

Chapter 4: US State and local initiatives

“So much more [state government electronic data] is available and readily accessible. The more you can do, the more is expected and it gets you quickly into realms you’ve never been in before.” Richard Strong, director of state legislative research and general counsel, State of Utah.

The economic slowdown of the last three years has placed considerable economic pressure on the United States federal, state and local governments. Aggressive advocacy groups have contributed to the growing demand for broader access to government data compilations. That access has come. But to the surprise of many advocates and publishing companies, the governmental agencies are charging for the data. In effect, the government is becoming a competitive factor in publishing. Its impact is amplified by the simultaneous surge of interest in ‘the information highway.’

State and local governments in America have been hit hard. State, county and local tax bases have eroded while expenses have risen. Essential services such as police, fire and infrastructure repairs have taken precedence over libraries and schools. The result has been steadily rising pressure upon ‘non-essential’ agencies; for example, demographic data and mapping.

The ‘information highway’ has become a handy metaphor for addressing a number of challenges simultaneously. State and local agencies whose charters require public dissemination of information on a myriad of subjects from economic activity to automobile registrations, view the Internet as a solution. Costs for Internet are largely hidden in other budgets; therefore, once a governmental entity has the requisite computer hardware and software, the connection becomes, in a sense, free.

Throughout the United States, state and local government officials — indeed most public bodies — monitor the activities of bellwether states such as California, Florida and Utah. These states have moved farther and more rapidly to leverage the juggernaut of the information highway. It is important to bear in mind that the electronic technologies and networks in use may not be part of the Internet. However, the power of the information highway is such that distinctions concerning access and technology are secondary to appearances.

Within this context, several trends have surfaced, and these appear to have sufficient momentum to persist for three or more years. The Internet, in a broad sense, is positioned as a way for state and local entities to:

- Reduce costs of disseminating information. Government entities charged with disseminating information to the public see the Internet as an alternative to print. California has explored dial-up public access to agencies responsible for vehicle registration. California statutes are accessible now.
- Attempt to do something to relieve congestion from commuter traffic. Local governments, including regional planning authorities, see the Internet as means to raise public and employer awareness of telecommuting (also known as ‘working from home’).
- Provide ‘distance education.’ Pacific Bell, one of the Regional Bell Operating Companies, announced that it will provide ISDN capabilities to all of the public schools, libraries and community colleges in its territory by 1996. It will link every classroom in its service region, which includes California, to its planned broadband network by the year 2000.’ Educators have rallied around the Internet as a way to increase the richness of the learning experience. Highly-publicised programmes tout video links between students in Virginia and other countries. Setting aside altruistic motives for a moment, instruction delivered over ‘the Internet’ promises to offer some cost savings in providing instruction to a remote area or regions that lack the resources to provide certain courses.
- Maximise library funds. ‘The Internet’ has been the catalyst for resource sharing for a number of years, particularly in Canada where distance and budget pressure have given some provincial and municipal libraries little choice. Within the US, such states as North Carolina, early-adopter Florida, Illinois and Pennsylvania have experimented with shared catalogues. In Ohio, a consortium of libraries offers access not just to online public access catalogue listings, but to such commercial databases as ABI/INFORM. As connectivity becomes easier and easier among networks, regardless of type, a global library will emerge. As noted elsewhere in this Briefing, at some point in time, bandwidth will become available to permit seamless image transfer from point to point.

These trends seem almost certain to gain momentum, agitating further an unsettled information environment. Government will become primary publishers who charge for their information. The amount, format, variety and distribution mechanisms will certainly mature. By the turn of the century, full-text documents, primary statistical data and a wide range of image and video objects will be widely available. Secondly, the educational applications of remote access to networked information are rich, filled with promise, and largely unexplored. The need for educational options is so compelling that the Internet could use a significant quantity of available bandwidth for instructional purposes. The crisis in education is attaining such proportions that

[1] Dan O’Shea, ‘Pacific Bell takes ISDN to school,’ *Telephony*, 21 February 1994, pages 809. A similar programme has been announced by Bell Atlantic called Basic Education Connection.

electronic access is likely to be perceived as the only way to provide certain types of learning opportunities.

