

Canada – A Strategic Choice

Canada as an investment destination
for wireless and multimedia



Canada¹¹

Canada's wireless and multimedia industry

Canada's wireless and multimedia industry represents a major component of Canada's information and communication technology (ICT) sector.

ICT manufacturing and services contributed \$135.6 billion¹ in revenues and \$62.3 billion in GDP to the Canadian economy in 2005 – accounting for 5.8% of total Canadian output. This large sector employs almost 590,000 workers – a figure that has grown by more than 33% since 1997. In addition to wireless and multimedia, significant other ICT industries in Canada include:

- Software and computer services, telecom services, and equipment wholesale/ leasing, each representing one-quarter of ICT service revenues in Canada.
- ICT manufacturing representing 15% of the industry, and investing over \$3 billion annually in research and development.
- ICT security, with strong Canadian-based capabilities in biometrics, cryptography, cybersecurity, testing and certification, and tracking technologies. Leading ICT security firms include Bioscrypt, Cansec Systems, Certicom, CGI Group, Domus IT, Entrust, and Positron.
- E-Health, a growth industry in which Canadian companies are developing leading ICT solutions in physician office, electronic health records, imaging, and drug information systems. Leading e-health firms in Canada include BDM (GE Healthcare), Clinicare, CGI, New IT Healthcare, and Sierra Systems.

Competitive strengths and capabilities

Canada has particular industry strengths in wireless and multimedia:

- **Wireless** technologies represent a core strength of Canada's ICT sector. Much of the ICT sector, and business in general, has become dependent on Canada's leading wireless product – the BlackBerry.

Wireless equipment, products and solutions are delivered by more than 400 companies with 21,000 employees, and generate \$18 billion in annual revenues. Wireless services generate an additional \$11 billion in annual sales – a figure that has been growing at an average annual rate of 17% over the last 10 years. These services are delivered through a digital wireless network that spans 1.3 million square kilometres – larger than the United Kingdom, Germany and France combined.

- **Multimedia** represents another major Canadian strength, with exceptional capabilities in digital animation and special effects, computer and video games, as well as business application of multimedia technologies. Canada's multimedia industry comprises more than 2,300 firms and 18,000 employees. Annual industry revenues exceed \$3.5 billion, and have been growing at more than 20% per year. Given its strengths in both wireless and multimedia, Canada is ideally positioned for the new wave of demand – multimedia content for wireless devices.

¹ Statistics Canada. All dollars are expressed in Canadian currency, unless otherwise specified.

Leading firms operating in Canada include:

Alcatel-Lucent
www.alcatel-lucent.com

Ericsson Canada
www.ericsson.com/ca

Frantic Films
www.franticfilms.com

Nokia
www.nokia.ca

Novatel Wireless
www.novatelwireless.com

Nortel
www.nortel.com

Research in Motion
www.rim.com

Sandvine
www.sandvine.com

Sierra Wireless
www.sierrawireless.com

SR Telecom
www.srtelecom.com

Multimedia

CAE Electronics
www.cae.ca

Electronic Arts
www.ea.com

KOEI
www.koei.com

Mainframe Entertainment
www.mainframe.ca

Radical Entertainment
www.radical.ca

Rainmaker Entertainment Group
www.rainmaker.com

Side Effects Software
www.sidefx.com

Toon Boom
www.toonboom.com

Ubisoft Entertainment
www.ubi.com

Key Canadian clusters

Vancouver, British Columbia is a leading multimedia cluster, with more than 550 new media companies and more than 13,000 highly creative employees. Digital animation, special effects, and digital post-production firms benefit from Vancouver's standing as "Hollywood North" – a leading film and television production centre that ranks third in North America (after Los Angeles and New York). Leading firms include Mainframe and Rainmaker Entertainment.

Computer and video games represent another Vancouver specialty, with approximately 150 companies and 3,000 employees. Home to Electronic Arts' largest global development studio, Vancouver's game industry also includes firms such as AirG, Next Level Games, and Radical Entertainment.



Ottawa, Ontario, is both Canada's national capital and Canada's leading cluster in the telecommunications and wireless industries. The Ottawa cluster encompasses a wide range of firms developing and delivering cutting edge wireless products and services, including:

- Component manufacturers, such as Flextronics and Tundra Semiconductor.
- Hardware firms, including Cisco, Mitel, Motorola, Nokia, and Nortel.
- Software and systems firms, such as bitHeads, CNG Global, Empowered Networks, and SOMA Networks.
- Testing and certification labs, security firms, satellite communications firms, photonics firms, multimedia content developers, and wireless service providers.

