The Connected Municipality:

TELECOM INFRASTRUCTURE FOR ECONOMIC DEVELOPMENT

By: Lis Angus

"We in Ontario, and Canada, are at a turning point in our journey to the new information society. We have a choice. We can continue, business as usual, and in doing so fall behind. Or we can, in partnership, set out on a new course. Such a course involves a change in thinking, and the courage to act."

Don Tapscott, Chairman's remarks
"Telecommunications: Enabling Ontario's Future", August 1992.

"Perhaps more than ever in the course of our history, our prosperity and well-being depend on our ability to exploit the potential of telecommunications and information technologies."

Excerpt from "Telecommunications: New Legislation for Canada", companion to Bill C-62, now adopted as the new Telecommunications Act.

Many people don't appreciate the range of policy options open to municipalities in regard to telecommunications, or the importance of this issue to economic development initiatives at the local level.

In fact, the most common response when the subject is broached is, "Isn't telecom a federal matter?" Those who are aware that Ontario has adopted a provincial strategy for telecommunications may assume that the province has dealt with any remaining questions not covered by federal policy.

Certainly telecommunications is a federal matter. As of October 25, 1993, we have a new Telecommunications Act which, among other things, will bring the last two prairie telephone companies under federal jurisdiction (Manitoba Telephone System by the end of 1993, and SaskTel sometime after five years.) A Supreme Court case, likely to be heard in 1994, may extend federal regulation to the level of the small independent telephone companies as well.

And there is an important complementary role for provincial governments to play in facilitating infrastructure development and technology education within the provinces.

But there are important issues which can only be dealt with at the local level — areas which are of immense practical importance to assuring that Canadians have access to the telecommunications infrastructure we need to take us into the twenty-first century.

The Role of Telecom in Municipal Economies

Telecommunications has been described as the "infrastructure of the future," enabling organizations in all sectors to provide new services and to respond to their customers and clients more effectively.

Businesses of all sizes (and in all sectors) use telecommunications to move information, to market their services, and to provide better service to customers. Governments and institutions similarly rely on telecommunications to deliver effective services in a timely and cost-effective manner.

Telecommunications can play a major role in the future economic development of Ontario municipalities, large and small:

- The local availability of leading-edge telecommunications services can act as a differentiator in attracting new businesses to the area.
- Advanced and cost-effective telecommunications can facilitate growth and global competitiveness in existing local businesses.
- The telecommunications sector itself is a source of employment, one which will grow precisely because its services facilitate the work of the entire economy. Local growth in this sector will create jobs and strengthen the municipal tax base.

Most Ontario municipalities — particularly the larger centers — currently have an excellent telecommunications infrastructure. But telecommunications is, by its nature, in a state of constant change, due to increased customer demands as well as technical evolution. Ongoing excellence in local telecommunications will not happen by accident: it will require leadership.

Suppliers and major customers will provide some of that leadership, as they have in the past, but there are areas in which they need leadership and facilitation from local governments as well.

The Metro Toronto Example

Metropolitan Toronto, for instance, has taken steps to recognize the importance of telecommunications as an enabler of economic growth. In mid-1992, the Council of the Municipality of Metropolitan Toronto established a Telecommunications Committee, with a mandate to foster telecommunications excellence in Metro Toronto.

This committee has recognized that the telecommunications industry is itself a major source of employment and revenue in the area. Over 600 telecom-related companies are located in the Greater Toronto Area, providing services and equipment to businesses and residences in the region as well as, in many cases, to distant markets in Canada and internationally.

Lis Angus is Executive Vice-President of Angus TeleManagement Group, based in Ajax, Ontario. She is co-editor of the monthly magazine TELEMANAGEMENT. In 1992, she was a major contributor to the strategy report "Telecommunications: Enabling Ontario's Future." The research on which much of this article is based was funded by the Municipality of Metropolitan Toronto, and was presented in preliminary form at a 1993 conference in Toronto on "The Telecommunications Revolution and Local Government."

It has also recognized that the telecommunications infrastructure will be a key factor in fostering ongoing economic development in Metro Toronto, as it emerges both from the recession and from the restructuring process common to companies throughout the Ontario heartland in the 1990s.

Metro Toronto is currently examining its options to determine what municipal government measures will best serve the interests of suppliers, businesses, and residents in the community.

User Needs

Increasingly, business and government users (as well as institutions such as hospitals, schools, and libraries) will need access to high-speed networks, and to advance services which are delivered over those networks. Reliability, affordability, and speed of deployment are important issues.

Consumers' quality of life can also be enhanced by services provided by advanced networks: for example, access to education networks, telework opportunities, increased personal security, and interactive entertainment services.

Major businesses view telecommunications as a crucial enabler of their current services and future growth.

At a minimum, business organizations need access to high quality telecommunications services — local and long distance — at affordable rates. But the needs for the future go beyond minimum requirements for simple voice and data calling.

