Wired Government: Information Technology and Municipal Wireless Networks

The current discussion in North America on IT and public administration focuses on the ways in which wireless technology can be used to increase efficiency and performance within public agencies at the federal, provincial or municipal levels. However, the new emerging technologies have also been employed by various agencies to engage citizens in the policy-making process in order to enhance both democratic participation and government responsiveness to citizen demands. Canada is among top 10 countries with the highest Internet penetration rate, with 67.9% population using the network on regular basis, and with 43% of Canadians having access to a wireless device.¹

According to the Global Information Technology Report 2005 “Efficiency in an Increasingly Connected World,” released by the World Economic Forum in Davos, the most advanced countries include also Sweden, Norway, Denmark, Australia and Singapore. With a total coverage of 104 economies the report has emerged as the world’s leading assessment of the impact of information and communication technology (ICT) on the development and competitiveness of nations.

Among the new EU member states, Estonia is ranked as the most successful example on how to succeed in the fast-paced information era and to develop excellent regulatory framework for ICT (ranked # 25, higher than Belgium, Spain or Italy). The formerly centrally planned economies in this region tend to rank higher than some of the larger countries in Latin America, with Estonia, Slovenia, Hungary, the Czech Republic and Lithuania, scoring higher than Brazil, Mexico and Argentina, the three largest Latin American economies. Impressive levels of foreign direct investment to Central and Eastern Europe during the past decade, reflecting comprehensive reforms adopted ahead of EU accession, have played a central role in this process. As far as Poland is concerned, it seems to be the least advanced among emerging economies of the Central and Eastern Europe – ranked #72. There is a large potential in implementing the Canadian experience with IT and wireless networks in transforming central and municipal institutions and Internet literacy in Europe, in particular the new EU member states.

This paper presents and discuss the socio-economical advantages of investing in IT technology and wireless networks by the central and municipal governments; the most successful and innovative case studies from Canada and US; guidance for the local authorities on how to embark on the advantages of IT and transform the local economy; as well as theoretical analysis on the internet’s impact on democratic processes; and the dialogue between universities, institutional think-tanks and the governments to invest in the development of municipal wireless networks. The paper has summarized the research facilitated for the Strategy Institute in Toronto, on municipal wireless networks and local IT initiatives.

The rapid movement towards setting up community-based internet networks across North America, which has grown expansively in the recent years, is indicative of the need felt by many

¹ Data: Computer Industry Alamanac, www.internetworldstats.com
governments and individuals to assert the primacy of the local communities in creating and sustaining educational opportunities, communicative associations, economic development, and civic participation. Community networking proponents wish to make this technology readily available to all community members at no or minimal charge, with public libraries, other community network sites set up as public access points, or even municipal Wi-Fi networks to widen access to broadband networks for whole cities.2

From municipal wireless networks case studies in small communities, such as Tempe (Arizona), Fredericton (New Brunswick), or Charlottetown (Prince Edward Island); to the ambitious projects of San Francisco, Philadelphia, Chicago and Toronto; local governments are developing Wi-Fi networks covering different terrain, demographics and building densities. Facilitation of life-long learning through computer networking has been touted as a desirable outcome by policymakers and educators in North America. Throughout the late 1990s different initiatives have been a test ground for more advanced projects, initiated by various stakeholders to connect schools, libraries, and community centers.3

In January 2007, the Strategy Institute in Toronto is hosting an international summit on ‘Wireless Cities.’ This international conference attracting attendees from North America, Europe and Asia is a unique opportunity to learn from the world’s best case studies on how to adapt, at the community level, today’s wireless technological advances into economic realities. Just as venture capital fueled the Internet economy, municipal grants are being used to seed a projected boom in wireless networks. The challenge facing cities, just as it was for dot-com entrepreneurs, is to distill ways of making money from a largely amorphous technology. Communities such as Long Beach (CA) or Fredericton (NB) established free wireless networks to revive their downtowns and bring new business initiatives traditionally located around large metropolis. With high office costs and business moving to the suburban areas, new wireless initiatives in Toronto, London, Chicago or Philadelphia help the local entrepreneurs to move back to the downtown core.