The Ottawa wireless, multimedia, and ICT sector represents more than 1,800 firms and 80,000 employees.

Montréal, Quebec, is home to a multimedia cluster that has become a global leader in animation and special effects:

- Montréal animation firm Toon Boom received a Primetime Emmy® Engineering Award in 2005 for outstanding achievement in engineering development.
- Another Montréal firm, Softimage, recently celebrated the 2007 Oscar™ for Best Animated Feature – awarded to the film *Happy Feet* which was created using Softimage software.

Montréal also has a large and growing video game industry, with more than 70 companies and 5,000 staff. Ubisoft has 1,300 staff at its Montréal studio, and Electronic Arts opened a new studio in Montréal in 2005, with a focus on games for wireless devices.

Cité Multimédia is a dedicated real estate development in Old Montréal that houses 6,000 workers from 100 multimedia, wireless, and other ICT service companies.

Waterloo Region, Ontario, also known as Canada's Technology Triangle, has become a major player in the wireless industry in recent years thanks to the Blackberry personal digital assistant (PDA). Designed, developed and manufactured by Waterloo-based RIM (Research In Motion), the Blackberry has become the leading business communications tool in 65 countries.

In total, the Waterloo Region wireless, multimedia and ICT cluster comprises 284 companies employing 13,300 people, including more than 2,000 R&D employees. In addition to RIM, leading firms with operations in Waterloo include Google, Sybase/iAnywhere, AMI Semiconductor, Dalsa Corporation, RDM Corporation, and Sandvine.

Other Canadian clusters in this industry include **Toronto, Ontario**, home to more than 550 digital media firms with a strong focus on content production and design, and **Calgary, Alberta**, which is a major centre for wireless development and manufacturing with an estimated 12,000 employees.

Winnipeg, Manitoba is also a growing multimedia cluster, boasting award-winning capabilities in digital animation, post-production and special effects. Winnipeg based Frantic Films has built a global reputation for stunning visual effects, and counts among its clients 20th Century Fox, Paramount Pictures and Warner Bros. Other major firms in this cluster include KidsWebTv Inc. and Digital Pictureworks.



Wireless and multimedia investment location drivers

To understand the main investment location drivers for the wireless and multimedia industry, KPMG LLP (Canada) completed a series of in-depth confidential interviews with senior executives from leading ICT firms operating in North American and international jurisdictions. In these interviews, executives identified and ranked the most important location drivers considered by their firms when choosing among potential investment locations. Individual responses were then analyzed by MMK Consulting Inc., to determine and rank the top location drivers, as detailed below.

Top-ranked Investment Location Drivers	Canada's Value Proposition	Investor Benefits
1. Availability of skilled labour	<ul style="list-style-type: none"> • Total wireless, multimedia, and ICT workforce of 590,000 employees • 40+% of ICT employees have university degrees or higher • High average education levels in the Canadian workforce 	<ul style="list-style-type: none"> • Excellent supply of highly educated developers and professional staff • Well-educated, innovative workforce
2. Proximity to major markets	<ul style="list-style-type: none"> • Close proximity to major US markets • Major centres for film production and international game companies 	<ul style="list-style-type: none"> • Plug into existing Canada-US wireless and multimedia industry
3. Labour costs	<ul style="list-style-type: none"> • Lowest labour costs among G7 countries 	<ul style="list-style-type: none"> • 7% to 24% savings on total labour costs (including benefits) relative to the US for telecom equipment and multimedia operations (KPMG <i>Competitive Alternatives</i>, 2006)
4. Availability of high-speed Internet	<ul style="list-style-type: none"> • High-speed Internet access widely available throughout Canada • Broadband penetration levels much higher in Canada than in the US 	<ul style="list-style-type: none"> • High quality connections for product distribution and remote collaboration • Internet-savvy workforce
5. Occupancy and construction costs	<ul style="list-style-type: none"> • Competitive office leasing costs • Competitive construction costs relative to key US clusters 	<ul style="list-style-type: none"> • Lower start-up investment costs • Lower ongoing costs
6. Accessibility to a major airport	<ul style="list-style-type: none"> • All featured Canadian clusters have access to major international airports • Canadian airports offer three times higher proportion of international flights than US airports 	<ul style="list-style-type: none"> • Convenient direct access to global destinations • Reduced travel time and costs
7. Tax incentives and exemptions	<ul style="list-style-type: none"> • Federal and provincial R&D tax incentives among the most generous in the world • Provincial tax credits for multimedia and/or digital media are available in all major Canadian clusters 	<ul style="list-style-type: none"> • Very low after-tax cost of R&D • Lower after-tax production costs for eligible multimedia and digital media projects
8. Availability of telecommunications services	<ul style="list-style-type: none"> • Full range of telecom capabilities available in all main Canadian cities 	<ul style="list-style-type: none"> • No telecom infrastructure barriers to efficient setup and operation



Canada as an investment destination

The rapid growth of Canada’s wireless and multimedia industry is proof of Canada’s attractiveness as a investment destination for this industry. What value proposition does Canada provide to global investors in the wireless and multimedia industry?

