2009

Invest in Canada
WIRELESS

Canada

WIRELESS

CANADIAN WIRELESS SECTOR

MAJOR GLOBAL INVESTORS IN CANADA

Alcatel Lucent

Ericsson Canada

Motorola

Nokia

Nokia Siemens Networks

LEADING CANADIAN COMPANIES

BelAir Networks

Icron

Miranda Technologies

Nortel Networks

Psion Teklogix

Redline Communications

Research In Motion (RIM)

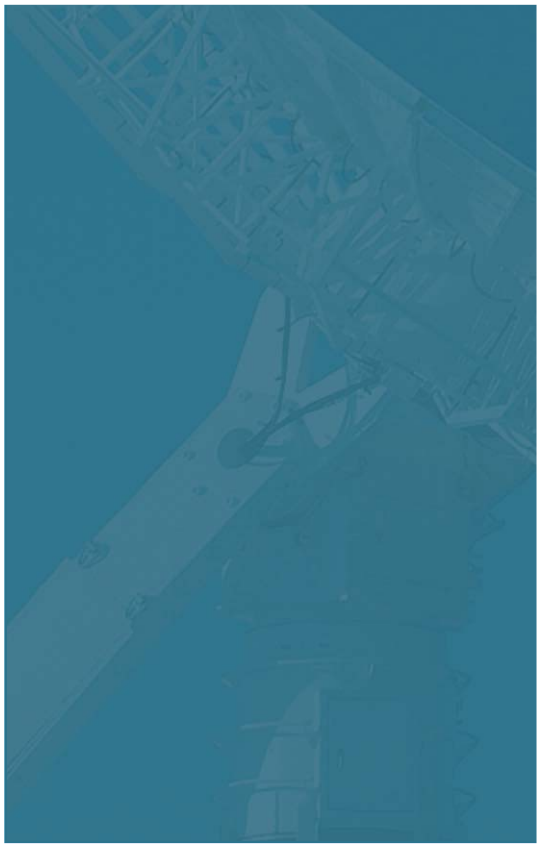
Sierra Wireless

Sinclair Technologies

Vecima Networks

VoiceAge

Wavesat



Information and communications technology (ICT) is one of Canada's most innovative sectors, representing almost 40 percent of the country's private investment in research and development (R&D), worth an estimated $5.7 billion[1] in 2006. Telecommunications firms—wired and wireless—dominate R&D in ICT.

Several multinational telecom companies have chosen to invest in R&D in Canada: Swedish manufacturer Ericsson, for example, has chosen Canada as the site of its largest Centre of Excellence outside Sweden; and Alcatel, Nokia, Motorola and Siemens, have all established R&D centres in Canada. More than 20 percent of the investment projects announced in the world between 2003 and 2006 were telecom-related, and Canada captured approximately 18 percent of those, resulting in 27 new projects[2].

The Canadian government encourages R&D through generous R&D tax credits to help drive innovation, and through direct support of research centres such as the Communications Research Centre, the National Institute for Information Technology and the National Institute for Nanotechnology.

Canada's R&D consortium include TRLabs and the Telecom Applications Research Alliance; university R&D centres include the Emerging Communications Technology Institute at the University of Toronto; and numerous nanotechnology centres, such as those at the universities of Toronto, Waterloo, Alberta, McMaster and Brock. These have particular strengths in applying quantum computing to cryptography, securitisation of documents and data security.

Key Capabilities

- Cellular equipment: Canada leads in this market through the presence of innovative cellular firms such as Nortel Networks, Sinclair Technologies and Radian Communications.
- Mobile devices and CPEs: Canadian companies have demonstrated leadership through unique and innovative end-to-end solutions for e-mail and data communications. Leading-edge companies include Research In Motion (RIM), renowned for the BlackBerry®, and Sierra Wireless, with its cellular AirCards.
- WiMAX: Canadian companies such as BelAir Networks, Bridgewater Systems, Dragonwave, Redline Communications, Vecima Networks and Wavesat have been early adopters of the "WiMAX" 802.16-2005 and 802.16e standards. Wavesat won the 2008 Technology Excellence Award by Frost & Sullivan for its Orthogonal Frequency Division Multiplexing (OFDM) chipset research work. Redline Communications was also recognized as one of the first companies in the world to have a complete WiMAX product-line certified by the WiMAX forum.
- Software-defined radios (SDRs): Canada has been a leader in SDR research and commercialization since the Communication Research Centre's pioneering work in ensuring the interoperability among different kinds of radios or other communication devices.

