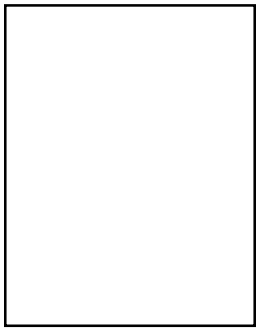
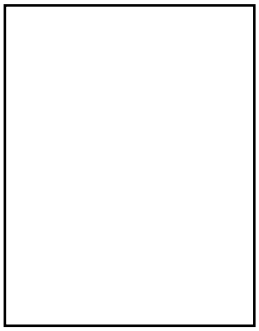
If We Build It, Will It Pay?

Local Information Infrastructure and the Bottom Line

Ruth Thompson, Ph.D. & Nancy Hunt-Coffey



Dr. Ruth Thompson created LNX Systems for the City of Glendale, California. She is a senior administrator at the Glendale Public Library where the LNX project is located, and a partner in Thompson McKernan Associates, where she consults on information issues. She has been involved in local information infrastructure development since 1987, when she headed Glendale's InfoNet project. Before becoming involved in libraries and information issues, Dr. Thompson was a professor of American literature.



Nancy Hunt-Coffey manages Glendale's LNX community information utility. Ms. Hunt-Coffey was born and raised in Glendale. She graduated from Occidental College with a Bachelor degree in English literature. She became interested in communications and technology while in school, and joined the LNX team at the Glendale Public Library in 1992. Thompson and Hunt-Coffey are currently working on a book about the social implications of the information and communications revolution.

There are currently two popular images of the city of the future, depending on whether you take a positive or a negative view of the impact of information technology on American society. On the one hand, the 21st century city is dead or dying, its trash-filled streets looked upon by empty, graffiti-marked buildings, its only signs of life a few remaining smoke stacks pumping effluents into the air, its unemployment offices marked by block-long lines of the hopeless, the unskilled, the illiterate—the human effluent of an economic storm. On the other hand, the 21st century city is thriving. Ribboned by green parks, its clean air is humming with electronic commerce, the happy jingling of the cyber-cash-register in the sky.

The real difference between these two visions, however, is not whether the advent of information technology constituted a threat or a promise, but how individual cities responded to it at the end of the 20th century. One city invested in its information infrastructure, while the other city focused exclusively on physical infrastructure and traditional industries. One city's investment made it attractive to new high-tech information companies and workers; it became a successful commercial center on the information superhighway. The other city allowed itself to be bypassed by the information traffic that roared along the superhighway day and night; it lost the businesses and workers able to compete in the new economy.

True? Well, yes and no. If we had to bet on one sure winner in the post-industrial society's "thriving community" sweepstakes, it would not be a city at all, but rather a small town in an attractive location, not too far from an airport—the kind of town that today has difficulty providing enough employment locally to keep bright young people at home. The information workers of the next century—some working alone, many working in ad-hoc, project-based electronic teams—can live anywhere as long as they are wired, and a lot of them will choose an exurban or rural lifestyle. However, cities offering plenty of bright lights, urban pleasures, and a clean, value-added economy based on new communication and information technologies will also prosper.

The Key to Success

The key is to make the investment now to build the local information infrastructure for tomorrow. That means investing in technology: fiber, telecommunica-

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tions, network architecture and equipment, hardware, and software. It means investing in the process of digitizing and sharing information resources, both public and private, in every corner of the community, through a community information utility. And it means investing in people by making a commitment to universal access and communication through public access technologies, equipment, sites, and support, as well as programs that develop information skills and create employable information workers.

Money is a Problem

The problem in accomplishing this transformation is money. Operating a community network costs about $300,000 a year, according to Miles Fidelman of the Center for Civic Networking. Development costs range from $125,000 or $150,000 (for a simple, BBS-type community network) to as much as $1 million for a fully-developed community information utility. A fully-developed community information utility can integrate such capabilities as:

- Multimedia kiosks, dial-in, and Web access.
- BBS and e-mail functions with databases and powerful search engines.
- Internet functions.
- Government, nonprofit, and educational services with commercial services and online credit card processing.
- Electronic democracy with electronic shopping.

Unfortunately, the need to develop local information infrastructure comes at a time when cities' social and fiscal problems make it exceptionally difficult for them to invest in new directions. These problems stem from the interaction of three concurrent revolutions in American life.