The following sections present Canada’s value proposition for wireless and multimedia firms by comparing Canada’s leading clusters – Montréal, Ottawa, Vancouver and Waterloo Region – to leading US clusters located in Dallas, New York City, and San Diego, as well as international clusters in Denmark and Hong Kong.

1. Availability of skilled labour

In a recent KPMG survey, ICT sector executives ranked the availability of skilled labour as the most important factor in comparing potential investment destinations.

Canada offers wireless and multimedia firms an existing base of 590,000 ICT sector employees, with more than 40% of these employees being university graduates or holding higher degrees. Canada graduates 16,000 new engineers annually, many in related fields such as software engineering and electrical engineering. In addition, a large number of specialist schools focus on customized training for the computer game and digital media industries.

As a result, Canada has developed a well-deserved reputation for the quality of its skilled workforce. The World Economic Forum’s 2005-2006 *Global Competitiveness Report* ranked Canada eighth globally for the availability of engineers and scientists, ahead of the United States, Denmark and Hong Kong (see chart at top right).

Further recognition of Canada’s workforce comes from Paris-based Ubisoft Entertainment, which recently announced a €300-million expansion to its Montréal game development studio and cited the innovativeness of its Canadian workforce as the main driver of its decision to invest in Canada.

2. Proximity to major markets

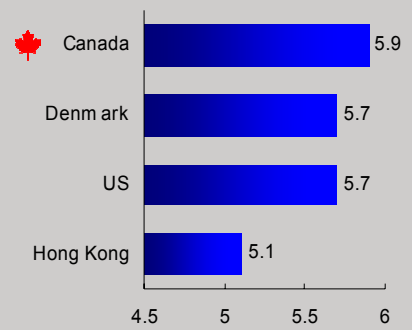
All of Canada’s major wireless and multimedia clusters are located in close proximity to major US markets, and share common time zones with major US centres. Vancouver is within three hours direct flight from San Francisco, Los Angeles and San Diego, while Montréal, Ottawa and Waterloo are all within approximately 90 minutes direct flight from New York City.

3. Labour costs

Labour costs for Canadian wireless and multimedia staff are very competitive with competing international clusters. For example, average remuneration for a management engineer is lower in Canada than in either Hong Kong or the United States, and far lower than in Denmark (see chart at centre right).

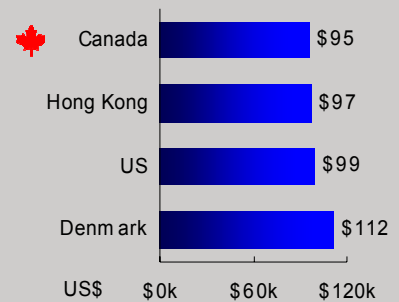
Within North America, Canadian wireless and multimedia clusters offer significantly lower labour costs than comparable US clusters. A 2006 KPMG study estimates the overall labour cost differential for software and multimedia operations as ranging from 8% to 25%, depending on the cities being compared (see chart at right).

Availability of engineers and scientists¹



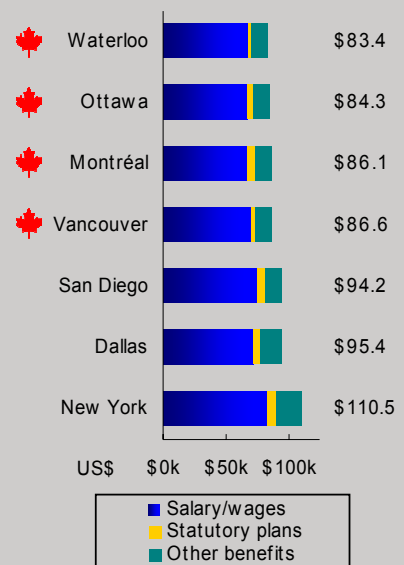
1: *The Global Competitiveness Report*, 2005-2006, World Economic Forum. Scientists and engineers are: 1 = nonexistent or rare, 7 = widely available.