Third, the expansion of electronic information may generate new and taxable businesses.

1. Activity in American state and local government

When a particular state's activities are with electronic information in general or the Internet in particular, it is often in the context of a commercial venture in a city or a geographic region. A typical example is the publicity surrounding various cable television or telephone company experiments. In fact, until the Internet emerged as a rallying point for electronic information, the majority of electronic services have been centred upon interactive cable television and largely ignored. What few have noticed is that virtually all of the tests have been disappointing. Cable television and use of the Internet may well be two different entities that are quite distinct and serve different social and economic segments of the population.

A representative example is GTE's test in a suburb of San Francisco. El Cerrito has been the latest site since 1989. The GTE system turns the television into a home computer. Links to a central computer enable residents to play video games, order a meal at a restaurant, and handle routine banking tasks. In 1994, the system remains in place, but the number of users has dropped dramatically. Said one local participant, "Most people, including the mayor, don't have the time or don't care."

The PC, not the tv, is the centre of interactive activity. The personal computer, not the television, becomes the key link to the information highway. The physical cables can be used to deliver high bandwidth links to the Internet from the home. Intel has announced modems that will let the user connect to a traditional telephone line or a cable device. The PC-based, Internet-type of service seems ideally positioned to capture a larger share of the market.

Although states vary widely in their economic and technical capabilities, innovation is evident. A public-private partnership, such as the one in Kansas, is likely to bring more information into some type of public access. The reason? Money. The Information Net of Kansas (INK) began in 1992 and boasts more than 4,000 users and generates more than \$5 million per year in revenue. Under a public-private partnership, more than \$3 million flows back into the state treasury each year.'

The state government of Nebraska and the telecommunications industry have formed a pioneering partnership to develop an efficient, economical data network that will help provide educational, medical, and a wide array of enhanced services to the public.² The argument is that Nebraska's citizens will reap the benefits of this

[1] Tony Semerad and Samuel Autman, 'New highways: plugging into Utah's future,' *The Salt Lake Tribune*, 26 December 1993, page A1 and following.

[2] Norm Osland, 'Nebraska scores a frame relay first,' *Telephony*, 1 February 1993, volume 224, number 5, pages 42-45.

advanced telecommunications infrastructure that will offer higher-speed transmission of data and is the first step toward the broadband integrated services digital network and the synchronous optical network (SONET). The state collaborated with US West and Lincoln Telephone. A division of Lincoln Telephone was selected as the carrier to provide frame relays between network points. (Frame relay is a fast-packet technology that provides the bandwidth needed for delivering thousands of packets of information into a single file transfer between individual local area networks or LANs.) Nebraska and its partners argue that frame relay also standardises LAN interconnection techniques and simplifies multiple vendor routing networks.

Similar 'deals' are likely to be a common feature of the US information environment for many years to come. American state and local governments are struggling with a number of problems: education, healthcare, crime, to name just three. For political and practical reasons, government officials are eager to allow their constituents to drive the information superhighway, or at least promise an 'on ramp' within easy reach. The political value of supporting advanced information programmes is significant. Technical details and long-term impact are secondary. The states and their leaders seem content to leave these nagging issues to others.

The driving forces behind the states' interest in electronic information services in general and the Internet in particular include:

- The low costs associated with the Internet in the United States, which add to the appeal for many state officials. To cite a typical example, the Oregon state government pays about \$12,000 per year for Internet connectivity. A person who can obtain a password does not have to pay for access. The Internet bandwidth has been purchased, and it is there whether citizens use it or not. A resident of Oregon making a long distance call, however, becomes a specific charge on the monthly telephone bill. Thus, from one point of view, the Internet is free.
- Politicians and their appointees find it expedient and politically correct to foster the belief in the near miraculous powers attributed to 'the information autobahn' and 'the Internet.' Reality often imitates belief. We are witnessing in the US an unprecedented interest in electronic access to information.
- The technology is becoming readily available in affluent homes. For example, the number of US households with a modem-equipped personal computer is expected to rise from 13 percent in 1993 to 25 percent by 1995. With this growth in online connectivity and the desire of the Nintendo generation for interactive entertainment, many believe that anyone disseminating information must face the growing importance of interactive electronic publishing. Based upon past experience in electronic publishing, the most successful services will be those that offer necessary

information, such as critical statistics, back issues, or computer programs, that can be downloaded, as well as those that promote interactively.'

