Smart Communities

REPORT OF THE PANEL ON SMART COMMUNITIES

Smart Communities

Report of the Panel on Smart Communities

November 1998

This publication is also available electronically on the World Wide Web at the following address:
http://smartcommunities.ic.gc.ca

This publication can be made available in alternative formats for persons with disabilities upon request.

For additional copies of this publication, please contact:

Information Distribution Centre
Communications Branch
Industry Canada
Room 205D, West Tower
235 Queen Street
Ottawa ON K1A 0H5

Tel.: (613) 947-7466
Fax: (613) 954-6436
E-mail: **publications@ic.gc.ca**

ACKNOWLEDGMENT
Financial support from Industry Canada to conduct the research on which this report is based is gratefully acknowledged.

The views expressed in this report are not necessarily those of Industry Canada or of the Government of Canada.

Cat. No. C2-395/1998
ISBN 0-662-63998-7
52490B

20% recycled material.

A Message from the Panel on Smart Communities

We, the Panel on Smart Communities, believe the six pillars of the Connectedness Agenda as announced in the 1998 Federal Budget — Canada On-line, Smart Communities, Canadian Content On-line, Electronic Commerce, Canadian Governments On-line, and Connecting Canada to the World — will provide new opportunities for learning, interacting, transacting business, and developing social and economic potential in communities across Canada.

A Smart Communities Initiative as presented here will play a fundamental role in linking people and organizations, encouraging the sharing of ideas, and addressing local development needs. We believe it will create a unique and exciting synergy that will come from building locally based innovations into internationally marketable applications. We believe it will result in Canadian leadership in the use and development of information and communications technologies for a knowledge-based economy.

David Johnston, Chair

Alan Aitken, Executive Director, OCRInet

Louis Audet, President and CEO, COGECO Inc.

Cynthia Bernolin, Vice-Chair, National Aboriginal Economic Development Board

John Bulloch, Chairman and Founder, Canadian Federation of Independent Business

Ben Franklin, Former Mayor, City of Nepean

Karen Jeisi, Senior Vice-President, Law and External Affairs, AT&T Canada LDS

Thomas P. Keenan, Dean, Faculty of Continuing Education, University of Calgary

Sylvie Lalande, Group Vice-President, Quebec Communications and Consumer Markets, Bell Canada

Paul Lamontagne, Executive Vice-President, Look Communications Inc.

Monique Lefebvre, Vice-President Quebec and Atlantic Canada, Ericsson Communications Inc.

Bruce MacCormack, President and Chief Operating Officer, Manitoba Telecom Services (MTS) Advanced

Teresa MacNeil, Retired Professor of Adult Education, St-Francis Xavier University

John T. McLennan, President, Jenmark Consulting

Wendy Newman, CEO, Brantford Public Library

Nathan Nifco, President and CEO, Nifco Synergy Inc.

Jeffrey Philipp, President, SSI Micro

Irene Seiferling, Past Chair, Consumers Association of Canada

C. William Stanley, Vice-Chairman and CEO, Fundy Communications

Chief Roy Whitney, Chair, National Aboriginal Economic Development Board

Smart Communities

Contents

Smart Communities

Vision

Smart Communities are towns and cities that use information and communication technologies in new and innovative ways to empower their residents, institutions, and region as a whole. Smart Communities make the most of the opportunities that new technologies can afford — for example, in the areas of better health care delivery, better education and training, and growing businesses — to help them more effectively compete in the future economy. Canada needs these communities to drive the use of technology for the benefit of all.

The Smart Communities Initiative is about embracing an idea that is potentially so beneficial and transformative to our society that it may be reasonably viewed as Canada's ultimate and most logical millennium plan. It is also about a vision of the post-millennium society, in which the cable, telephone and satellite companies, and hardware and software firms move quickly and quietly into a new era known as "technological convergence," the point at which all lines blur between traditional media of print, radio, television, telephone, computers and wireless systems.

This new world of convergence will offer unprecedented opportunities to Canadians once they embrace it. Used wisely, these information tools can be combined into powerful delivery systems for information and services that can enrich the lives of ordinary people and make possible the development of more effective, and more humane, communities. When combined into a single national vision, this information revolution can propel Canada forward markedly. The Smart Communities Initiative is now poised to become the next step in the vision of a connected nation that is built upon connected communities.

Smart Communities is about embracing an idea that is potentially so beneficial and tranformative to our society that it may be reasonably viewed as Canada's ultimate and most logical millennium plan.

The richness of abundant services that will become possible with technological convergence will embrace every aspect of economic, social, educational, recreational and structural needs, from health care to lifelong learning, from basic governance to culture and the arts. The wonderful range of applications that will be at our beck and call tomorrow will be built upon today's creative use of information technology already employed by far-seeing, pioneering communities.

Smart Communities will undoubtedly experience change. But with a plan, those changes will improve the quality of life. With a plan, the city or town of the new millennium will be visibly richer, with an abundance of services powered by technologies that are no more intrusive than the magic behind the delivery of today's television signal.

Many countries will choose their enabling technologies and systems from an ever-growing international marketplace. Here in Canada, however, we have all the necessary human and technological resources in place to give substance to our vision of a connected nation. This means that as the vision takes shape, our Smart Communities can be developed using "Made in Canada" solutions. From this will come international recognition, which in turn will offer economic benefits to Canada as an exporter of knowledge.

1 The Smart Communities Initiative

Canada is a nation committed to the constant pursuit of integrating society, commerce and technology in creative ways to face the challenges of the future. Canadians have traced a long history of embracing new communications and transportation technology to the general benefit of all Canadians, from the building of the "national dream" Canadian Pacific Railway, to the Canadian National Railway, the telegraph, the Trans-Canada Highway and our early role in satellite communications.

Embracing the Future

"I skate to where the puck is going to be."
—Wayne Gretzky

In the 1997 Speech from the Throne, the Government of Canada made a bold pledge:

We will make the information and knowledge infrastructure accessible to all Canadians by the year 2000, thereby making Canada the most connected nation in the world. This will provide individuals, schools, libraries, small and large businesses, rural and Aboriginal communities, public institutions, and all levels of government with new opportunities for learning, interacting, transacting business and developing their social and economic potential.

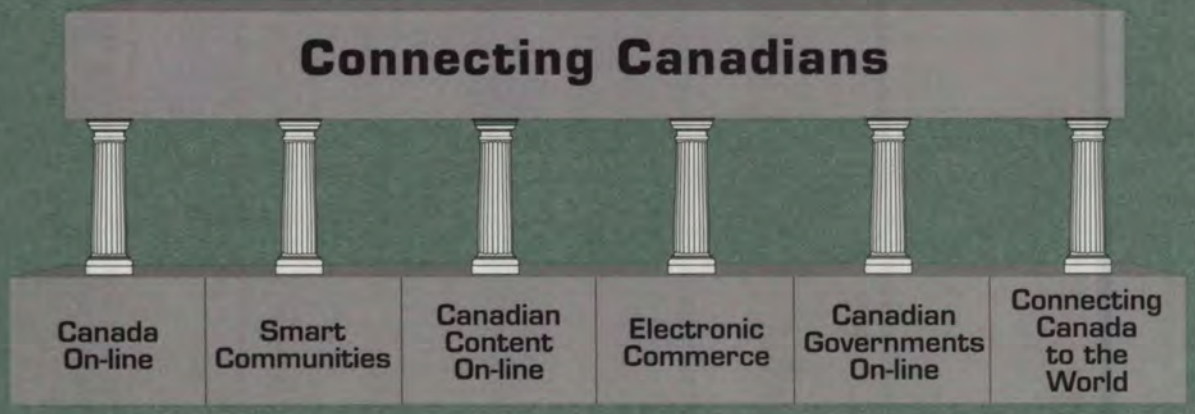
With this announcement began one of the most significant and exciting transformations in our country's history. Under the Connectedness Agenda, Canada is destined to become the most connected nation in the world by the year 2000. It is about people, ideas and speed. It carries with it fundamental implications for the future of communities throughout the country. It is a momentous commitment by a nation with the people, technology, and will to open the door to change.