Municipalities have the chance to provide through wireless networks a variety of educational resources, thus investing in the future of young generation by increasing innovations, computer and internet literacy, participation in local governance and public-private partnership. In fact it is the most democratic and cost-efficient way of ensuring that the majority of the community will stay on top of the recent developments. Community networks can encourage and support a renewed economic base within the community, as well as provide an integral support system.

The Internet has increased the public’s freedom of information, freedom of speech and freedom of action tremendously. It has also contributed to the institutional transparency in Canada, transforming its governments to one of the top 3 most transparent worldwide, a challenge for emerging democracies in Eastern Europe.4 A technological infrastructure such as wireless network can make information regarding administrative and legislative processes more accessible, thus offering citizens an increased capacity for participation and control. The role of IT here goes beyond data collection for performance monitoring. Citizens and other stakeholders interact through channels created by IT, as a means of assessing the effectiveness of public organizations. Consequently, the public is able to give important feedback to public officials to help improve decision-making and service delivery. It is easier to inform decision-making bodies of existing problems and imperfections.5

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4 According to the “Corruption Perceptions Index 2003”, released by Transparency International, Poland is ranked 64th (while Canada is recognized as one of the 10 most transparent countries in the world).
There are several case studies in Canada, which can be a model for European municipal governments. At this point, however, I have to point out few, innovative, initiatives already implemented in EU member states.

As already mentioned Estonia is now ranked eighth internationally for putting the Internet to practical use, according to the World Economic Forum. Internet and mobile phone usage per capita, is higher in Estonia than it is in France, and with such local developments as Kazaa, Skype and other programs, IT and E-economy is becoming one of the main fundament of the country’s economy. Free wireless Internet access, or Wi-Fi is quickly becoming the rule, not exception, in the Estonian capital. 90% of the country’s territory is already covered with commercial accessible wireless network. The vast majority of the population does its banking online. Drivers in Tallinn can pay for parking by simply sending a text message from their mobile phones. Even the Estonian government has gone hi-tech. Cabinet ministers meet weekly in a room fitted with more than a dozen high-end computers, complete with flat screen monitors and broadband connections. Another example can be found in Poland. Krakow’s free wireless network covering the Main Market Square following US President George W. Bush’s visit to the city in 2004, can be a good start to establish a network, which could cover the whole city, benefiting its academic and business communities With some of the best education centers in Poland located in the city, with over 100,000 students coming to the city from all over Poland, and with recent Hi-Tech investments allocations from such companies as Delphi, Comarch, ComputerLand or IBM; - the city has a potential to be transformed into the local IT center in Europe. Following Canadian case study should be closer analyzed.

The most advanced municipal wireless network project were launched, however, in Bologna (Italy) and London (UK). The historic centre of Bologna and the worlds’ first university has taken the lead by deploying a highly functional wireless network. Today it supports both fixed and mobile broadband Internet access as well as mobile VoIP yet it is also upgradeable to WiMax. Dr. Giuseppe Paruolo, Deputy Mayor of Bologna and the City’s Manager for Communication and ICT will discuss the business case for the network at the international Wireless Cities Summit in Toronto. In addition, Peter Rogers, Chief Executive from the Westminster City Council, will explain how London’s project helps to cut costs, improve efficiency of city services and enhance public safety.

Fredericton, another case study from the capital city of New Brunswick in Canada, has integrated traditional and wireless technologies to create FredeZone, a free, community-wide Wi-Fi network providing residents, visitors and businesses with mobile broadband access from virtually anywhere within the city. The network enables Fredericton to better differentiate itself from other cities and towns, increasing its ability to attract and retain ‘knowledge industries’ looking for a location that offers an innovative, productive and exciting environment. Maurice Gallant, city’s Chief Information Officer will address during the two-day summit in Toronto how to initiate and manage a wireless network project and what are the technical and geographical limitations of the WiFi network. Looking at the cities in Europe competing to attract FDI and allocation of EU funds for local initiatives, Fredericton’s experience can be easily implemented in the European environment.