Increasingly, businesses foresee an evolving need for higher- bandwidth services than are currently available, for applications such as connecting Local Area Networks and videoconferencing, among others. File transfers within and between organizations will increasingly involve not just data files, but multimedia files (integrating data, voice, and image) which require much greater bandwidth.

As organizations increasingly move to "telework" — with employees working from home, from remote hubs, from client sites, or from mobile offices — high bandwidth services will be needed not just within the downtown core of our towns and cities, but into the suburbs and surrounding areas, as well as connecting to intercity networks.

Rapid and failure-free movement of information is absolutely essential to the banking community, among others. Redundancy — the deployment of backup services, where possible from different suppliers over alternate routes — is important to assure the security of data networks and contingency planning. The banks report that carriers have not always been responsive in the past to their need for redundant services.

These needs will drive a growing requirement for fiber optic technology. Fiber technology is important because of its high capacity. In addition, it provides other benefits such as pure signal transmission. Fiber ring architectures — being introduced by both telephone and cable TV network providers — mean that a break or interruption in the cable at one spot does not disrupt transmission: the transmission simply goes the other way around the ring. Suppliers (e.g. Rogers, Unitel, Bell) are increasingly deploying ring technology for their own backbone services — but some large customers also want "survivability" in the services they lease.

Redundancy can simply mean that services are duplicated to provide backup. For greatest security, customers prefer services over different physical routes and from more than one supplier.

Many business users believe that competitive supply of telecommunications services is increasingly critical. This not only allows customers to diversify their networks, but competition puts pressure on suppliers to improve services, introduce new services quickly, and reduce prices — all of which creates a healthy environment for businesses that rely on network services.

Another issue for users is speed of deployment. If new services are introduced in Canada years later than in the US — which has historically been the case — this harms business' ability to compete with US firms. Users want services introduced quickly, and when they order service, they want access provisioned quickly.

The deployment of high-bandwidth services will also facilitate development of software applications using such services, by research organizations, software houses, and professional firms. The Ontario government has highlighted the importance of software development as a component of the "information infrastructure" needed to carry the Ontario economy strongly into the next century.

Small Business, as is well known, is currently creating the most new jobs. Telecommunications can help small businesses grow. For example, technology can support the establishment of "home offices", or roaming offices (real estate agents often use their cars as mobile offices, for example). Telecommunications can give small businesses access to customers and suppliers far beyond the local area, giving them access to regional, national, and world markets. And telecommunications can help small businesses succeed, by giving them access to necessary information and improving their productivity.

Residential Users. There is a continuum between provision of high-quality business services and support of enhanced quality of life for all Ontario residents. Some examples include improved access to services such as:

- Education, training, distance learning. This can allow individuals to upgrade skills without necessarily being physically present at a school or college.
- Telework, telecommuting. This not only can reduce commuting travel and pollution, but can make work accessible to the handicapped, and to individuals who need flexible work schedules to accommodate other responsibilities such as child care or care of the elderly.
- Safety, emergency care. Greater access to emergency services.
- Access to information. Access to library databases, information sources.
- 'Shop at home' and other retail applications.
- Entertainment. Greater choice and control over entertainment options with such services as video-on-demand or interactive services.

The existence of high-quality communications for residential consumers can also be a benefit to businesses (existing or new) who need access to a flexible, trained workforce.

Government users: In addition to stimulating economic development in the local business community, good telecommunications services can enhance the operations of local governments themselves. In a time when governments at all levels are having to "do more with less" — ratepayers want to be well served, but don't want local taxes to go up — technology can help pull this rabbit out of the hat.

First of all, telecommunications services can increase the efficiency of municipal administration and operations.

- Costs can be reduced by substituting technology for time-intensive activities, freeing people to perform other tasks. (For example, internal use of voice messaging

eliminates the need for secretaries to fill out "pink slips;" secretaries' time can be spent more productively, and the exchange of information is more complete.)

• Teamwork among committee members can be facilitated by services such as electronic mail, file sharing, and teleconferencing.

Secondly, and probably more importantly, local governments can use technology to serve taxpayers in the community more effectively.

The Ontario Government's Telecommunications Strategy includes concepts such as "Ontario Online" to improve access to government services, and "government as a model user" to stimulate service development as well as improve efficiencies. Local analogues to such services could include 24-hour access to information about municipal events and services, including the ability to sign up using interactive voice response technology; or schools using voice mailboxes to help parents stay in touch with teachers; or libraries providing on-line networking to other libraries; or doctors consulting with specialists located elsewhere, using images and video transmissions to help in diagnosis.

The Infrastructure

The telecommunications infrastructure — sometimes referred to as the "electronic highway" — has several components.

• First of all, there is the network itself, both local and intercity. In today's world, this really means multiple networks: not only wire-based networks installed and operated by the telephone companies and competitive carriers like Unitel, but circuits provided over satellite , microwave, cellular, radio, paging, cable TV, and other media. Modern networks are not just passive circuits, either: today's networks are software-controlled "intelligent" networks. These networks are always growing: extending to new developments and buildings, adding capacity, upgrading software or switching, or even adding entirely new technologies.