The Connectedness Agenda consists of six key pillars that will help drive Canada to this goal: Canada On-line, Smart Communities, Canadian Content On-line, Electronic Commerce, Canadian Governments On-line, and Connecting Canada to the World (*see Figure 1*). This report details recommendations by the Panel on Smart Communities on the development of one of these pillars — Smart Communities — throughout Canada.

As a complement to the other five pillars under the Connectedness Agenda, the Smart Communities Initiative will use information and communication technologies to link people and organizations together, share ideas, and address local development needs.

Prime Minister Jean Chrétien formally announced the Smart Communities Initiative to the Federation of Canadian Municipalities on June 8, 1998. The Prime Minister stated he would create a panel of interested individuals to propose ways in which information and communication technology can help create Canadian Smart Communities. The panel was to advise the Minister of

Figure 1: *The Six Pillars of the Connectedness Agenda*



Industry on the need and opportunity to establish Canadian leadership in developing the Canadian communities of the future and in the international Smart Communities movement. Under the initiative, at least one world-class Smart Communities project would be created in each province, in the North and in an Aboriginal community by the year 2000.

Medicine Hat, Alberta

Through a combination of several leading-edge technologies, Medicine Hat is now offering virtual 3-D tours of the entire town through the Internet to users around the world, allowing the city to showcase itself in real-time to new home buyers, potential visitors, film companies and prospective businesses thousands of kilometres away.

Chaired by David Johnston, the panel consisted of experts drawn from the fields of telecommunications, education, law, community development and small business.

The panel addressed the following questions:

- What would be required to make Canada a leader among Smart Communities internationally, and how will we know when we have achieved this?
- If Canada is to lead, what should be our objectives?
- Who are the main partners, what should be their roles, and what type of leadership and support should they provide to the participating communities?
- What service functions and application areas should be targeted with the greatest potential for technological, economic and social returns to communities?
- What are the minimum criteria that qualify a community as smart? What selection and evaluation criteria will ensure maximum benefit to Smart Communities and their partners, yet still allow for creativity and interpretation?
- How can these activities best be organized and delivered so that all regions of the country may benefit?
- What are the most suitable measures of progress and success for any smart activities undertaken?

2 Canadian Leadership in the Smart Communities Movement

The 1997 World Forum on Smart Cities **(http://www.smartcommunities.org)** estimated that some 50 000 cities and towns around the world would embrace Smart initiatives in the next few years. The resulting changes in quality of life, society, competitiveness, commerce and information flow will be continuous, global and fundamental. No contemporary nation can remain indifferent to the potential impacts of these changes. They will turn to established and recognized centres of excellence for the necessary tools and the expertise to power their own transformations. History suggests that this will occur in the same way that the New World purchased European engineering and knowledge in railways, telegraph and steamships in the 19th century to span new continents, thus creating thousands of jobs and great wealth for their European originators. Canada, while too young in the last century to be an exporting power of the industrial revolution, can become a major power in the next century's information revolution.

Canada can be the world leader in the application of these technologies through the adoption of a Smart Communities strategy.

Many communities throughout Europe, North America and Asia have already invested in high-tech infrastructure such as fibre-optic cables, high-speed communications links, and Internet-ready computer systems to implement Smart Community Initiatives. Cities and regions such as Singapore, Hong Kong, Yokohama, San Diego and Smart Valley, California, have made the technological investments and are now developing smart applications in partnership with industry, government, the commercial sector, health and educational institutions, and community groups.

Canada can become a major power in the next century's information revolution.

However, apart from a handful of collective efforts in Europe, Australia and the United States, there are no comprehensive "Smart Community" strategies in any national jurisdiction. The global economy is quickly moving toward an emphasis on knowledge-based industries, goods and services. Entire nations whose economies formerly depended on traditional industries realize they need a new development paradigm if they wish to remain economically vibrant and viable in the 21st century. Success will come to those nations whose communities and regions find opportunities for growth in an increasingly competitive global marketplace while facing challenges presented by devolution and fiscal cutbacks.

As the Government of Canada begins to examine the concept of Smart Communities, other governments in Europe, the United States and Asia are preparing their nations

for leadership. For example, in the emerging European Union, transnational strategies are already engaged, funding programs are in place, export plans are under development, and centres of excellence are being established. In the U.S., several relatively modest national strategies and policies have appeared in what began as independent activity at the local city level. These strategies are now being recognized at the state level and may soon attract massive increases to the existing level of federal support. Japan can be expected to implement a multi-billion-dollar commitment to become a leader in the world of Smart Communities as it has been in consumer electronics, robotics and transportation. The neighbouring states of Singapore and Malaysia have made public commitments in the billions of dollars to create Smart Communities and Smart industries.

Information technologies are among the most underutilized resources for the reduction of costs, delivery of services and creation of business opportunities. As the opportunity exists for the next generation of technological pioneering, Canada will be better poised to become the world leader in the use and development of communication and information technologies through the adoption of a Smart Communities strategy.

Canada could adapt a less assertive, wait-and-see strategy, but then would miss many of the benefits of early use and not be able to play a lead role in developing, producing and selling the applications involved.

In the absence of a national vision and strategy of leadership and cooperation, history suggests that Canadian communities will turn to foreign suppliers of technologies and services to fuel their own information-based development. Some of our more aggressive, advanced-technology firms will capture international clients. Many more such companies, however, will miss markets unless Canada seizes the showcase opportunities and the corresponding worldwide recognition of "smartness." Only then will these companies be recognized and admired as the best the world has to offer.

The real prize is the synergy that will come from building locally based innovations into internationally marketable applications.

Conscious of the Prime Minister's commitment that Canada would become the most connected country in the world by the year 2000, we believe the vision is achievable through the application of the six pillars of the Connectedness Agenda.

Recommendation One

The Government of Canada should immediately launch a national initiative to develop a series of Smart Communities across Canada in support of its Connectedness Agenda. Collectively, these communities would become the most visible international symbol of Canadian leadership while also enriching the lives of individual Canadians.

3 Smart Communities Defined

Smart Communities are built upon a foundation of exciting, life-enhancing smart applications that use existing and emerging technologies. These are most typically applied to the areas of:

- Health/Medicine
- Environmental Management
- Telework and Telecommuting
- Education and Learning
- Transportation Information
- Social Services
- Law and Public Safety
- Housing
- Tourism
- Access to Government
- Community Networks
- Resource Sectors

Smart Communities focus on achieving results in economic returns, social benefits, and technological advancements (*see Figure 2*). They emphasize the balanced and sustained growth and development of all three key result areas with a view to enhancing the human experience, strengthening the community, and achieving world-class competitiveness. A community that improves its circumstances significantly in all three areas, through the use of information and communications technologies, is truly transformative.