Economic Transformation

The first is our economic transformation to a post-industrial economy. Emerging communications and information technologies have resulted in workforce reductions and job re-engineering in many traditional industries. While creators and conveyors of high value-added information will thrive in the new economy, the majority of our population is not information literate—20% are not literate at all. Yet, new information technologies are replacing traditional high-paying blue collar, labor-intensive jobs with systems of production that do not require skilled labor. The process is already dislocating those American workers who do not have the information literacy skills to survive in the new economy, and will continue to affect local economies and tax revenues well into the next century. As Jeremy Rifkin writes,

> The hard reality that economists and politicians are reluctant to acknowledge is that manufacturing and much of the service sector are undergoing a transformation as profound as the one experienced by the agricultural sector at the beginning of the century, when machines boosted production, displacing millions of farmers. We are in the early stages of a long-term shift from "mass labor" to highly skilled "elite labor," accompanied by increasing automation in the production of goods and the delivery of services. Workerless factories and virtual companies loom on the horizon. While unemployment is still relatively low, it can be expected to climb steadily and inexorably over the next four decades as the global economy makes the transition to the Information Age.

Immigration

Second, massive immigration to the United States is being spurred by:

- Population pressures.
- Increasing struggle over scarce resources.
- The resurgence of traditional ethnic animosities.

In many localities, immigration is bringing a surplus of unskilled immigrant workers into the American workforce, adding to the burden on local services. When we talk of a global information economy, we must remember that 80% of the world's population does not have the basic literacy and information skills to participate. As the American economy becomes a model of the successful information economy—high-paying, high-tech, highly-efficient. and competitive in world markets—will there be work for these people? And, if not, what will be the impact of refugee populations on local communities? As Paul Kennedy writes, "...most recent immigrants to America have relatively low educational and skill levels, congregate in the inner cities...and impose additional demands upon the social and educational services of the poorest parts of the American administrative structure. Demographers predict that perhaps as many as 15 million immigrants will arrive each decade for

Case Study—Glendale's Community Information Utility: LNX Systems

Glendale's LNX System is a full-service community information utility, headquartered at the Glendale, California Public Library. After a year of beta testing, LNX 1.0 was released to general public service in August 1995. Additional components and services are still under development. The LNX applications software is being developed by Information Technologies Unlimited. Funding came from a combination of sources including the City of Glendale, the South Coast Air Quality Management District, Glendale Community College, and the Verdugo Private Industry Council.

LNX provides free, interactive local communication and information and an easy to use on-ramp to the Internet for the citizens, businesses, schools, college, and government offices of Glendale. It incorporates BBS/e-mail functions, public and commercial databases, library access, gateways, electronic delivery of government services, and online payment and revenue-generating components in one system.

Access is available from home and business computers, networked city offices, public and college library workstations, and public touch-screen kiosks located in libraries, city buildings, and the Glendale Galleria. Additional public workstations are planned by nonprofit organizations involved in the city's Healthier Community and Homeless Coalitions and by the public schools.

LNX is a multi-platform, client-server, UNIX-based system. Currently, Glendale has sixteen 28.8 b/s ports plus one ISDN port, in addition to Ethernet and Internet connections. Eight additional ISDN ports and 16 additional modem ports are planned. Access is free to anyone who lives, works, goes to school, or does business in Glendale. Users can register online, and data can be entered and updated from anywhere in the system, with appropriate user access.

Free LNX access software is provided for Windows or Macintosh users. The LNX host and dial access software incorporate a unique graphical user interface. Access is also available via the World Wide Web using any Web browser. Six public computer kiosks with interactive, touch-screen multimedia interfaces are also online to the host. These kiosks are specifically designed to attract the non-computer-user with full-motion video, music, and voice-over.

The Central Library, the LNX host, and the City Hall campus are networked via the city's fiber optic network. Additionally, all central library and city government offices and four of the six LNX kiosks are on the city network. The LNX host also connects users to the Glendale-Pasadena Public Libraries' shared online catalog, and to the Glendale College Library online catalog.

Community Communications Applications
- Bulletin Boards/Discussions
- Electronic Mail with Internet Connection
- Meetings
- Chat
- File Exchange
- User Directory

Internet Services
- Web Access/LNX Home Page
- City of Glendale Home Page
- E-mail Integrated into LNX E-Mail

LNX Kiosk Multimedia Programs
- Meet Your City Council
- Glendale History
- Electronic Building Directories (on some kiosks)

Community Information Applications
- Electronic Yellow Pages
- Community Calendar
- Job Opportunities
- Entertainment and Restaurant Guides
- City Announcements
- City Agendas
- Clubs and Organizations
- Verdugo Private Industry Council
- Job Help
- Electronic Shopping and Credit Card Payment
- Glendale College Class Catalog and Class Schedules

Library Resources
- Glendale-Pasadena Online Library Catalog
- Glendale College Library Catalog

the next 30 years, and calls are now being made to 'bar the door.' "

THE ROLE OF GOVERNMENT

Third, public opinion as to the proper role of government and how to solve the national debt crisis currently leans toward limiting federal responsibility for social welfare and "devolving" these concerns on to local government. This trend means greater responsibility at the local level for local problems, including the problems identified in the previous section.