- Money is generated. The hope is that public-private ventures spin off significant amounts of cash. Grants are available, such as the one funding CommerceNet in Silicon Valley, one of the first online financial transactional services to feature encrypted credit card data, letters of credit and digital signatures. Furthermore, access to the network remains inexpensive because funds continue to be available from Federal sources, and telecommunications companies have the infrastructure for access in place.
- The Internet promises, at least in theory, a mechanism for some state and local paperwork to be reduced, thereby reducing costs. Awareness of electronic information, available to anyone at no or low cost, promises to provide another way to distribute information about health, insurance and dozens of other vital concerns to residents.

1.1. Florida: a price list for electronic information

In addition to Internet activities for elementary and secondary schools, Florida has been an early leader in state-wide library networking using dial-up and Internet connections. A significant new chapter in state electronic information is now being written. Kentucky and several other states permit officials to set fees for electronic information and make distinctions between customers who wish to use the information for commercial or non-commercial purposes. Kansas, Georgia and several other states provide direct access to electronic information for people who pay an annual fee. These vary by state. Florida officials, in response to demands from local governments, are exploring ways to set a formula-based, uniform charge for government data in electronic form. A similar movement is gaining momentum in New York. Within US federal agencies, cost recovery is permitted. However, the Florida approach amounts to a price list.

The proposed fee schedule charges for information 'by the byte.' For example, a customer would pay one penny per 1,000 bytes for the first three million bytes of data, one penny per 2,000 bytes for the next seven million bytes, and one penny per 10,000 bytes for additional data. The proposed fee cap is \$3,000 per transaction. Under this proposal, the Florida Department of Education's annual report would cost \$80 in electronic form. A floppy disk copy costs about \$0.40.²

The arguments for free access pivot on the fact that government information has been 'paid for' by taxpayers. However, in the face of mounting budget pressure

[1] Thomas Forbes, 'Testing the waters online,' *Folio: The Magazine for Magazine Management*, 1 December 1993, volume 22, number 22, pages 64-66 and following.

[2] Larry Rohter, 'Florida weighs fees for its computer data: some see profits; others, too high a price,' *The New York Times*, 3 1 March 1994, page A 12.

and awareness of the fees commanded by resellers of the government-provided data, strong advocates for 'selling' information have stepped forward. Because of the rapid spread of personal computers, significant amounts of state and local agency information is in machine-readable form. As the practice of charging for electronic information grows, the availability of government data on public networks will increase as well. If the present budget climate persists, government entities at federal, state and local levels will assess fees for electronic information. Whether the Florida proposal becomes law is irrelevant; the door is now open to a formalised, consistent pricing mechanism for government information from state and local entities.

1.2. *Texas and technology transfer: revenue from patents licensing*

The term *technology transfer* describes programmes and activities to move technology from the owner of the technology to another person or organisation for financial consideration. Among the leaders of the technology transfer movements are academic institutions. Technologies developed in university research laboratories have been in the forefront of this marketing effort. The reason is that revenues from a successful licensing arrangement flow into depleted coffers.

In the fall of 1992, Texas Innovation Network System (TINS), a non-profit organisation chartered by the Texas state legislature to support technology transfer and business growth, was established. Since its inception, TINS has acquired several hundred members. In design, TINS is a database system that has no databases of its own; instead, it is a gateway to the vast online resources of the Internet. TINS is, in effect, a miniature Internet, providing selective access to databases of value to the Texas high-technology community. TINS's most popular databases are a trio of directories covering Texas technology resources. The first, *Texas High Tech*, lists over 3,000 manufacturing and service companies in the state, with information on products, services, sales volume, size, location and management. Faculty Profiles lists thousands of science and engineering faculties in dozens of Texas universities. The third file, Research Centers, lists 300 university-affiliated and independent research organisations in the state.'