While there is currently no single, universally accepted definition of a Smart Community, most definitions of this phenomenon are similar to the following:

A geographical area ranging in size from a neighborhood to a multi-county region whose residents, organizations, and governing institutions are using information technology to transform their region in significant ways. Cooperation among government, industry, educators, and the citizenry, instead of individual groups acting in isolation, is preferred. The technological enhancements undertaken as part of this effort should result in fundamental, rather than incremental, change.

From The Smart Communities Guidebook *(January 1997), prepared by the International Center for Communications at San Diego State University with direction from the California State Department of Transportation (http://www.smartcommunities.org/smart/first.html).*

Optimum use of information and communication technologies is an essential element of Smart Communities. Appropriate technologies may include fibre-optics, cable, microwave, satellite links, cellular, video conferencing, interactive voice response, and the Internet. A Smart Community's strategy will create specific services to address local objectives through the convergence of all these resources.

Vancouver, British Columbia

In Vancouver, city police recently used the RCMP's national Violent Crime Linkage Analysis System to solve a case of serious assault on a child that had baffled them for several years. Within one hour of accessing the new database, the analyst had a possible match with a man with a criminal record. His picture was arranged in a photo line-up and identified by the victim immediately.

Figure 2: *Smart Community Conceptual Model*

All citizens should have equal opportunity of access, requiring a removal of barriers associated with age, culture, physical ability, education and income. Strategies may include low-cost, in-home access as well as public access in libraries, community centres and other community settings.

Community partnerships are the fibres that bind the Smart Community. The myriad technological resources contribute to the interactivity between information providers and information seekers, creating a human process with the potential to empower all citizens to become decision influencers. Community response and feedback will ensure that the technologies used and services deployed are relevant to community needs, rather than merely high-tech exercises.

There are exciting examples already in many Canadian communities: police departments can simultaneously alert hundreds of householders to look for a missing child within minutes of a disappearance; street agencies are providing the homeless with digital voice mail boxes that offer a much needed contact number for potential employers or family members; commuters are spending more precious time with their families and less in freeway traffic jams; home-based businesses are staying connected through on-line training and mentoring; and charitable societies are building a new generation of supporters and volunteers through on-line recruiting. Using innate creative skills, dozens of countries are looking at community challenges in new ways and applying innovative information technology to solve problems and expand opportunities for their people.

How does Canada fit into this picture? Superbly! In a speech to the Federation of Canadian Municipalities in Regina, Saskatchewan, on June 8, 1998, the Prime Minister described the federal vision of a connected nation and the creation of the Smart Communities Initiative. The groundwork for this proposal is already in place

with some of the best and most extensive infrastructure in the world. Canada is in the front ranks of nations in terms of the lowest cost of access to the necessary connectivity and high use of telephone, cable and home computer systems. Across the country, internationally recognized private sector companies exist, ready to deliver all the necessary tools such as smart cards, public kiosks, software and multimedia. And there is growing evidence of a number of technology-based innovations arising in our cities and towns, as expressed in the following small sample:

- The Woodland Cree First Nation has developed a Geographic Information System (GIS) designed to maintain traditional land use information, improving their ability to address and **voice their concerns regarding forestry, oil and gas, and wildlife within their traditional territory.**
- Grand Prairie, Alberta, is using information technology to aggressively promote local economic development. Fibre-optic links installed in all public buildings will enhance the community's connectivity, allowing the transmission of text, images and multimedia presentations **to attract potential developers and investors to set up businesses and create jobs.**
- In Windsor, Ontario, enhanced networking has provided citizens with previously unavailable levels of **access to health care, expanded learning opportunities, reduced inefficiencies and minimized duplication.** Over a dozen service providers have pooled money and expertise into this project in an effort to link schools, universities, hospitals and libraries through a powerful broadband network.
- In Sherbrooke, Quebec, technology has **given citizens a greater say in the activities of their municipal government.** Through the Ville de Sherbrooke web site, residents can monitor and influence the municipal council's decisions affecting the community and their lives.
- Prince Edward Island's Télécommunauté insulaire francophone facilitates access for adult P.E.I. francophones to **an education system delivered in French.** As circumstances permit, the project will also use information technology to keep its constituents informed of changes in government programs and will facilitate ongoing exchanges of information to promote provincewide community development efforts.
- The remote community of Rankin Inlet, Northwest Territories, has been reaching out to the world through participation in the SchoolNet program. In connecting to this network, the community has gained access to a diversity of communities and cultures around the globe. At the same time, its citizens are drawing **closer together and focussing upon their own cultural identity in a global context.**

Canadian communities are using technology to think globally and act locally. They are identifying challenges and are using new technologies as the instruments of change to realize their vision of what their community can become.

Regina, Saskatchewan

A pilot project operated by the Regina Public Library is providing Information Highway access to blind and print-disabled people using adaptive technology – voice synthesizer and special software that strips Internet graphics and sounds out of the text.

The users are able to access Internet services – daily newspapers, sports scores, feature articles, E-mail, etc. There is an appropriate training program as well as a community outreach facility. The result is profoundly transformative: information and E-mail parity with the sighted citizen.

How will these actions by communities transform us into a connected nation? In typical Canadian fashion, transformation will likely come from the grass roots. Those communities already set on the path to becoming a Smart Community will no doubt find their services and innovations growing in number and extending community outreach. Supported by a national strategy, they and other towns that have yet to explore the phenomenon will begin to share ideas, problems, successes and even failures. They will unite through a network or web that will generate its own energy and synergy. While communities are more often concerned with their own local challenges they may, with encouragement, find the strength and provide the credibility to fuel the dream of a connected nation possibly resulting in Canadian leadership on the international stage.

Given the innovation already apparent among Canadian communities, it is fair to question the need for any kind of national overview or plan. Indeed, it is reasonable to assume that over the next few years, left to their own devices, Canadians might well see the blooming of several hundred community initiatives. However, rather than taking a laissez-faire approach, Canadians should actively promote the adoption of best practices across and beyond communities to share knowledge and experience more quickly and effectively.

A national strategy will lay the foundation for cooperation, participation and shared success. Communities can be assisted and encouraged to develop their unique Smart innovations that they select as most appropriate to their culture, size and geography. They will subsequently contribute expertise to the national pool of knowledge. Prairie towns, for example, might develop new agriculture-based information systems

while Atlantic communities develop applications relating to tourism management.

The goal of all communities that pursue a Smart agenda should be the transformation of social, economic and technological processes rather than the cautious incremental improvement in the delivery of services and information to citizens.

Recommended Definitions

A "community" should be defined as a group of people sharing a similar interest, which includes some or all of the common elements: geography, history, interests, goals, culture, economic and social fabric.

A "Smart Community" should be defined as a community ranging from a neighbourhood to a nation-wide community of common or shared interest, whose members, organizations and governing institutions are working in partnership to use information and communication technologies to transform their circumstances in significant ways.

4 The Benefits to Canadians of Smart Communities

The Smart Communities Initiative proposes a revolution in the way citizens interact with their communities. By using an integrated community approach, Smart Communities will harness and maximize the benefits to society of information and communication technologies and use the infrastructure to link people and organizations together, share ideas and information, and encourage cooperation so that all sectors and community members can work more effectively toward sustainable economic and social development.

