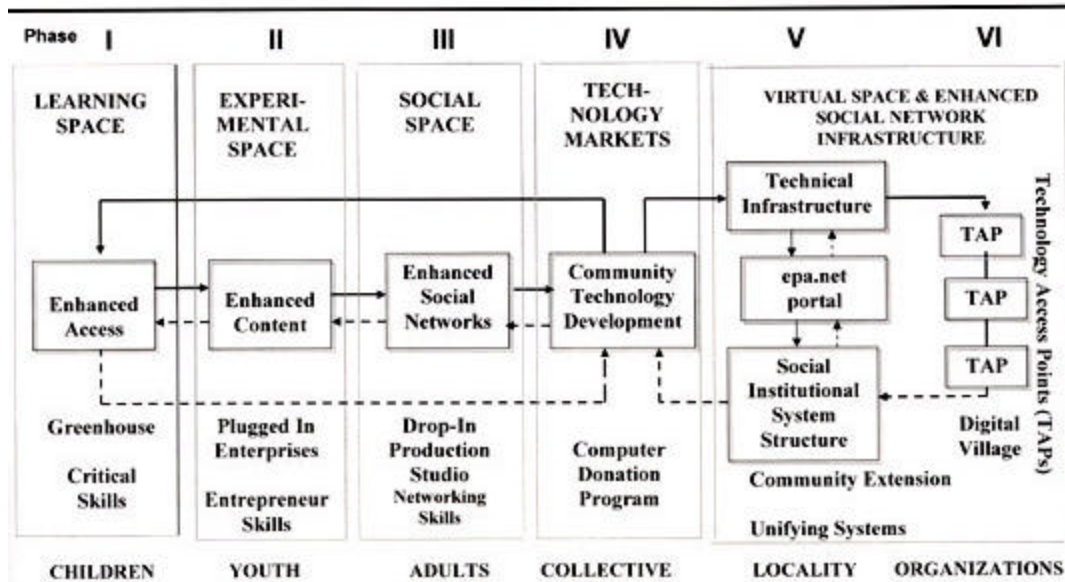
Accomplishments of Plugged In: In its ten years, this community-based agency has developed seed experiments that have evolved into structured programs for children, youth, adults, organizations and the collective community. To interconnect its constituency internally and externally, the agency implements the community technology development (CTD) programs outlined in Figure 2. This CTD has evolved into six separate but interrelated phases of development, the main purpose of which is to create technology markets for development.

The first phase of the CTD program is training in enhanced access to produce knowledge rather than simple consumption of information. It has the ability to recognize relevant information, to transfer information into productive knowledge, and to apply and communicate this knowledge in a way that meets the intent and interest of any user (Gordo 2001). Plugged In argues that the community – in particular, children – don't have a learning space that supports critical thinking and creative abilities. The city doesn't have the institutional resources to deliver high quality technology pedagogy to its citizens as in neighboring Palo Alto. The EPA public school system is in continual crisis, and while EPA residents live in a region with very high Internet use rates, they do not even have a branch library.

Plugged In has developed a children's Greenhouse program with a technology-based curriculum to help young children, designed as a creative arts and technology studio. The after-school program is structured to create a fun, safe and dynamic learning environment that inspires children aged 6-12 to learn through both exploration and creative expression, by publishing original works of art and poetry in their online virtual gallery. Through a curriculum developed by an ever-changing staff of scholars, student volunteers, alumni and teachers, the children have also created online books and digital videos such as "Plug Me into the World."

The second phase of the CTD program is training in the production of "enhanced content" – relevant and useful knowledge produced and revealed through the technology. The agency has created an experimental space for youth

**FIGURE 2: COMMUNITY TECHNOLOGY DEVELOPMENT IS IN PRACTICE
PLUGGED IN**



to develop their entrepreneurial skills. Training is learning from “mistakes” and experiencing production processes that translate into materials that can be exchanged for money. In response to the high demand for employment and skill development of youth, a Plugged In Enterprises (PIE) curriculum was organized to provide youth with production experience and professional skills development. PIE is a graphic design, multi-media production and Web publishing business run by teenagers. PIE has been successful at attaining contracts with Pacific Bell, Sun Microsystems and the East Palo Alto Law Project. Through the assistance or interaction with high level experts and clients, PIE teens have been able to secure internships at workplaces like Netscape – even during the economic hard times in Silicon Valley.