Annual remuneration
Management engineer, US\$’000¹



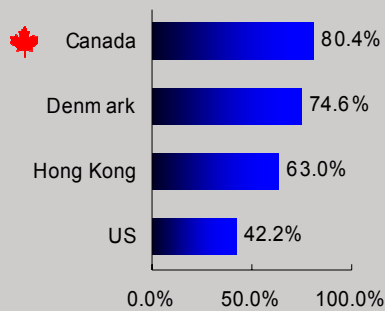
1: *IMD World Competitiveness Online*, 2005. Base salary plus bonuses and long-term incentives, US\$.

Software and multimedia
Average cost per employee, US\$’000¹



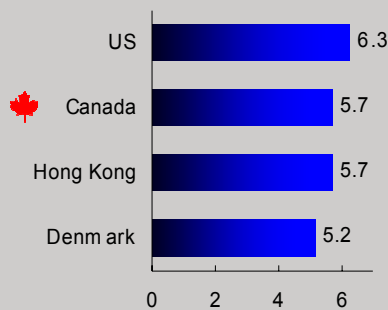
1: *Competitive Alternatives*, KPMG LLP, 2006. Total annual cost per employee. Data represents the Software Average, which is an average for Software Design and Web & Multimedia operations. Data not available for Denmark and Hong Kong.

Broadband Internet penetration¹



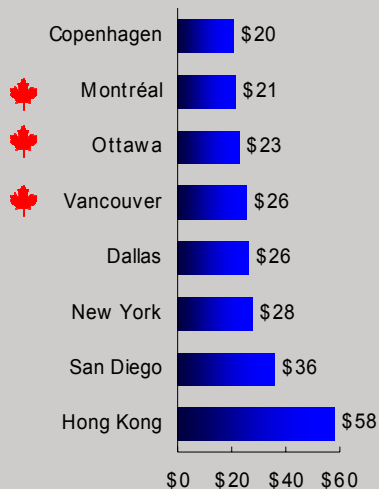
1: *Measuring the Information Society – 2007*, International Telecommunication Union. Broadband as a % of total Internet subscribers, 2005.

Quality of competition in the ISP sector¹



1: *The Global Competitiveness Report, 2005-2006*, World Economic Forum: "Is there sufficient competition among Internet service providers (ISPs) to ensure high quality, infrequent interruptions, and low prices" 1= no, 7= yes, best in the world.

Suburban office costs, US\$/sq. ft.¹



1: *Global Office Real Estate Review 2007 and US Real Estate Review 2007*, Colliers International Class A gross rent, December 2006. Waterloo Region data not available.

A significant component of Canada's labour cost advantage relative to the United States comes from generally lower costs of providing employee benefits. Canada's national healthcare system means that most medical insurance costs are publicly funded, rather than paid by the employer – resulting in significant cost savings.

4. Availability of high-speed Internet

Canada has one of the best-developed broadband infrastructures in the world and broadband services are widely available across the country, not only in major centres. Approximately 95% of Canada's population lives in communities served by high-speed Internet, and Canada ranks highly in terms of broadband penetration, ahead of Denmark, Hong Kong, and the US (see chart at left).

Quality, reliability and pricing of Internet services are naturally key considerations. The World Economic Forum's *Global Competitiveness Report 2005-2006* ranks Canada in ninth place globally for quality in Internet services, ahead of both Hong Kong and Denmark (see chart at centre left).

Canada also has a very high overall Internet usage rate among its general population, reflecting the high levels of Internet-based skills within the Canadian labour force.

5. Occupancy and construction costs

Office occupancy costs

Office lease costs in Canada's major wireless and multimedia clusters are extremely competitive when compared to US and international clusters. Class A suburban office leasing costs in the Canadian clusters – Montréal, Ottawa and Vancouver – are lower than in either Dallas or New York, and significantly lower than in San Diego or Hong Kong (see chart at bottom left).

Facility costs

For construction of manufacturing facilities, costs in the Canadian clusters are also very competitive. According to KPMG's 2006 *Competitive Alternatives* study, construction costs for manufacturing facilities in Waterloo, Montréal, Ottawa and Vancouver (at US\$51-56/ft²) are somewhat higher than in Dallas (\$40/ft²), but are much lower than in either San Diego (\$70/ft²) or New York (\$78/ft²).

6. Accessibility to a major airport

Montréal and Vancouver both have major international airports that offer frequent air service to US and international destinations. Ottawa airport also offers direct US and international flights, while Waterloo is located within 100 kilometres (60 miles) of Toronto's international airport – Canada's largest airport and international gateway.

7. Tax incentives and exemptions

R&D incentives

Canada has a long-standing tax credit program for R&D activities that is among the most generous in the world.