Quebec Cities

A broadband communication network for telemedicine links the Hotel-Dieu Hospital in Montréal, the Regional Health Centre in Lanaudière, the Sainte-Marie Hospital in Trois-Rivières, and the hospital in Rouyn-Noranda. The network is used for consultation, diagnosis, transmission of digital images, emergency services and professional development for medical staff. This application allows for the sharing of expertise among medical professionals and, most importantly, facilitates access to specialized services that would not otherwise be available on a timely basis in remote areas.

Smart Communities will embrace a new ethic of collaboration. They will rely on the power of cooperation, shared resources and shared goals to increase their competitive ability to retain and attract people, businesses and jobs to their region. Smart Communities have the potential to:

Smart Communities will embrace a new ethic of collaboration.

- help people harness the latent power of information and communications technologies and thereby develop the skills needed to prosper in the knowledge-based economy, improve their quality of life, and strengthen their culture
- stimulate economic growth by helping individuals and businesses become more adaptive, cooperative and better linked to the world
- improve access to, and the quality of, health care information and services
- improve quality and availability of education for people of all ages in all levels of society
- give all citizens a greater say in issues of governance
- collaborate with other levels of government to serve communities and our country more effectively
- advance the state of environmental awareness, monitoring, and protection
- attract high-tech investment and/or businesses to their region.

As a result, members of the community will reap the following benefits:

- better paying, more satisfying jobs
- higher standard of living
- faster, more personal service from their governments.

Moving from incremental change to transformative change, communities will discover new benefits and services that were unimagined until now, simply because the enabling technologies had not arrived or were not explored. An exciting age of awakening for Canadian society and commerce awaits us.

According to John Eger of the International Center for Communications at San Diego State University **(http://www.smartcommunities.org)**, many opportunities and challenges loom for locally based citizens and companies due to emerging technologies:

Locally based companies that once competed with firms only in their region now must battle companies throughout the world for their customers' loyalty and dollars: Wal-Mart On-Line challenges the local hardware store; Dell Computers On-Line challenges local computer stores; and even local colleges feel the cool competitive wind of on-line courses from half a world away. Cities and towns that have historically had a significant and stable residential and economic base have to offer more to maintain their existing populace. They will have to develop a new skill of "civic destination marketing" in order to attract needed in-migration in a world where a growing number of people can live nearly anywhere, often at lower cost, and still have access to the same jobs, the same income and the same products and services to which they have grown accustomed.

As with most advanced technology fields, the developers of Smart tools are highly dependent on skilled individuals. A number of columnists, economists and political leaders have expressed growing concerns about these skilled persons leaving Canada to explore opportunities in the United States and abroad. The aggressive growth of companies in Canada that will logically follow upon the development of the Smart Communities strategy will significantly increase the number and the quality of their employment opportunities.

5 Creating a Unique Canadian Approach

Canada's approach to creating Smart Communities must fit its national advantages, strengths and unique character. In comparison, the European Union is providing large grants to cities and towns to pay for the development of applications considered to be in the interests of an information technology strategy for all of Europe. The United States is relying mainly upon its vast wealth and the competitiveness of its private sector to generate information technology innovations.

Saint John, New Brunswick

New Brunswick's Tele-radiology Network uses digitized X-ray transmission to service remote towns. When ferries and buses were used to transport X-ray films to Saint John for interpretation by a radiologist, the wait for results could be as long as 10 days. The new system produces routine results in 24 hours and emergency readings in minutes.

One of Canada's strengths is its ability to engage and mobilize the community in locally based economic and social activities. Coupled with our competitive advantages in information and communications technologies, Canada is in an excellent position to become a world-class leader in the Smart Communities movement.

To capitalize on these strengths, the panel encourages a holistic, community-driven approach that supports the transformation of communities through the use of information and communication technologies. The Smart Communities Initiative should focus on promoting success through model Smart Communities, stimulating excellence, innovation, learning and the sharing of our experience throughout Canada and abroad. By providing the necessary financial and technical assistance to a select number of communities that have developed a transformative vision and strategy for the future, at least one model Smart Community should be established in every province, in the North and in an Aboriginal community in Canada by the year 2000.

These communities will set the standards toward which others in Canada and elsewhere can aspire.

Recommendation Two

The federal government should immediately launch a national Smart Communities Initiative that:

- **assists communities to implement Smart strategies that deliver improved services to their citizens in such areas as education, health, government services, business and industry, housing, employment, library and information services, transportation, lifelong learning, culture and the arts**
- **creates opportunities for learning through the sharing between**

communities of Smart activities, experiences and lessons learned

- creates new business opportunities, domestically and internationally, for Canadian companies engaged in the development and delivery of information and communication technology applications and services.

Yellowknife, Northwest Territories

New technologies have given Yellowknife residents the option of paying utilities, registering for municipal programs, and paying bylaw violation tickets using only a telephone. Parents can book swimming classes for their children and French lessons for themselves — 24 hours a day.

Recommendation Three

The Smart Communities Initiative should mesh seamlessly with the other elements of the government's Connectedness Agenda (e.g. SchoolNet, Community Access Program, LibraryNet, VolNet, CANARIE, Electronic Commerce, Canadian Governments On-line).

In addition to establishing one demonstration project in each province, in the North and in an Aboriginal community, several others could be chosen to balance considerations of geography, culture and population. This would ensure a range of applications and services across Canada so that communities with different needs and interests could benefit from these experiences (*see sidebars*). This process will generate a set of diverse learning tools to foster economic, social and cultural benefits in other communities.

Recommendation Four

As part of the Smart Communities Initiative, the federal government should establish a Smart Communities Demonstration Project, which would be a phased competitive process to select up to 20 demonstration communities across Canada with the potential and ambition to be recognized as world-class Smart Communities.

Recommendation Five

All 20 Demonstration Smart Communities should be in place by the year 2000.

Recommendation Six

A selection committee should be established at arm's length from the government to determine which communities will receive financial support and to confirm terms and conditions. The report of the selection committee should be made public at the same time that the winning communities are announced.

Recommendation Seven

Selected communities should be supported by a government contribution of up to five million dollars over a period of three to five years, with leveraging to come from other sources.

The Smart Communities Demonstration Project would generate interest among many communities, not just 20, and would encourage them to analyse local readiness to use information and communication technologies to build on community strengths, solve local challenges and meet the needs of their citizens. While the Demonstration Project would provide a powerful impetus to create Smart Communities, its true legacy would be in the development and delivery of strategies, skills, tools and lessons learned to all communities seeking to become Smart. Additional budgetary considerations would be required for these services and programs, which would be developed as soon as possible and delivered through a Smart Communities' Resource Exchange.

Recommendation Eight

Nationally funded, ongoing, related services and programs to the Smart Communities Demonstration Project should be developed in order to disseminate the proven expertise gained and replicate the successes of the Demonstration Smart Communities to other communities across Canada and internationally.

Recommendation Nine

A Smart Communities' Resource Exchange service should be established to provide communities with a permanent on-line clearinghouse of up-to-date and relevant information, support and Smart Services. It should also provide a networking arena that will enable Canadian governments, companies, universities, colleges, the learning sectors, communities and individuals to share experiences, offer their expertise and set up alliances.