Like most towns and cities in Canada, the City of Fredericton places great emphasis on its economic development initiatives to attract investment in the community and to attract and retain businesses that can stimulate the local economy through employment and the sale of goods and services. With a population of just over 80,000, the city boasts a business base of nearly 4,000 businesses and is home to municipal government, the seat of provincial government


6 Boyd C.; “Estonia embraces web without wires,” BBC, 5.05.2004
7 The official website of the city of Fredericton, New Brunswick, Canada. www.city.fredericton.nb.ca
and numerous federal government agencies. The city’s population is younger than both the provincial and national averages; and the presence of two universities gives birth to a young, skilled workforce, especially in information technology, engineering, and research and development.

The local authorities believe that making affordable, effective tools and technology available to the community is a critical component of its economic development strategy. To help the City and its businesses differentiate themselves and make themselves more competitive – and thus more attractive to the global community – Fredericton embarked on a mission in 2000 to provide broadband connectivity to the municipal government, businesses and universities. Because broadband service was priced too high and not readily available in all parts of the community however, the city formed its own telecommunications company, e-Novations ComNet, Inc., a not-for-profit municipally owned corporation. In a co-op model supported by local business and university partners the city proceeded to extend the reach of the broadband network to the rest of the community through the use of Motorola long-distance wireless technology deployed through access points hosted on seven towers distributed throughout the city.

During my research, for one of the Toronto research-based organization monitoring changes and trends in business and municipal governance, Don Fitzgerald, Executive Director of Fredericton’s Economic Development Department, explained that enabling operational efficiencies across the municipal organization, the city saw the opportunity to deliver 21st century ‘Intelligent Infrastructure’ to the community as an important pillar of Fredericton’s economic development strategy. He stressed two economic development benefits for investing in wireless network: attraction of new business and growth and retention of existing business. Once companies are offered services by the city, which are not available elsewhere, they will invest without additional incentives.

Based on the experiences from other cities, such as Tempe (Arizona), Charlottetown (Prince Edward Island), Houston, Portland or Toronto and Vancouver, where limited wireless networks have been established to test the ground for broad coverage; one can point out several advantages of investing by the local municipalities in delivering access to information technology:

• Fred-eZone serves as a ‘living laboratory’ in which local firms, can develop and deliver leading-edge applications, such as Webcam traffic monitoring, resulting in new markets and new expertise;

• Fred-eZone enables the academic community to more easily collaborate with business and government and profit from the allocation of Hi-Tech investments in the region;

• Local business people, as well as those visiting, can stay connected, free of cost and hassle, thus contributing to the city’s reputation as an easy place to do business;

• Other economic benefits include the development of a community co-op model for internet connectivity, a lower price point for connectivity and a value-added service for hotels and conference facilities;

• Result of the Fred-eZone initiative is that the business community would have a sense of confidence that the municipal government is doing what it can to foster their success by ensuring they have the types of tools they need to compete globally;

• More broadband, wireless, free access, means boosting the demand for more computers, thus bringing more jobs and tax revenues to the state and encouraging Hi-Tech companies to invest locally;  

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8 Based on the experience from Dell, world’s largest PC maker. The Economist: “Wi-Pie in the sky?,” in the Economist Technology Quarterly, March 11, 2006
The costs can be split through the Public–Private Partnership with local Hi-Tech companies, as in recent initiatives in Philadelphia, Fredericton, Toronto, Chicago or Charlottetown;

As more and more municipalities in North America initiate projects to provide a wireless communication platform for forward looking civic and economic development it becomes also important to ask the following question:

*Who is the intended beneficiary of an unlimited and freed wireless communications? The people or the corporations?*

The answer is that robust development benefits both, just as public education, public highways and public safety do.