The third phase of the CTD program is the creation of social space to support enhanced social networks, relations that are socially diverse, stable, long-lasting and reciprocal – in order to provide positive feedback, encouragement and support. The drop-in production studio, which primarily serves adults, is structured as a social space where they help each other’s projects by facilitating collaboration and self-help in an area with few safe social spaces.

Over time, the agency has learned that assisting the individual means creating a virtual space that the community at large can own and direct. Plugged In is now in the process of instituting an enhanced social network that includes technology access points (TAPs) for local social service delivery. In the process of crafting a virtual space, the agency came to realize it would need to

assist organizations to create technology access points. Through a Hewlett-Packard grant and as part of a plan to interconnect virtual space and develop an enhanced social network infrastructure, the agency is engaged in creating TAPs throughout the community. Through this digital village plan, Plugged In is opening up technology labs for its partners and provides community based partners with technical training to restructure social service based on technology. Plugged In is guiding the creation of TAPs within an affordable housing complex, drug rehabilitation community agency, job training development center, senior citizen center and learning center.

Through the interconnection of CTD seed programs (such as increased technology adoption rates within EPA, employment of youth and adults, and increased entrepreneurial activity), Plugged In influences community technology development at the grassroots level. Despite dwindling public and private funding, Plugged In continues to maintain quality service and serve the interest of the community, with its cycle of innovations – as seen in creative projects and learning programs, organizational development, materials, curricula and technical assistance provided by a staff who believe that technology should be made available to the poor.

CONCLUSIONS

Public policies and private initiatives to expand affordable connection to network technology for the poor via technology discounts and community technology centers are being discussed – but with relatively little attention to the conditions under which community-level interventions can benefit ethnic groups living in urban low-income communities. Community social agents are not only struggling to address institutional market failures and the evolutionary process of poverty and digital deprivation, but they are also challenged by the lack of theory or vocabulary to articulate the obstacles they confront at the grass-roots level.

While public policy makers and community technology advocates argue about whether the poor deserve a chance to overcome digital deprivation, the poor continue to struggle. Plugged In shows that under the conditions of well-structured and designed programs, people living in poverty can produce technological content that generates economic benefit. It has made great strides in finding resources to support the technology needs of the EPA community. A strong theoretical foundation with measurable indicators can define and track its progress in reducing digital inequality – to see first hand the problems poor people experience in their struggle for a dignified independent life.

More can be learned about the places and conditions under which low-income communities benefit from community technology development programs. Without additional resources, restructuring, and policy intervention, they can only provide band-aid solutions. One cannot presume that adoption of

technology, without a change in governing rules about education, will advance social development for the poor.

REFERENCES

- Castells, M. 1996. *Rise of the Network Society*. Cambridge, Mass.: Blackwell Publishers.
- _____. 1997. *The Power of Identity*. Malden, MA : Blackwell
- _____. 1998. *End of Millenium*. Malden, MA : Blackwell Publishers
- Gordo, B.2001. *The "Digital Divide" and the Persistence of Poverty in Planners Network*.
<http://www.plannersnetwork.org/htm/pub/archives/141/gordo.html>
- Gordo, B. 2002. "What Planning Crisis?" Reflections on the "Digital Divide" and the Persistence of Unequal Opportunity. *Berkeley Planning Journal*. Volume 16.
- Krueger, A. B. 1993. "How Computers Have Changed the Wage Structure: Evidence from Micro Data". *The Quarterly Journal of Economics*. 107:1; 35-78.
- U.S. Department of Commerce. *A Nation Online*. Washington DC: US Department of Commerce, 2002. Available at:
<http://www.ntia.doc.gov/ntiahome/dn/anationonline2.pdf>.
- U.S. Department of Commerce. *Falling through the Net: Toward Digital Inclusion*. Washington, DC: U.S. Department of Commerce, 2000. Available at: <http://www.ntia.doc.gov/ntiahome/digitaldivide/>.