In a not-too-surprising commitment to the Internet, Texas now backs TCP/IP as its 'standard.' The decision affects more than 200 state agencies. It is clear that Texas is serious about enabling state agencies to provide Internet access to data and information services.² Officials charged with attracting new business to a state can use the Internet to publicise to a global user community information about taxes, technology, economic conditions and special incentives at little incremental cost.

However, the Texas Department of Commerce felt that more was required. A new service — TEXAS-ONE — provides low-cost wide area networking services to

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- [1] Mick O'Leary, 'TINS boosts Texas high tech transition', *Information Today*, March 1993, volume 10, number 11, pages 11-12.
[2] Ellen Messmer, *Network World*, 11 October 1993, volume 10, number 41, pages 1, 61.

companies that cannot afford such systems. Under the auspices of the Texas Open Network Enterprise, the state has formed an alliance with the University of Texas at El Paso and several other state agencies to provide funding and technical support for the programme. These WANs will be able to link with the Internet and other online services.

1.3 California: reducing costs for transportation and its supporting infrastructure'

The Internet has emerged as a metaphor for telecommunications and computer technologies that permit people to work from their home or from special telecommuting centres. Commuting to work in Los Angeles is difficult even without earthquakes, floods, fires and civil disturbances. When a disturbance occurs, commuting becomes a nightmare. Shortly after the earthquake in 1994, the telecommuting centre set up by Newhall Land in Valencia, California, could not meet demand.

But the first active telework centre opened in Coronado, California, near San Diego, in October 1993. Money for the experimental programme has come from the California State Transportation Department. The University of California at Davis is managing the project and providing staff.

The purpose of the experiment was to see if commuters can work from telework centres. In this pilot, access to the Internet is one of the features of the overall undertaking. California is actively looking for ways to reduce the traffic congestion in its major cities. The Neighbourhood TeleCentres are set up to provide an alternate work place so that employees do not have to drive their automobiles to and from a principal work place each day.

The basic equipment in each centre consists of

- Four telecommuting workstations, essentially personal computers with access to a modem.
- One facsimile machine.
- A photocopier.
- Meeting area.
- Eating space.

The facilities meet OSHA and American Disability Act guidelines. The sites have been selected because they are on the periphery of Los Angeles' most congested areas and are located within walking distance of shops and restaurants. In America's major cities, "driving to a telework centre, or driving from the telework centre to shopping is nearly as bad as driving downtown to go to work", says Robert Moskowitz, a journalist who has covered California's telecommuting tests.

He continues, "Most telecommuting work centres are set up with twenty to thirty workstations, and are intended to draw from a fairly large geographical area,

[1] For a discussion of the state-supported CommerceNet online marketplace, see pages 65-66

perhaps with a radius as large as five to ten miles. In contrast, [these new] CalTrans neighbourhood telecommuting centres are not expected to draw people from more than one mile in any direction.”

Los Angeles (California) equipment and telecommunications guidelines for telecommuting centres			
Type of centre	Equipment recommendations	Estimated cost in 1993 US dollars	Comment
Local site	Computer Facsimile machine Modem Sueaker phone	\$6,000 per site	Minimum level of telecommuting connections
Sub regional site	Facsimile machine Computer Modem Electronic bulletin board support Audio conference bridge Link to larger hub meeting site	\$23,000 per site	Information objects may be brought by telecommuters to electronic meetings
Hub site	Facsimile machine Large group audio conference unit Document teleconferencing unit (electronic white board) Desktop video conferencing unit	\$28,000 per site	Supports audio and document teleconferencing

California officials envision many small centres linked to central office areas via the Internet. Each of the proposed new centres requires that workers using the facility provide detailed feedback about the facility and its services. Operating hours are from 09.00 to 17.00. There are relatively few rules associated with use of the centre. Chief among them are:

- Users cannot modify the computer equipment.
- A written agreement spells out requirements and guidelines.

The number of telecommuters in the US is estimated to be about eight million. There is a general feeling among many observers of the changing work place that this number is growing.