Stonehaven West, Ontario

The new community of Stonehaven West is building a new information structure to facilitate telecommuting, a concept that includes: video answering machines; video mail; education content from an interactive cyber-library of learning tools; and distance learning. These and other services will result in far higher levels of telecommuters who can work at home, thereby improving family life.

Recommendation Ten

The Smart Communities Initiative should include a Smart Communities Facilitation Tool Kit and Skill Development Program. This program will incorporate tools such as Smart Communities needs assessment

software, business planning software, implementation guidebooks, outreach plans and inventories of Smart applications, services and technologies, and providers. It will also provide a series of Smart Communities skills development workshops and facilitators to help communities become Smart. The program will be structured to include adequate human as well as on-line resources.

Recommendation Eleven

The Smart Communities Initiative should include a Smart Communities Benchmarking and Recognition Program. This program would develop a set of world-class Smart Communities standards against which communities would benchmark themselves. Communities would be designated levels of Smartness based on these standards. A community would receive recognition to indicate that it had met the requisite criteria for each level. This is an opportunity to celebrate the success of the community and to raise the profile of the initiative.

Evaluation and Outreach

A key component of the Smart Communities Initiative is to increase impact, enhance efficiencies and deliver more benefits to more communities. An evaluation process that will provide both reflective analysis and developmental feedback is a crucial consideration.

A two-pronged examination process is needed that analyses the lessons learned and benefits enjoyed by the communities, and evaluates the effectiveness of the program nationwide.

Through the use of media and information technologies, the Demonstration Smart Communities should be encouraged to share their experiences, successes, and even failures with other communities, thus capturing and further promoting the true information-sharing spirit of the Smart Communities movement.

The extensive range of services of Industry Canada, including those of the national Connectedness Agenda, should be utilized as part of an extensive outreach program including LibraryNet, SchoolNet and NetCorps. Regional offices of various federal and provincial governments could be used as centres for skills development training, facilitation, outreach and promotion.

Recommendation Twelve

A Smart Communities evaluation committee should be created to guide the development of a framework that will be used to evaluate the program nationally and in each community. The evaluation committee should select broad national indicators of progress and guide communities in selecting corresponding local indicators of progress.

Recommendation Thirteen

Demonstration Smart Communities should incorporate plans to apply lessons learned and share these lessons with all communities interested in becoming a Smart Community.

Recommendation Fourteen

To ensure that all communities can learn from the experiences of those in the Smart Communities Demonstration Project, the federal government should launch an extensive promotional campaign that targets the appropriate or potential audiences to raise the profile and potential benefits of being a Smart Community.

Methods of Achieving Long-term Sustainability

For an initiative of this nature, sustainable funding may be derived from a number of sources. For example, the up-to-date results of the initial Demonstration Smart Communities will undoubtedly attract considerable interest and electronic traffic to a Demonstration Smart Communities web site and other information distribution media. Sponsors should be approached to fund the ongoing work in return for what is essentially advertising within the program. These may range from firms that directly provide applicable products and services to others, such as banks and accounting firms, that want to augment their business by being involved in Smart Community projects.

The true engine for sustainability will come from the quality of the information available through the Smart Communities Initiative.

Technology companies may also compete to provide resources as a "technology sponsor" since this positioning would associate them with leading-edge Canadian projects. Non-commercial entities such as professional and industry associations may also want to link to this project to get their messages out to a highly relevant and qualified community, and may pay for the privilege.

While these simple examples help broadly illustrate the potential for revenue generation, the true engine for sustainability will come from the quality of the services used and the information available through the Smart Communities Initiative, in both the short and long term.

Recommendation Fifteen

The private sector and communities should capitalize on Canadian leadership in Smart Communities technologies, applications and services, in domestic and international markets, by using government business and export development and assistance programs as required.

6 The Selection Process

Strategic Areas

Applications from communities interested in becoming a Demonstration Smart Community should show a vision for the future that includes using information and communications technologies in innovative and transformative ways.

Communities should submit a letter of intent and, if selected, should be invited to submit a full proposal that outlines achievements and aims in the following strategic areas:

- **Community Engagement:** Engagement is the process of collectively identifying community strengths and weaknesses, matching solutions with problems and sharing expertise with others toward the goal of ensuring that a significant percentage of community members will benefit from any Smart Community initiative.
- **Smart Services:** Smart services are services that are informative, interactive, innovative, improving and international in scope (*see Annex A*). Smart services enrich the lives of members of a Smart Community by enabling them to meet the business and personal challenges of the information age through the use of information and communications technology. Smart services provide networked communities with interactive software and multimedia content delivered through secure and private, in-home, at-work or community access facilities to improve the overall economic, social and cultural well-being of a community.
- **Smart Infrastructure:** Infrastructure is the networks, systems and other hardware and software found in telecommunications, broadcasting and computer communications. Smart infrastructure provides adequate high-speed, two-way communications infrastructure with sufficient bandwidth to support services needed by a community. It also offers various options of connectivity by being scalable and interoperable, allowing systems to communicate or work with one another.
- **Organization:** Organization is the structures, systems, policies and practices that enable a community to effectively plan, implement, manage and monitor a Smart Communities strategy. Appropriate leadership and management are needed to achieve desired goals and to sustain results.

The federal government should announce a national call for proposals with the goal of funding at least one Demonstration Smart Community in each province, in the North and in an Aboriginal community.

- **Smart Results:** Smart results are the outcomes that arise from a Smart Communities strategy. They indicate the extent to which an initiative has been effective in responding to the needs of the community.

Applications should be adjudicated by an arm's-length national selection committee. The committee should consist of experts in the areas of telecommunications, economic, social and cultural development, and in targeted areas such as business support, education, health, tourism, youth employment, recreation, agriculture, resource sector management, social services, libraries and government services delivery.

The panel recommends that the Smart Communities Demonstration Project fund up to 20 communities across Canada. With this goal in mind, the federal government should announce a national call for proposals to fund at least one Demonstration Smart Community in each province, in the North and in an Aboriginal community by the year 2000. If necessary, a second call for proposals should be announced to ensure that this goal is reached, and to ensure that a variety of applications and services are piloted.

Demonstration Smart Communities should be funded for a period of three to five years. Once under way, a Smart Communities secretariat should manage the program and monitor the progress of the demonstration projects. A national advisory board should be created to provide strategic advice to the secretariat.

Eligibility Criteria

Industry Canada has traditionally set high standards for its programs. In striving to achieve the world-class excellence and innovation expected of the Smart Community Demonstration Project, communities should meet or exceed defined standards/ criteria in each of the five strategic areas identified above.

Recommendation Sixteen

The following eligibility criteria should be used to determine which communities become a part of the Smart Communities Demonstration Project.

Community Engagement

Communities should demonstrate that:

- **their key community stakeholders understand and can describe how information and communications technologies can enable a community to affirm its needs and solve its problems**

- they have a history of widespread community involvement in major social and economic initiatives (e.g. education, health, culture)
- they have experience in successfully developing and implementing major community-wide activities.

Smart Services

Communities should demonstrate that they have an integrated, operational, and sustainable human and technological community network in place to deliver key services to the majority of the community.

Smart Infrastructure

Communities should demonstrate that:

- the majority of community members have access to on-line interactive media (e.g. E-mail, discussion groups) through in-home, at-work or public access facilities
- schools, libraries, government offices and a significant proportion of the business community are connected to the Internet or are in the process of being connected

Newfoundland and Labrador Cities

Resourceful people have developed a creative solution to the problem of delivering affordable, effective education and training in communities spread over thousands of kilometres in Newfoundland and Labrador.