• Secondly, there are the services provided over these networks. These may include pricing packages to help users control their costs; messaging services, such as electronic mail or voice mail; video and audioconferencing services; and a host of other services. To be effective as a driver for economic development, these services must be innovative, flexible, cost-effective, and introduced in a timely manner. Businesses and other organizations should have access to the range of services they need, as soon as they need them — and certainly not long after their competitors in other areas have had access to the benefits of the new services.

• A third requirement for an effective infrastructure, one which is often overlooked, is an active and informed user base. It is important that local business people and organizations be aware of the technologies and services available to them, and the costs and benefits associated with each. They also need employees who know how to use the technology, and how to manage it. Without this knowledge base, the benefits of the networks and services cannot be realized.

Suppliers are faced with the fact that network expansion is capital-intensive, and that it is difficult to fund such expansion in advance of customer demand. (Customers want service right away when they determine a need for it — but to have it available, suppliers have to have anticipated these needs, often by a matter of years.)

Some of the significant costs of extending or building networks include:

• Obtaining rights of way and approvals for construction, including negotiations with other utilities as well as various levels of government. This is both costly and time- consuming.

• Trenching to install cable. The cost of trenching — including often digging up roadways, removing and replacing sidewalks — is much higher than the cost of the cable itself. As a result, "joint builds" are often the only way to go. In new developments, cable TV, hydro, and telephone lines are often laid simultaneously.

Municipal Options

Municipalities have jurisdiction over most rights of way in the province (other than along provincial highways). This was true under the Railway Act, which governed telecommunications regulation from 1907 until October 1993, and is still true under the new Telecommunications Act.

"...a Canadian carrier or distribution undertaking may enter on and break up any highway or other public place for the purpose of constructing, maintaining or operating its transmission lines and may remain there for as long as is necessary for that purpose, but shall not unduly interfere with the public use and enjoyment of the highway or other public place." (Section 43.2)

"No Canadian carrier or distribution undertaking shall construct a transmission line on, over, under or along a highway or other public place without the consent of the municipality or other public authority having jurisdiction over the highway or public place." (Section 48.3; emphasis added)

If a carrier cannot get consent from a municipality, the Act does allow the CRTC to overrule the municipality and grant consent. The Act does not deal with questions such as compensation to municipalities for providing such carrier access.

It is not generally in a municipality's interest to hold up approvals for right of way access, or to charge excessive amounts for them. Time and red tape in obtaining approvals can be major cost items to carriers. Anything which speeds up the approval process means that suppliers can install new networks and services more quickly, at a lower cost — meaning that businesses and other organizations have access to new technology more quickly, and that unnecessarily high costs are not imbedded in the rate structure.

Municipalities have two options open to them in their relationship to telecommunications providers (including cable companies).

They can act as a roadblock. Typically this takes the form of viewing only short-term revenue opportunities for the municipality, for example considering right-of-way applications to be a "cash cow." Unreasonably high fees for rights of way or access to buildings, long lead times for applications and decisions, all serve to delay the deployment of technology and drive up its price to users.

Or — and this is the stronger choice from an economic development perspective — they can choose to facilitate telecom infrastructure development. Activities which municipalities can undertake include:

• Encourage supplier development, including the extension of service to new areas, as well as the appearance of new suppliers and technologies.

• Speed up the approval process in applications for access to municipal rights of way. If co-ordination with the province is required (for access to provincial roadways, for example), assist in this. Condense multi-level approval processes as much as possible.

• Encourage the development of new services and applications. This may be an opportunity for new businesses in the area — for example, software developers or maintenance providers.

It is possible to apply for provincial

funding for local initiatives in telecommunications, in both network development and application/service development, under the Ontario Network Infrastructure Program (in our acronym-loving age, this is referred to as "ONIP") as well as the Sector Initiatives Fund. Despite provincial budget cutbacks, funding for these programs is in place, as essential to economic development in the province. So it is important that the designated funds flow into local economies to support the types of initiatives for which they have been designated. Municipal governments can assist local groups in putting together such proposals. (For further information on these programs, contact the Ontario Ministry of Economic Development and Trade at 416-326-9600.)

Conclusion and Recommendations

Telecommunications is a major enabler of economic development. It facilitates the growth of every sector in the economy — increasing productivity and effectiveness — and promotes job growth.

Municipalities are in a unique position to offer leadership in the following areas:

- Simplifying the "red tape" which suppliers face in getting approvals and access to rights of way for new telecommunications construction
- Supporting local initiatives for service and applications development, including putting together partnerships which can carry out initiatives which might not be possible for each party individually. This may include qualifying for provincial funding or other support, but can also encompass joint development or joint marketing initiatives.
- Making use of telecommunications technology to improve the operations of local government.

The "cash cow" approach to supplier requests for access or other assistance is generally a poor option: it's too short-sighted. More long-term benefits will flow to the municipality from an approach which encourages rapid development of networks and services, by multiple providers.

Municipal governments can potentially have a very significant impact on speedier service development and network deployment, which in turn will have a major impact on the local economy.❐