One drawback to telecommuting via the Internet or direct-dial access is that state and local regulations may prohibit such use of residential facilities. Most troublesome are municipal statutes that were originally promulgated during America’s industrialisation in the early 20th century. These statutes prevented a person from using a residence as a chemical processing facility or a meat packing plant. Consequently, most states and municipalities are ignoring the laws and regulations prohibiting telecommuting unless a specific complaint is filed with the authorities.

Thus, although the Los Angeles pilot project specifically prohibits those using the facilities for telecommuting from breaking the law, the centre itself is testing the feasibility of working at locations other than the office. In many cities, working outside of the office is itself illegal. In Chicago, for example, zoning and business laws prohibit the use of mechanical or electrical equipment for business purposes in the home.

There is little doubt that outmoded laws will be changed. In California, such powerful groups as the Institute for Local Self Government and the South Coast Air Quality Management District (Los Angeles County) are solidly behind the use of computer systems and networks to provide some relief for the urban problems associated with millions of people commuting to and from work each day.¹

When the Internet offers increased data transfer, the California telecommuting centres will be equipped with the video conferencing hardware necessary to minimise air travel as well as automobile use in the state.

1.4 Utah: planning for the future

Consider Utah: the state has combined public and private funds to develop a far-sighted programme for state agencies and educational institutions. State agencies maintain more than 1,000 databases of state-assembled data. Most of these are online for use by state officials, and a small number are publicly available. Governor Michael Leavitt sees public access to certain real property and insurance records, health and environmental information and insurance and health care information as being desirable.²

For more than 20 years, the state has been in the forefront of electronic information technology. In addition to Internet connections, Utah has been home to a robust high technology industry, including Novell Corporation.

Fuelled by exploding interest in the Internet and other communications technology, Utah envisions a range of electronic services that would use low cost communications via the Internet with computers to improve education, health and human services. Consider Utah's use of advanced communications technology in education: in addition to Internet connections at Utah's two year and four year colleges and universities, Utah's student-to-computer ratio is 11:1. The US national average is 16:1. The state's Educational Technology Initiative — a partnership between state governments, private industry, school districts and colleges — has provided about \$100 million in funds for a range of computer and telecommunications equipment.

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- [1] The information about California's telecommuting pilot using Internet and other high-speed communication channels comes from a feature article by Robert Moskowitz, 'Telework centre's grand opening,' *Microtimes*, November 15, 1993, pages 43-43, 44, 46, 48.
- [2] Information about this organisation may be obtain by writing to UTIA, 2413 East Granite Hills Drive, Sandy, Utah 84092.

EDNET is Utah's education network. Enrolment in the satellite-beamed courses has grown more than 300 percent in the last 12 months to 3,500 students, up from 1,000 in 1992. Within 24 months, every high school in Utah will be linked to the system. At the Lake Ridge Elementary School in Magna, Utah, students send electronic mail to students in Barcelona in Spain each school day. More than 300 classrooms link via a combination of satellite video and Internet connections

According to a series of articles in the *Salt Lake Tribune*, state officials want residents to have access to a system that lets people communicate "easily, reliably, securely and cost-effectively in any medium — voice, data, image, or video — anytime, anywhere."

The state has allocated additional funds for a wide range of technologies. The state's schools have the highest percentage of schools connected to local area networks, as well as the second highest number of CD-ROM drives. By 1996, Utah will achieve satellite-delivered instruction to every high school. The system will be one of the largest networks in the world with links to the Internet.

What Utah has learned is that computer-assisted learning changes school into an environment that shares some features with the work place, according to the International Society for Technology in Education.

Utah has on the books the Government Records Access and Management Act of 1991 (GRAMA). The act spells out a system for classifying government records and specifies penalties for misuse of the information or blocking a citizen's access. Utah is one of the few states with legislation that specifically addresses electronic access to information. But the act will not be able to address all of the issues associated with widespread access to electronic information. Utah and the other 49 states will have to modify rules and procedures as they move forward.

Among the services envisioned are:

- Police officers using portable pentop computers to record, print and check licences in the course of parking enforcement. Using a combination of wireless and low-cost networks, police would have access to local, state and Federal databases.
- Police vehicles would be equipped with an on-board computer that would access criminal records, city ordinances, fingerprint records and photographic archives of felons. Data would be transmitted by wireless technology and seamlessly link with high-speed networks to investigative centres regardless of location.
- Emergency vehicles would be equipped with computer systems that could obtain, transmit and receive vital signs, electrocardiogram readings, insurance and case information. Imaging capability would enable personnel in the emergency vehicle to provide and obtain more accurate information en route to a medical facility.'