The Open Learning and Information Network (OLIN) is facilitating a consortium of distance education providers which includes learning institutions, a community multimedia communication network, a telemedicine centre, a marine institute, the provincial libraries board and others. Through the efforts of the OLIN partners, students in Newfoundland and Labrador can share equally in the province's learning resources regardless of their location.

- most existing network-based services are delivered efficiently through the availability of servers and provision of sufficient bandwidth.

Organization

Communities should demonstrate that:

- **they have a track record in establishing and sustaining public/private sector partnerships to manage and coordinate community activities (preferably those that involve the use of information and communication technologies)**
- **they have established a credible organizational structure or a sponsoring organization to manage the project.**

Smart Results

Communities should demonstrate that their economic and social well-being has been improved by using information and communications technologies.

Selection Criteria

In addition to meeting the eligibility criteria outlined above, communities should also demonstrate that they have a strategy to become world-class Smart Communities, which pursue excellence, innovation and transformation, not only in what they do, but in how they do it.

Recommendation Seventeen

The following selection criteria should be used to determine which communities will be selected to become a Demonstration Smart Community.

Community Engagement

Communities should demonstrate that their citizens and stakeholders share a vision for transformation by:

- **describing local economic and social development challenges and priorities, and how these were identified**
- **describing how the decision was reached on choosing the specific services proposed and on identifying and achieving potential benefits**
- **providing evidence of how these selected services will contribute economically and socially to the overall well-being of the community**
- **submitting written expressions of formal commitment by key stakeholders and institutions to use their resources to pursue Smart services within the community.**

Communities should provide evidence that they have the managerial and financial capacity to achieve the proposed objectives by:

- **demonstrating that those who will lead the initiative possess adequate technical and managerial expertise, as well as the support of community sectors relevant to the proposed application(s)**

- providing evidence of adequate short- and long-term financial planning to sustain successful program functions, including aspects such as communication and evaluation.

Communities should demonstrate a commitment to continuing communication and consultation by outlining plans for an ongoing communications strategy that will:

- keep the community informed of the applications and benefits associated with the initiative
- provide the community with a say in the way services are provided.

Communities should demonstrate a commitment to access by:

- outlining plans for comprehensive, equitable, affordable, barrier-free access mechanisms, including access in public institutions (e.g. libraries, schools)
- including in their plans services and applications that respect the language and culture of the users
- describing the proposed development and organization of content for user-friendly accessibility; outlining the orientation and other systems to be put in place to assist members to successfully use the technology; and summarizing the ongoing financial support that will ensure public access, i.e. physical access, user assistance, and organized content.

Drayton Valley, Alberta

People in Drayton Valley who suffer from a type of depression known as Seasonal Affective Disorder may need to see a psychiatrist — who has a waiting list of well over three months and an office 120 kilometres away in Edmonton. Thanks to "Tele-psychiatry Service," the problem is solved within 48 hours as a local GP books a session with a psychiatrist in Edmonton or Calgary using interactive TV, eliminating the hardship to the patient of a lengthy wait and a long winter drive.

Communities should seek out and incorporate programs and services of governments at all levels to the extent possible in the initiative by:

- linking applications embodied in the initiative to existing, or proposed, government services
- linking contacts with specific agencies, government departments, etc., with specific applications.

Smart Services

Based on a community-wide needs assessment, the community should identify and implement at least two

Smart Services with appropriate community content in areas such as: education, health, government services, business and industry, housing, employment, library and information services, transportation, lifelong learning, culture and the arts.

Communities should describe how the Smart Services that they intend to implement can be easily transferable to other Canadian communities, so that the initial Smart Communities can serve as centres of excellence for the implementation of Smart Services throughout the country.

Communities' services should be informative, interactive, innovative, improving and international *(see Annex A)*.

Smart Infrastructure

Communities should design and implement enhanced, high-speed, two-way communications infrastructure with sufficient bandwidth to support the services needed by their members by:

- engaging in a proactive way traditional and new carriers to develop collaborative plans for the deployment of the enhanced infrastructure (supply)
- building a critical mass of users needed in order to promote the demand for value-added services (demand)
- providing access to application tools and digital content through the inclusion of sufficient server based resources. Agreement should be brokered between Internet service providers in a community to provide direct connections between their networks to improve the delivery of on-demand and real-time services
- extending basic access to the infrastructure through private lines or public access to all members of the community.

Communities should base their applications and services on international open standard protocols that are compatible with all community networks.

Communities should take advantage of existing provincial or federal programs that support public access to community networks, e.g., the Community Access Program, SchoolNet, LibraryNet, Computers for Schools, as part of their strategy in establishing a high-speed, two-way, broadband infrastructure that will provide access to schools, libraries, public access centres, etc.

Organization

Communities should demonstrate that they have qualified and experienced leaders to launch and deliver a Smart Community initiative.

Communities should demonstrate that they will work in partnership with various levels of government, health institutions, education institutions, local voluntary institutions/ organizations, the community network and the private sector to plan, implement and manage the Smart Community initiative.

Communities should describe their governing organization. They should show that it can effectively plan, implement, manage and monitor a Smart Community initiative in a representative, fair and transparent manner.

Communities should describe their operating plan in terms of:

- organizational structure (e.g. board of directors and committees with clearly defined roles and responsibilities for policy making, financial management, accountability, and research and development)
- effective planning, budgeting, project management and monitoring mechanisms
- effective internal and external communication strategies
- leadership skills and qualifications of staff and/or volunteers.

Communities should demonstrate that they have integrated access, training and content policies into their Smart Community initiatives in the overall development plans of the community.

Lanark County, Ontario

Over 8000 residents travel from Lanark County into the Ottawa area every day to work, yet much of what is done in the office may actually be better accomplished at home. "You Otter work@home" is part of the Lanark County Network Corporation serving residents and businesses of Lanark County, which facilitates higher speed telecommunications connections between businesses, public institutions and individuals.

Communities should describe their plan for sustainability in terms of:

- ongoing infrastructure development and support
- ongoing applications development and support
- provision for ongoing, affordable, accessible, quality training in all new application areas
- availability of adequate resources to ensure the ongoing planning, implementation, education and monitoring of Smart Community activities
- succession of leadership
- ongoing and meaningful involvement and support of the community.

Smart Results

Communities should outline the goals of their Smart Communities initiative and define how they will evaluate their progress. This can be achieved in a number of ways, including the use of polls or surveys done before, during and after the initiative.

Communities should have a strong evaluation component primarily focussing on identifying services and beneficiaries, community engagement, infrastructure, organization, and results and benefits.

Communities should select indicators of progress based on the following criteria:

- benchmarks that reflect economic, social and cultural changes in the community as a result of the proposed project and that are developed, understood and accepted by the community
- quantitative and qualitative indicators that can be measured over time and that include, where appropriate, consideration for accessibility, affordability, consumer protection and privacy.

These indicators should have interest and appeal to the general public as a means of communicating progress to the community.

Communities should demonstrate that their initiative will result in economic, social and cultural benefits for the community as a whole and that these benefits will have a transformative effect on the community.