ENDNOTES

¹ There are various dimensions or degrees to digital deprivation. For example, alienation can move from creators of new technologies (and the social processes that sustain or develop them), to consumers, to complete separation from the technology process. One indicator of creators of technology could be having computer science and related degrees. Breaking down federal statistics by undergraduate degrees shows ethnic social groups residing in poor places are underrepresented in the pool of higher education; fewer are found in computer or information management science departments.

² Network technology includes external technology artifacts that facilitate voice, print, and visual communication or representation to produce, consume, and exchange material products or public content. This includes technologies that facilitate social engagement, economic benefit, institutional exchange and collaboration and the Interface that makes possible transfer of political voice. For example, computers, Internet, Intranet, cell phone, online radio, hand held computer digital devices, and in variable organizational forms such as list serves, email, Web pages, online postings and transactions etc.

³ Key determinants of CTCs organized to support community economic development include: mission, partnerships, networks, institutional collaboration and community base. Mission determines which individuals, groups, and institutions will support a CTAC and establishes a particular development strategy. Institutional collaboration and partnerships are seen in the ability of staff members and partners to engage in planning, community organizing, fundraising and the implementation of programs. Networks are reflected in the links that CTC service providers and board members have with other community based organizations (CBOs), institutions, and employers. Community base is determined by whether the CTAC is based in the community being served and whether the agency works with other CBOs. An indicator of innovative programming is enhanced access.

⁴ This list of criteria is adopted from Westat's case study evaluations of the Telecommunications and Information Infrastructure Assistance Program for the U.S. Department of Commerce, 1999.

⁵ Enhanced access, the ability to manipulate the productive function of technology to meet personal, political, economic, and social goals, is an indicator of novel and innovative service.

⁶ In the political transfer from a Democratic Clinton to a Republican Bush administration's NTIA, one sees clear shifts in the frame and language used to describe the digital divide. In 1999 under Clinton and NTIA Assistant Secretary Larry Irving, the digital divide was publicly acknowledged to be a monumental challenge needing public attention and support. By February 2001, the framing of the problem changed to a problem near elimination under President Bush and Assistant Secretary Nancy Victory. The NTIA reports move from 'digital divide' to 'digital opportunity' that obscures, or furthers the idea that there is no longer a "digital divide" problem. At the same time, the Bush government is experimenting with other new technologies, particularly new interfaces, to record political votes. In most and latest state and local elections voters use touch screen technology to vote. In the past, reading and writing was a prerequisite to voting. It still is but a new type of literacy is emerging with new technologies. Individuals who do not understand such interface technologies, their votes may be miscounted.

⁷ Technology goes through a cycle of innovation. One way to break this cycle into phases of development or evolution is, in order, creation, adoption, use and integration. While society is at the stage of integration there are still debates over whether diffusion of technology for the needs of the poor are necessary – integration meaning the merger of technology into institutional productive processes that sustain systems of operation. While upper middle class communities are rapidly approaching the next stage in the cycle of technology innovation (i.e. WI-Fi or Internet), technology of the previous generation has already bypassed the inner city. People in many low-income neighborhoods have little exposure even to earlier generation of commercial tools, such as laser scanners at supermarkets and bank automatic tellers, facsimiles, computerization, telecommunications and mass media applications are dramatically underrepresented in economically distressed urban areas.