» As a true testament of Canada's strength in innovation, Ericsson of Sweden more than doubled its research and development operations in British Columbia by 60 jobs in 2008

1 Unless otherwise noted, all values are in Canadian dollars. 2 IBM-PLI Global Investment Location Database

KEY CANADIAN CLUSTERS

British Columbia (BC)

Concentrated in Vancouver, there are approximately 250 companies active in the wireless sector, generating revenues of approximately $1 billion and employing 5,500 people. Particular strengths in the province's wireless sector are in the areas of mobile workforce, mobile applications, mobile entertainment, intelligent transportation and ruggedized embedded solutions. The sector also comprises services, such as voice and data, and equipment manufacturing, including infrastructure, phones, PDAs, handheld devices and applications software. The top companies in BC's wireless sector include Glentel, Sierra Wireless, Vecima Networks, Versatile Systems and MDSI Mobile Data.

British Columbia also hosts a complement of notable public sector, academic and industry research facilities, including the National Dominion Radio Astrophysical Observatory Lab, Nokia's mobile terminal R&D facility and UTStarcom's training facility.

Alberta

The Alberta wireless and telecom sector comprises more than 300 companies, employing over 16,000 people and generating revenues of $3.5 billion. Alberta's expertise covers areas such as interactivity, mobile commerce, location and mapping technology, telematics, geomatics and GPS, security, content, applications, services, broadband technology and more.

The province is home to leading wireless companies that include Meta4hand, Blackline GPS, Novatel, Wedge Networks, Hemisphere GPS, Redwood Technologies and Baseband Technologies. The research base of Alberta's wireless sector is exemplified by organizations such as TRLabs, the University of Alberta, the University of Calgary and the University of Lethbridge. The University of Calgary is recognized for its strengths in geomatics and remote sensing technologies.

Ontario

Toronto is home to over 3,300 high tech companies, with annual ICT revenues of over $25 billion. Many large corporations, including Nortel Networks, Rogers Communication, and TELUS help to employ the 148,000 involved in the ICT sector. The multiple educational institutions in and near Toronto, including the University of Toronto, York University, and the University of Ontario Institute of Technology have a strong track record of producing highly skilled employees and outstanding research.

Waterloo Region, with particular strengths in microelectronics and telecommunications, has approximately 400 high-tech companies that employ close to 15,000 skilled workers. Known as Canada's technology triangle, the Waterloo Region has a highly educated workforce and exceptional educational establishments, including the University of Waterloo and Wilfred Laurier University, as well as research facilities such as Communitech Research Accelerator and the University of Waterloo Research and Technology Park. Some of the major established wireless companies include Research in Motion and Sirific Wireless.

Ottawa is another important ICT hub, with over 1,600 high-tech companies employing 65,000 people. Ottawa offers particular strengths in telecommunications equipment and networking, and has experienced ICT revenues in excess of $10.4 billion. Ottawa's leading educational institutions, including the University of Ottawa, Carleton University, Algonquin College and Université du Québec en Outaouais, are able to support some large global players such as Adobe, Alcatel-Lucent Canada, Calian Technology, Cisco, and Mitel Networks.

Quebec

The Montréal ICT service cluster consists of a critical mass of companies employing a total of 130,000 people. With four comprehensive universities and seven other institutes of higher learning, Greater Montréal offers a large number of students and university graduates to meet the workforce needs of companies in this cluster. One of the cluster's sectors, IT system and device manufacturing, brings together close to 21,000 jobs in 370 companies, plus 700 jobs in 12 affiliated university centres.

The cluster's leaders in communications include CMC Electronics, Ericsson, EXFO, Ultra Electronics, Miranda Technologies, Wavesat and VoiceAge. The future looks promising for ICT since Greater Montréal was ranked among the top regions in Canada in 2006-2007 for employment growth in high-end technology.

WIRELESS

METHODOLOGY

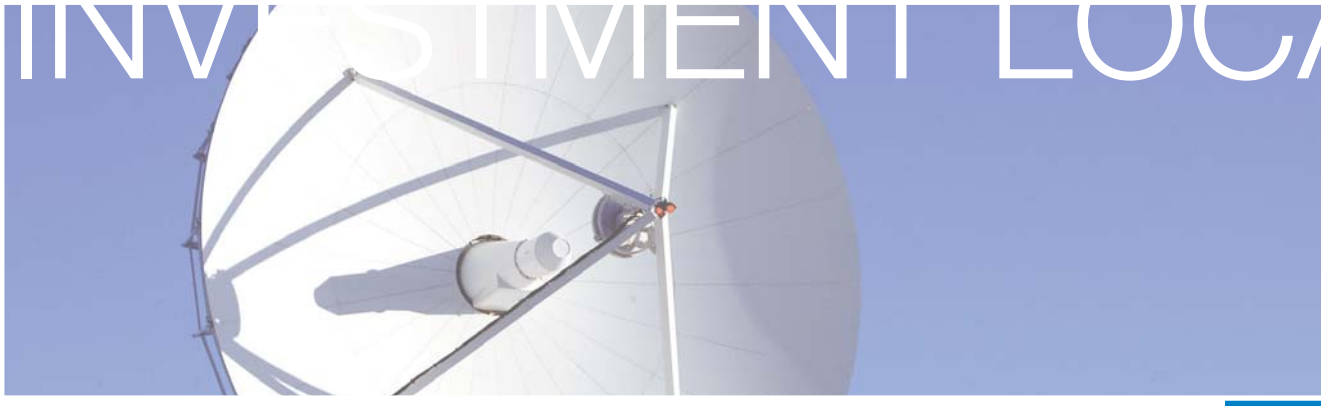
This benchmarking study assesses the competitiveness of a number of Canadian clusters against competing international business locations. Based on an investor's perspective, the research and analysis uses a representative investment project prototype (an operation that produces wireless telecom equipment using next-generation electronics technology—see profile on page 5) to assess criteria that corporate decision makers typically examine when evaluating location alternatives for foreign investment.