Communities should demonstrate that their initiative will produce export opportunities for Canadian expertise and technologies, thus helping Canada to become a world leader in the Smart Communities movement.

7 Moving from a Smart Community to a Smart Nation: The Challenge of National Accessibility

The goal of the Connectedness Agenda brought forward by the federal government in its 1998 Budget is to make Canada the most connected nation in the world by the year 2000. The Smart Communities Initiative is a major step toward implementing that agenda. As the Smart Communities share and reach out to other communities, this initiative has the potential to enable Canada to become a Smart Nation. This will ensure that Canadians, their communities, businesses and institutions will have access to the social and economic opportunities created by the new technologies, information infrastructure and digital content. The enhanced connectivity will allow Canadians to achieve personal growth, and social and economic prosperity through the knowledge-based economy of the 21st century, and position Canada as one of the first Smart Nations on the world scene.

Winnipeg, Manitoba

The latest advances in Internet technology have been embraced by the City of Winnipeg in an effort to better serve the community. Twenty-four hours a day, seven days a week, citizens can access information on, among other things, government services and current civic activities, corporate finance, recreation, and public utilities. Citizens can take advantage of this service at public access sites as well as on home computers.

Access to the community-based services from home will be critical for developing community members' buy-in and will encourage greater use of these services. Canadians' acceptance of services will ensure a critical mass to support the long-term use and sustainability of the community networks and services. Incentives for individuals to access the community services, particularly in the case of lower income households, would help accelerate the adoption of on-line services, as part of their day-to-day life.

Recommendation Eighteen

Governments should work in collaboration with the private sector and non-governmental organizations to find innovative ways of making information and communication technologies universally accessible and affordable to all Canadians.

Information and communication technologies are transforming small-scale enterprise and commerce. This creates a learning challenge for small business, governments and intermediaries that support small business development.

Recommendation Nineteen

The Government of Canada, in partnership with other levels of government, the private sector and non-governmental organizations, should encourage the dissemination of knowledge to support the use of information and communication technologies by small businesses and their intermediaries.

To achieve the full potential of information and communication technologies, Canadians need to acquire the necessary skills and keep them updated. Communities need to ensure that this training is available on an ongoing basis. The school system as well as libraries could play a crucial role by ensuring that curricula lead to the acquisition of a minimum set of skills.

Smart Communities must also become "lifelong learning communities." Once out of the formal school system, individuals should be able to continue their acquisition of skills and remain at the leading edge in the use of technologies. By providing public access and appropriate content, and by offering assistance and guidelines on how to use it, Smart Communities will ensure that their citizens are able to participate in the constantly evolving knowledge society.

Recommendation Twenty

The Government of Canada and the business community, in partnership with provincial governments, should continue to support programs such as SchoolNet, LibraryNet, Computers for Schools and other complementary programs that provide opportunities for learners to develop a basic set of information and communication technology skills and contribute to the development of learning applications within the community.

Recommendation Twenty-one

The Government of Canada, in partnership with the provincial governments, should make available resources that will allow communities to provide sustainable ongoing public access, development and organization of content, and orientation and assistance to users so that they remain current in the use of leading-edge technologies and services that make up the community networks. The fields of learning and health offer many opportunities to demonstrate the potential of network-based infrastructures that support Smart Communities and ultimately Smart Nations.

The Internet's astonishing growth has given rise to a number of issues related to its social and cultural impacts. Several interest groups have expressed concern about the availability of illegal or offensive content on the Internet, the protection of privacy, security of data and intellectual property. Other groups see the Internet as offering both opportunities and challenges with respect to the distribution of content reflecting the values and aspirations of Canada's communities and the conduct of business. Many jurisdictions, including the European Union, the United States and Germany have attempted, without success, to implement some means of directly regulating the Internet. Canada should maintain a

general principle to encourage the free flow of information and to let market forces prevail wherever possible and appropriate. However, governments and the private sector should continue to work together to redefine the rules for commerce in an electronic environment and to join the international community in developing standards that will facilitate the movement of information over the Internet. The opportunities offered by the Internet should be encouraged, and we stress the desirability of minimizing regulation in this area.

Recommendation Twenty-two

In order to encourage the free flow of ideas, transactions and electronic commerce within Canada and with the rest of the world, the Government of Canada should maintain its current approach of not directly regulating the Internet.

Local government currently plays a leadership role in consolidation of many public telecommunications services such as call-911, police and fire services. The panel has seen many excellent examples of cost-effective service delivery in municipal government. Moreover, as the principal funder of public institutions such as schools and public libraries, which provide access, local content and user orientation, and as supporters of many community networks, municipalities have also been contributors to accessibility of the Information Highway.

Municipal governments, through the services for which they are responsible, must also play a key proactive partnering role in implementing the next-generation Smart Communities communications environment. The local governments must take part as champions to drive forward a comprehensive initiative. While individual initiatives can be promoted within communities, a cohesive program will require the enthusiastic participation of local governments. This additional participation can take many forms, such as provision of management facilities, guarantees on service usage or grants in support of service delivery to stimulate economic development projects. As local governments

Nova Scotia

Nova Scotians can now share with each other and the world their Western Health Information Project: one-stop consumer health topics like pregnancy, nutrition and drug abuse. Developed by a community partnership of health care providers, hosted by their community network, and accessible at their public library system, it includes access to commercial full-text data bases, locally produced answers to citizens' questions, and links to catalogues across Nova Scotia.

increasingly strive to be closer to the citizens, the Smart infrastructure will provide the tools for interactive communication between citizens, public servants and local representatives with up-to-the-minute information.

Recommendation Twenty-three

A national strategy should recognize the key role that municipalities play in supporting a comprehensive Smart Communities program. Municipalities should integrate the Smart Communities Initiative as an integral part of their infrastructure and service delivery to ensure the effectiveness and sustainability of the Smart Communities Initiative.

Fair and sustainable competition should be a driving force behind the creation of the Smart Communities infrastructure. To develop a high-speed, two-way, broadband infrastructure that allows for interconnectivity and interoperability, Smart Communities will need to work with several communication carriers who will collaborate in finding optimal Internet-based solutions. The elimination of disincentives are encouraged to ensure the involvement of all communication carriers, since the investment of their resources will be considerable. For example, a contribution may take a variety of forms, including free or low-cost access to the existing community infrastructure, which should level the playing field for companies wishing to compete.

Recommendation Twenty-four

Smart Communities should facilitate the deployment of the infrastructure on their territory by creating an environment that accelerates the development of the community infrastructure in response to need. The incentives might include revenue-neutral access to "right-of-way" and support structures without additional taxes or user fees being imposed.

Although Canada has a virtually universal telephone service and is one of the most cabled countries in the world, access to a high-speed broadband network by citizens and small businesses will be necessary to meet the needs of a competitive business environment and to achieve the goal of the government's Connectedness Agenda. Governments, in partnership with the private sector, are now deploying the world's first optical Internet, CA*Net 3, which is to be fully operational by 1999. This vastly increased bandwidth network will revolutionize the way industry, governments and researchers exchange information. Access to this high-speed, broadband infrastructure by all businesses and households will depend on the capacity of carriers to provide regional and local levels of services at affordable cost.