As a result of all these factors, local governments are finding less money available from traditional federal safety net agencies and traditional tax revenues, while at the same time demands for services and for repair of the physical infrastructure are increasing. In most cases, the dollar that might have been spent on building the information infrastructure to create a viable future is (understandably) being spent on mending the streets, painting over the graffiti, sheltering the homeless, and protecting lives and property in increasingly violent times.

A Community Information Utility

There are several approaches to solving this problem. All require that we expand our original idealistic justifications for networking local information and communication to incorporate a broader view of local information infrastructure, its capabilities, and its bottom-line value.

First, communities must move beyond the traditional demarcations between public and private, commercial and noncommercial. While there may be many reasons for local governments to take the lead in implementing a community information system, no single agency can or should control a community's information resources, nor should a single element be responsible for developing and managing a community's information infrastructure. Such a project benefits everyone and can only be achieved through partnership.

Within most communities, the cost of local information infrastructure development can be shared by municipal government, local public utilities, schools, churches, hospitals, nonprofit organizations, businesses, and others. Each can make a reasonable investment in the connective tissue that will directly serve their individual interests and contribute to their bottom-line financial advantage.

For example, a local utility company may find it economically advantageous to build the "last mile" infrastructure to the home in order to electronically monitor and bill for water and power usage. Similarly, municipal government saves money (and gains friends) by delivering information and services directly to the public, 24-hours-a-day via a community information utility. Nonprofit organizations that can share digitized information can eliminate costly duplication of effort and communicate more effectively with their clients. Schools and colleges can network to:

- Link students, teachers, and parents.
- Simplify registration and class participation.
- Deliver education to new clientele through new media.
- Improve information literacy skills throughout the community.

Libraries can provide 24-hour-a-day access to online catalogs and networked resources, adding virtual branches and intelligent search agents (often manifested in human form as a reference librarian). Mounting a job search program on the local community information utility gives the community a "one-stop electronic job center," while an accessible, friendly, graphical interface in itself constitutes an excellent training ground for information workers. Finally, the entire business community benefits from electronic yellow pages that promote shopping with local merchants.

The enhanced communication and participation made possible by a community information utility support an ongoing broad-based coalition between public and private interests, and thus immediately produce more financial options. One interesting aspect of this, discussed by Richard Civille last year in *New Telecom Quarterly*, is the Empowerment Zone/ Enterprise Community initiative that would involve the whole community in the strategic planning process necessary to gain federal block grant funding. More generally, part of the federal "devolution" process appears to be a transition to block grants at the local level, with significant advantage to the community that has well-supported coalitions in place. Many other public and private sector grants are also available to coalitions and community partnerships that are not available to single entities. Venture capital is also more available when the private sector is already a partner in the enterprise.

Another potentially fruitful course is to exploit the entrepreneurial capacity of the community information utility itself. Advertising, client services, and online credit card transactions represent potential sources of revenue while providing a valuable service for the customer. Local businesses benefit from an attractive new advertising medium that enables them to interact with their customers and take advantage of much-ballyhooed "cyberspace" marketing techniques right in their own hometown. Organizations needing their own internal networks and communications systems have the option of running one on the local community information utility—enabling public access or not as they choose. Residents and businesses can pay for local services such as permit application through their community information utility rather than by standing in line, and the agencies involved can reduce the number of bounced checks and angry customers. There are dozens of useful services a community information utility can provide, at a reasonable return and with benefits for everyone.

As we have tried to suggest briefly in this article, local information infrastructure development will profit the community on the bottom line. Development and use of a community's information infrastructure is a win-win situation. This cannot be a choice that a community must make for the future as opposed to the pressing needs of the day. Nor can it be a choice for one agency or sector working alone, and not for the rest. Instead, we need to realize that everyone in the community—citizens, government, businesses, nonprofit organizations, and education—will benefit materially as well as spiritually, in the near term as well as the long term, by investing in their community information utility today. ntq