On a larger scale there are similar wireless projects launched in Toronto, Vancouver and Calgary. Calgary, the economic center of booming province of Alberta, has a reputation as a centre of excellence in the wireless technology sector. A public–private partnership launched a *Wireless City*, funded in part by the Government of Canada and the Government of Alberta.9 Two new Wireless City showcase projects were launched at the same time. The first is the Calgary Wireless City Showcase Hotspot, which offers limited, free wireless Internet access to the public using Wi-Fi technology. The second is distinctive Wireless City Hotspot logos that will help people locate Hotspot access zones in the city.

In Canada, the most successful experiences are shared by municipalities through various annual events, such as the Canadian Municipal Governance summit, hosted by the Strategy Institute in Toronto, or the Innovative Cities Congress organized by the Federated Press Institute. In addition, international development organizations such as UNITAR and the Inter-American Development Bank organize the series of conferences and seminars aimed to raise awareness about opportunities for local government to build high-capacity wireless communications infrastructure in support of municipal economic, social, and educational development. This Global Municipal Government and Local Authorities Series aimed to build consensus among municipal executives (mayors, municipal technology policy executives, city council members and municipal policy minded CIOs), industry practitioners and regulators involved in technology policy development and implementation, to establish strategies necessary to overcome obstacles and develop environments favorable to the broad deployment of wireless Internet infrastructures in municipalities.10

It is clear that information and communication technologies will continue to play a growing role in boosting the efficiency of the increasingly integrated global economy, enabling countries to improve resource allocation and boost growth prospects. Singapore and Taiwan are excellent examples of entities that have been able to make in a relatively short period of time enormous progress in putting ICT at the service of improved living standards. Together with a handful of other economies (, Israel, United Arab Emirates, Korea, Estonia, among others), Taiwan’s experience highlights the increasingly central role played by technology as an engine of growth and competitiveness, even beyond the borders of the rich industrial countries. John Jung from the Intelligent Community Forum will address Taipei’s wireless network during the first day of the


10“*Wireless technology offers low-cost internet access to underserved areas,“* a report by the Wireless Internet Institute. www.w2i.org
Wireless Cities Summit in Toronto. One of the major issues surrounding the project is the digital divide and the social consequences of deploying the network in the city.

Wireless Internet technology has the potential to bridge the digital divide by providing low-cost broadband Internet connectivity to underserved areas and local communities. Leapfrog wireless technologies may be deployed rapidly to help foster economic development and workforce productivity and to enable delivery of social-service applications in the areas of e-health, e-education, and e-government.

Its deployment can become a useful tool in improving productivity and security and in bringing internet-based services and connectivity to whole new segments of underserved populations at a fraction of the cost of wired technologies. Bringing the stakeholder community together can improve decision-making and provide an open forum to discuss incumbent telecom companies and adverse legacy regulations that can drastically limit the potential of the wireless Internet.

The Wireless Cities Summit in Toronto, for municipalities, communities and universities will also present case studies from other North American cities, such as Portland, Oakland, Anaheim, Grand Rapids, Hamilton, Toronto, New York, Philadelphia and San Francisco. In addition the delegates will hear from the city of London (UK), Bologna (Italy) and the Norwegian University of Science and Technology in Trondheim.

Experts from World Health Organization, Health Canada, Trent University, Toronto Public Health, Motorola, and Lakehead University will also address recent discussion on the health concerns. This one-of-a-kind debate on the current technological developments and how safe they are to the public will deliver latest findings on the exposure to the EMFs and the development in the Canadian and American regulations. This exclusive event will share the best practices from across the globe and help municipalities develop wireless networks suitable for their economy.

For more information please refer to the program of the Wireless Cities Summit.

Michal J. Steckiwiw, MIS  
Wireless Cities Summit Lead Developer

Strategy Institute  
401 Richmond Street West, Studio 401  
Toronto, ON  
M5V 3A8  
Phone: (416)944-9200 ext. 293  
Fax: (416)944-0403  
email: steckiwi@strategyinstitute.com

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