Utah, like Kansas, envisions leveraging Internet access and a public-private partnership with the state's 1,350 high technology companies. The idea rests upon the low cost approach of the Internet. Gordon Peterson, Utah's state information technology director, wants to provide access to a wide range of information at no or low cost. The problem he foresees is one of limiting access and protecting privacy. Privacy is likely to be one of the top issues associated with the vision of electronic access to information.

1.5 Kentucky: off to the data races

The Kentucky Finance Cabinet working with the Governor's Commission on Quality and Efficiency decided in November 1993 to ask Kentucky companies for ideas on how a statewide information network might be operated. The University of Kentucky, the University of Louisville, and several other four-year schools, have been active Internet sites for years. The University of Louisville, according to one of the Internet system specialists, is at capacity and continues to buy more bandwidth because of rapidly rising use.

The state officials and company representatives who have worked with the Kentucky Finance Commission have outlined a sweeping vision of the future for a predominately rural state with two major cities, each with a population of about 500,000 people. The services pivot upon the Internet nodes at the major universities, high capacity bandwidth of existing cable television operators, and fibre optic cable to be installed by the regional Bell operating company that services most of the Commonwealth.

The Commonwealth's data highway will:

- Allow the universities to have data, image and video links to community colleges and other schools.
- Link state and municipal offices with electronic mail.
- Provide auto licence branches into the state computers in Frankfort.
- Enable privately held companies to conduct video conference training for employees in field offices.
- Let radiologists at health clinics in small sites send scans to Louisville where they are read by specialists.

Links among libraries in the state are part of the plan. Kentucky Educational Television wants to use the information highway to expand its educational programming. One 1991 study said that the state of Kentucky was spending \$7 million a year to transmit information over 33 different networks and that the cost could

[3] Information about Utah has been extracted from *The Salt Lake Tribune*, 28 December 1993, pages A-1, A-4, A-8, and A-9.

rise to \$30 million by 1996. The information highway represents one way to cut costs by consolidating the data traffic. The state spends about \$250 to send an employee to Frankfort, the state capitol, for a meeting. A video conference would cut the cost of an employee's participation in a meeting to less than \$20.'

2. Grassroots advocates

Ferment at the grass roots is gaining momentum. States' rights has a long tradition in America. Equally important has been the effectiveness of local special interest groups in bringing about change. The US government seems particularly vulnerable to pressure politics. Internet-enabled communications services bring a new power and scope to such activities, giving local groups access to a broader constituency. Electronic communications shrink time and distance with the same potential for unexpected impact as other Internet phenomena.

2.1 *The Centre for Civic Networking*

The Centre for Civic Networking (CCN) is based in Boston, Massachusetts and Washington, DC. CCN is devoted to the grassroots, fertile soil in which the Internet has taken root. The organisation founded in August 1992 was a response to the alliances and acquisitions among telecommunications, cable, software and computer companies. The objective of CCN is to educate the public and community leaders about the virtues of the existing Internet. Commercial interests, founders Richard Civile and Miles Fidelman believed, would transform the free or low-cost Internet into a commercial and costly service.²

In October 1993, CCN issued a policy document *A national strategy for civic networking: a vision of change*. The white paper spells out for state and local politicians the positive benefits of Internet-anchored public networks. Among its key points were:

- A somewhat rosy depiction of how networks can cure many of American society's gravest ills.
- An argument that benefits to citizens result from leveraging the existing Internet infrastructure and approach for the National Information Infrastructure envisioned by President Clinton.
- A need for hard information that provides insight into ways Americans use networked information, ways to support local civic networking

[1] The profile of Kentucky's information highway activities is based upon information gathered by Ric Manning. A feature article 'Road to the future,' appeared in *The Courier-Journal*, 12 December 1993, pages E- 1 and E-5.