The OECD's standard measure for competitiveness of R&D tax incentives is the "B-index", which represents the amount of pre-tax income (or funding) required to undertake each dollar of R&D expenditure (after tax). Using this measure, Canada's leading wireless and multimedia clusters offer a lower after-tax cost of R&D than any of the clusters compared in the United States and Denmark (see chart at right), and the lowest after-tax cost of R&D among twenty OECD countries.

Multimedia incentives

Canada's leading multimedia and wireless clusters are all located in provinces that offer special incentives to the multimedia and digital media industries:

- Montréal firms benefit from Quebec's refundable tax credit of up to 37.5% on eligible labour costs for the production of multimedia titles and products.
- Ottawa and Waterloo firms benefit from Ontario's refundable tax credit of 20% on eligible labour, marketing and distribution expenses for interactive digital media projects.
- Vancouver firms benefit from British Columbia's refundable tax credit of 15% on eligible labour costs for digital animation and visual effects.

These credits for multimedia productions are all in addition to credits for other forms of media, such as film and TV production, that also apply in these jurisdictions.

Manufacturing incentives

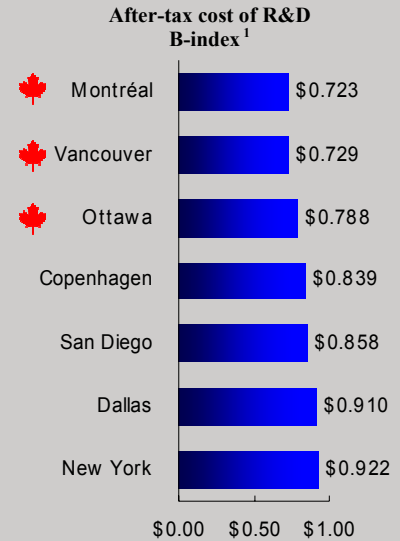
For companies engaged in wireless equipment manufacturing, Canada's 2007 federal budget included new tax incentives that will benefit them. These incentives include enhanced depreciation allowances on manufacturing buildings, machinery and equipment.

8. Availability of telecommunications services

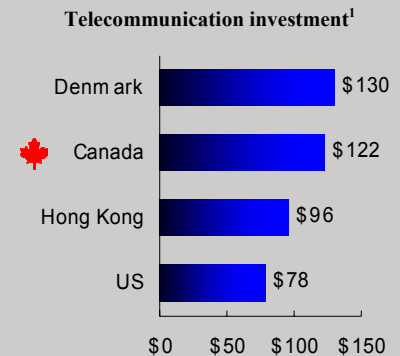
The telecommunications infrastructure in Canada is well advanced, with fibre-based digital systems in all major centres providing seamless voice, video, and data links to major US and international carriers. Canadian telecom pricing is very competitive, with traditional telecom carriers, competitive rival telecom providers, and cable TV companies now competing aggressively in the voice and data telecom market.

The high standards of Canada's telecommunication services are the result of strong investments by carriers. In 2005, telecommunication investments per subscriber in Canada exceeded those of both the United States and Hong Kong (see chart at centre right). The high standards of Canada's telecommunication services were recognized by IMD in its 2006 *World Competitiveness Online*, which ranks Canada ahead of the US for "communications technology meets business requirements".

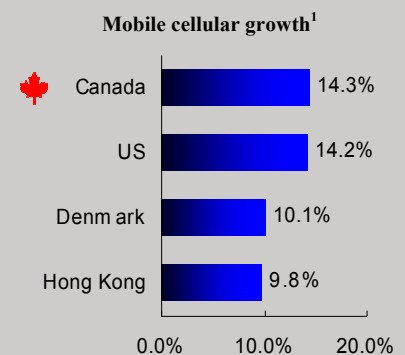
For wireless firms, another key consideration related to telecommunication services is the growth of mobile phone and wireless device users. In this regard, Canada's wireless market is growing rapidly. Between 2000 and 2005, mobile cellular phone growth rates in Canada exceeded those of the United States, Denmark, and Hong Kong (see chart at right). This translates into strong growth opportunities for wireless service providers.



1: The OECD-standard B-index measure represents the present value of before-tax income that a firm needs to generate to cover a \$1 (after tax) investment in R&D activities. B-index of less than 1.00 indicates that the tax system is subsidizing the cost of R&D. Rates shown are applicable to large and foreign corporations. Data for Hong Kong not available. *Canada's R&D Tax Advantages, An International Comparison*, IPW Innovation Associates Inc., 2007.



1: *Measuring the Information Society – 2007*, International Telecommunication Union. Investment in US\$ per telephone subscriber, 2005



1: *Measuring the Information Society – 2007*, International Telecommunication Union. Compound annual growth of mobile subscribers, 2000-2005.

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