⁸ New governance structures, such as the Internet Corporation for Assigned Names and Numbers (ICANN), are making crucial decisions on Internet policy that affect the public interest. This global organization manages the Internet's Domain Name System (DNS) and is developing accreditation guideline standards for obtaining certified domain

license names. Legislators and administrative agencies are also passing laws or modifying the old rules of engagement, competition, and ownership. For instance, under Chairman Michael Powell, the Federal Communications Commission (FCC) is deregulating the structure of the broadcast and cable television industries by revising ownership rules that give more power in ownership of frequency airwaves by traditional networks. Further, new institutional processes under the new Department of Homeland Security (DHS) are expected to influence an array of technology issues, such as “protecting the nation’s online infrastructure, directing the development of new surveillance and defense technology, and preserving the privacy rights of ordinary citizens.” The Bush Administration is establishing a National Strategy to Secure Cyberspace under the same DHS . On a more local level, law enforcement agencies, such as police departments, are using Internet or cell phones for surveillance. Courts of law are accepting content in email or Website documents for lawful evidence of crime to prosecute citizens. Increasingly Internet service providers and telephone companies are facing requests from law enforcement for the names of subscribers and their email accounts.

⁹ There are other barriers to retrieve content through the Intra-Internet. To find information, one may need knowledge of rules and how institutions function. There is a general assumption that content is free. This is not always the case, as when there are transaction fees. Also, institutions and organizations regulate who gets to enter a particular database via the interface. Often institutions manage retrieval of information through passwords; passwords often come through a monetary fee. Even more, availability of information on the Internet is determined by how open governing bodies are. This too is affected by the political climate. During the aftermath of the September 11 events, the Bush Administration was asking institutions to pull out certain information or knowledge on the Web that could be used by terrorists. During the same time the U.S. government began to discuss the idea of providing “imperfect information.”

¹⁰ A popular explanation for the digital divide is the cultural hypothesis that Blacks or Latinos do not benefit from use of technology because they do not own a computer or cannot pay for the Internet despite “affordable” and fast dwindling prices. However, this view fails to scientifically establish whether in fact such populations are afforded same market and institutional opportunities at their levels of innovation. Most studies which claim cultural factors rely on people who are not connected to explain why some populations do not value or benefit from the use of technology. It would be more scientifically appropriate to identify populations with different set of beliefs and values, and control for training in technological capacity and knowledge as a way to establish culture as a causal mechanism to overcome the digital divide.

¹¹ This area of study could be developed through the literature that intersects inequality, poverty and social exclusion in ways that provide insight on race relations and ethnic studies. This can be helpful in unraveling interconnections and the ways inequality based on race and how stigmas are recreated with technology. This could be the same with gender relations.

¹² For instance, there are general standards or rules for writing (in)formal messages via the net. There are (un)written rules about engaging with a company president or business colleague and family members or friends. Email writing may be a new form of formal and legal memorandums. To make social distinctions some analysts are discussing the idea of email etiquette. Also, most companies or institutions are adopting

emerging legal guidelines and take email as property when it is written with computers or online connection they pay for. Companies are increasingly adopting and requiring email disclaimers. Judging from the type of disclaimer, companies view and enforce email content as a legal document separate from a specific institution.

¹³ Inequality in East Palo Alto can be striking. The economic boom that transformed neighboring communities in the past decade bypassed this pocket of poverty. While Palo Alto could not meet the demand for labor during the digital economy boom, East Palo Alto is faced with a number of serious economic challenges with its bleak job market. In 2001, there were only 900 jobs available for a population of 25,000 people. This small city has four times the unemployment rate of Palo Alto. While Palo Alto has a mean family income of \$70,000, 80% of the EPA population receives public assistance. According to the latest 2000 U.S. Census, 16 % of the East Palo Alto population lives under the designated federal poverty line, with 19% of children under 6 living in poverty. According to the California Employment Development Department, the unemployment rate for East Palo Alto in September 2002 was 11%, almost double the County of San Mateo (4.5%) and the State of California (6%). Further, the majority recipients are “digital divide” populations – Black, Latino, urban, low-income, women, in poor places. While Silicon Valley has played a leading role in fostering the digital revolution that is sweeping the globe, East Palo Alto has missed out on much of this prosperity. There is only one computer for every 28 students in East Palo Alto schools, as compared to the 1-to-9 ratio for the entire state.