Since many Canadians do not yet have a home computer, wider access to the Internet has been achieved to date by focussing on

schools, public libraries and communities through programs such as SchoolNet, LibraryNet, Community Access Program, Computers for Schools, and now, the Smart Communities Initiative. These federal programs, as well as initiatives implemented by other levels of governments, have greatly facilitated access to the Internet by a large segment of the population. Much remains to be done, however, to provide access to a high-speed broadband infrastructure that would enable the efficient use of digitized information and the development of services and content by all citizens and public/private organizations. Therefore, Canada should implement a strategy that goes beyond Smart Communities and aims at making the entire country a Smart Nation. While levels of access for Canadians are among the best in the world, they do not come close to the near-universal penetration of established communications technologies such as telephone and cable.

Recommendation Twenty-five

The Government of Canada should develop a national strategy, including target service levels, that will provide accessibility by all parts of Canada to high-speed broadband interactive networks.

An adequate communications infrastructure and an Internet connection have become major enabling technologies, with the potential to provide significant economic, social, and cultural benefits to Canadians and an important avenue for citizen participation. Also, despite the rapid growth rate in connectivity, many rural and remote communities will not be able to afford the type of communications infrastructure for access to the Internet and to a variety of on-line services that would improve the quality of life for their citizens. Furthermore, the design and implementation of an infrastructure suited to their needs would require up-front investments that the carriers are not ready to absorb because of the lack of adequate financial returns.

We believe that the infrastructure program implemented by the federal government, in partnership with other levels of government, during the period from 1994 to 1997 was a great opportunity for communities to upgrade their existing infrastructures. Very few communities, however, took advantage of this program for upgrading their communications infrastructure. The new millennium represents an ideal opportunity for governments to repeat the infrastructure program, focussing especially on the benefits of updating infrastructure that would enable communities to participate fully in the knowledge-based economy. Such a program could become a cornerstone of the Connectedness Agenda. We also believe that all levels of government should provide special assistance to rural and

remote communities to become equipped with an infrastructure that will suit their needs and facilitate their access to the Internet. Access devices, long distance fibre routes, the digging of trenches and building of towers could thus be shared between communities and supported in part by governments, based on economic and need criteria to be established. This support would come in addition to existing programs, which currently do not properly address these needs.

Recommendation Twenty-six

The Government of Canada, in partnership with other levels of government, should reinstate its infrastructure program with particular emphasis on the renewal of communications infrastructure by communities that have identified this need in order to reap the economic and social benefits of the knowledge-based society.

Recommendation Twenty-seven

The Government of Canada, in partnership with other levels of government, should consider incentives for carriers to upgrade the infrastructure where distance or size or population density of a community does not provide normal return on investment and therefore cannot support infrastructure upgrade to high-speed, broadband and two-way capabilities by existing carriers. Such incentives could include the availability of a special fund, tax credits for capital investment and/or service costs for communication links to remote communities.

Across Canada, citizens are often called upon to serve on advisory panels to assist the federal government in making decisions that will affect the country. In undertaking this assignment, the panel has been placed in the happy position of addressing the potential for positive changes in the ways in which Canadians will interact in the coming century, but these changes, unlike many others, are within our ability to control and manage. If implemented wisely, they will open new vistas and bring new opportunities, new benefits and advantages that are economic, social and cultural, and place greater power in the hands of the people who are most affected by government decisions.

The recommendations in this report speak to the very spirit of Canada as the nation enters a new century. The basic concept of Smart Communities calls upon the country to use our already acknowledged strengths in information and communication technology and to combine those strengths with our historic national commitment to inclusion and access for all. With such a strategy, Canadians can continually better their lives while at the same time achieving the economic benefits that will come from global leadership.

Annex A: The Five I's of Smart Services

Informative: Content is the fundamental ingredient of any service. The message, whether in the form of text, sound, graphics or images, delivers meaning to the user. The informative part of a Smart service fosters understanding of the relevance of inform ation, is rich in timely and relevant content, offers user-support, is customer-driven, and is responsive to individual needs.

Interactive: Computer games and the World Wide Web have transformed lives by providing an engaging experience. Powerful search engines allow questions to be asked on any subject imaginable and seconds later an answer to be found. The interactive part of a Smart service is friendly, culturally and linguistically accessible, demand-oriented, and responsive to clients in real time. It offers a sense of involvement for the community and serves a broad cross-section of the public.

Innovative: Between networks and content are invisible agents known as applications. These codes of software enable content to be delivered as multimedia content through a variety of multi-type devices over many networks. If these applications are not designed with this in mind, they will serve only a narrow purpose. Therefore, the innovative part of a Smart service is adaptive, scaleable (adaptable to increased demands and capacity), interoperable, universally accessible, organic, synergistic, ubiquitous, and may support electronic commerce.

Improving: Since every citizen may potentially influence community decisions, digital content must help them affect change. The challenges facing a community in the next century will require leveraging the best resources within and outside the community. In essence, these new services must not only be innovative, but also transforming. In fact, this transformation will empower a community to meet these challenges. The improving part of a Smart service encourages new perceptions within the community, permits limited resources to be allocated more efficiently, saves time and fosters lifelong learning.

International: If Canada is to be a global leader in information and communications technologies, it must showcase Canadian innovation through centres of excellence. The Smart Communities Initiative will extend the reach of Canada globally and advance the nation as a global leader. The international part of a Smart service supports open standards, is transferable, accesses and contributes to the international wealth of knowledge, and enhances the lives of Canadians through interactive communications.

Annex B: Panel Members

David Johnston
Chair, Smart Communities Panel, Professor of Law, Centre for Medicine, Law and Ethics, McGill University, Montréal, Quebec

Alan Aitken
Executive Director, OCRInet, Ottawa, Ontario

Louis Audet
President and CEO, COGECO Inc., Montréal, Quebec

Cynthia Bertolin
Vice-Chair, National Aboriginal Economic Development Board, Edmonton, Alberta

John Bulloch
Chairman and Founder, Canadian Federation of Independent Business, Toronto, Ontario

Ben Franklin
Former Mayor, City of Nepean, Ontario

Karen Jeisi
Senior Vice-President, Law and External Affairs, AT&T Canada LDS, Toronto, Ontario

Thomas P. Keenan
Dean, Faculty of Continuing Education, University of Calgary, Alberta

Sylvie Lalande
Group Vice-President, Quebec Communications and Consumer Markets, Bell Canada, Montréal, Quebec

Paul Lamontagne
Executive Vice-President, Look Communications Inc., Montréal, Quebec

Monique Lefebvre
Vice-President, Quebec and Atlantic Canada, Ericsson Communications Inc., Montréal, Quebec

Bruce MacCormack
President and Chief Operating Officer, Manitoba Telecom Services (MTS) Advanced, Winnipeg, Manitoba

Teresa MacNeil
Retired Professor of Adult Education, St-Francis Xavier University, Johnstown, Nova Scotia

John T. McLennan
President, Jenmark Consulting, Ottawa, Ontario

Wendy Newman
CEO, Brantford Public Library, Brantford, Ontario

Nathan Nifco
President and CEO, Nifco Synergy Inc., Vancouver, British Columbia

Jeffrey Philipp
President, SSI Micro, Ft. Providence, Northwest Territories

Irene Seiferling
Past Chair, Consumers Association of Canada, Saskatoon, Saskatchewan

C. William Stanley
Vice-Chairman and CEO, Fundy Communications, Saint John, New Brunswick

Chief Roy Whitney
Chair, National Aboriginal Economic Development Board, Tsuutina, Alberta