[2] The organisation may be reached at P. O. Box 65272, Washington, DC 20035. Telephone: 202-362-3831. Internet: rciville@civicnet.org.

projects, and provide policy models to help guide American civic institutions.'

Schools, local governments, public interest groups and neighbourhood coalitions have been finding out how to foster Internet-based communication in socially 'invigorating' ways. According to Richard Cville, the United States needs pilot projects, perhaps funded by public-private partnerships, to see what kind of civic information services people will use and what works.²

2.2 Freenets

A key tenet of CCN is the importance of Freenets or locally-operated online services that provide access to the Internet. Cleveland Freenet is one of the most visible in the United States, offering dial-up access to the resources of the Cleveland Public Library as well as full Internet access. About a dozen Freenet nodes exist throughout the United.

There is considerable variation among Freenets. The services offered in Cleveland, Ohio, are not identical to those offered in Peoria, Illinois, for example. There are some 40 Freenet projects under way in North America, including several in Canada.³ Other efforts to galvanise grassroots exist as well. Community support of Internet services has spread to Toronto, Ontario, and appears likely to migrate throughout North America.

One contributing factor to these grassroots Internet movements is the United States government itself. The National Science Foundation, in consultation with specific other agencies, is authorised to make multi-year grants to states to develop electronic libraries. These libraries will provide access to databases, computer programs and interactive multimedia presentations that can be carried over the Internet and similar networks. Senate Bill 626 was developed to enhance states' use of information. It anticipates use in education, business and government. Iowa's state network — the Iowa Communications Network — allows users to share information over a fibre-optic network designed to transport voice, data and video signals statewide. The network links Iowa's schools, public universities, community colleges, independent colleges, government offices and libraries. Activity is under way in several cities to establish Freenet links to this network. The diminished importance of physical libraries and the reduced opportunities for contact between users and information professionals means the latter need to reach out to users and add value to services. In Cleveland, some professional researchers use the Freenet

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- [1] Lance Rose, 'Beyond the 500 channels: the centre for civic networking,' *Boardwatch*, January 1994, pages 88-9 1.
 - [2] Langdon Winner 'Beyond inter-passive media,' *Technology Review*, August September 1993, page 69.
 - [3] John Eberlee, 'Freenet hope to promote IS literacy', *Computing Canada*, 18 January 1993, volume 19, number 2, page 38.

to sidestep the fees of commercial online companies. Government funds have helped make these grassroots services possible.’

3. Outlook 2000

The activities of the states and the citizens may dwarf commercial databases if one considers the impact of placing all government-produced information in electronic form in publicly-accessible servers. However, funding remains a central issue. Most of the state and local Internet or electronic services have flourished because costs have been low and often paid by various grants and allocations. When the subsidies are withdrawn, the state and local services will face different economic realities which will open new revenue opportunities for commercial firms partnering with the government to disseminate or publish information.

Even more problematic in the US is the spectre of information haves and have-nots. Affluent people have advantages that are not easily duplicated from public access terminals. On the other hand, too much information can be a form of information poverty, especially if it drives people away from communicating or listening to useful information. The information society also seems to encourage a new type of information poverty — a bias against certain information channels, especially the library and the printed word. Solutions to the problem of information poverty include the development of more standardisation in basic equipment and better communication among information professionals.²

The economics of electronic information pay scant heed to the theorists, listening instead to what the market says. With some exceptions, those without money also tend to be without access to good information. In the United States, the population of information poor is growing rapidly in even the upper middle economic class. Even those with money may lack the necessary computer skills related to a given operating system, or they may lack the appropriate information retrieval skills. By 2000, government information will stratify with free, low cost and premium-priced products.

The promised information superhighway does not have a way to ensure the quality, accuracy or value of what moves through the system. The issue of confidentiality is likely to remain a difficult challenge for years. Like copyright, policies, approaches and guidelines for handling print do not transfer easily into the electronic arena.

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- [1] Lois F. Lunin, ‘On the way to a National Electronic Library’, *Information Today*, May 1993, volume 10, number 5, pages 19-20.
[2] James H. Sweetland, ‘Information poverty — let me count the ways,’ *Database*, August 1993 volume 16 number 4, pages 8- 10.