This international location benchmarking exercise was conducted by IBM-Plant Location International (IBM-PLI), a renowned global location consultancy. IBM-PLI performed objective research to assess the comparative cost and quality of doing business in various locations, simulating the approach used by investors when screening candidates for corporate investment projects. The benchmarking study examined 250 to 300 financial and qualitative location indicators in the assessment of each industry subsector.

To assess the quality of a location's operating business environment, data were collected from a variety of sources for the different subfactors in each of the categories featured in the operating environment table (page 5). Data for the qualitative assessment were translated into comparable scorings (zero to 10) for each category and subfactor using a weighted scoreboard approach. Weights were assigned to each location category and subfactor to demonstrate their relative importance in the location selection process. These weights are specific to each industry subsector and are based on IBM-PLI's experience in helping investors make strategic decisions when choosing locations.

A high-level financial analysis was also completed to take into account major location sensitive investment and operating costs and revenues for each representative project profile. Cash flow projections have been calculated and discounted over a 10-year period, incorporating anticipated inflation rates, to determine their net present value and to assess the profitability of the project in each of the benchmarked locations.

» benchmarking the comparative cost and quality of doing business in global locations



INVESTMENT LOCATION BENCHMARKING

REPRESENTATIVE PROJECT PROFILE

GENERAL DESCRIPTION OF OPERATIONS

Wireless telecom equipment production using next generation electronics technology. The production of prototype and small lots of equipment using nanotechnology, optical, bio, or other non-metallic circuits for applications in wireless telecom equipment.

KEY PROJECT DRIVERS

- Availability of skilled labour including electrical engineers and material scientists
- Presence of telecommunications equipment company cluster
- Access to courses/R&D/suppliers in nanotechnology and miniaturization
- Access to suppliers of electronics industry, circuit boards, semiconductors, and vacuum technology
- Proximity to purchasers of high tech equipment
- Collaboration with universities or institutes with strong nanotechnology and optronics centers

OPERATING COST ANALYSIS
PROJECT REQUIREMENTS FOR FINANCIAL MODELLING

LABOUR

(HEADCOUNT = 105)

Engineers: 15

Electrical and Electronic Engineering Technicians: 43

Electrical and Electronic Equipment Assemblers : 31

Machinists: 7

Management and Administration: 4

Materials Scientists: 5

MACHINERY AND EQUIPMENT

CAD $10,000,000

SALES

CAD $20,000,000

PROPERTY

Land: 2.1 acres

Building: 47,344 sq ft

UTILITIES

Power:

(Monthly Consumption) 17,043 kWh

Water:

(Daily Consumption) 15,000 gal

OPERATING ENVIRONMENT

GENERAL BUSINESS ENVIRONMENT » 10%*	» Compliance with protection of privacy regulations, information security, IP rights; » Availability of financial support & incentives; » Quality of support from local government & development agencies; » Business permitting procedures; » Economic and financial stability; » Political stability
LOCAL POTENTIAL TO RECRUIT SKILLED STAFF »35%*	» Presence of experienced wireless equipment employees, including manufacturing related; » Presence of student population; » Overall tightness in the labour market (unemployment); » Overall size of labour pool
PRESENCE OF INDUSTRY/CLUSTER » 30%*	» Presence of industry base; » Importance of R&D; » Market proximity (access to customers/suppliers); » Proximity to finance/regulators
FLEXIBILITY OF LABOUR & REGULATIONS » 5%*	» Hiring & firing flexibility; » Industrial relations/attitude of unions; » Working time regulations; » Work permits
INFRASTRUCTURE & COMMUNICATIONS » 10%*	» Quality & reliability of IT and telecommunications; » Air access; » Public transport; » Highway network & congestion (accessibility); » Reliability of power supply
REAL ESTATE » 5%*	» Availability of large industrial sites
LIVING ENVIRONMENT » 5%*	» Attractiveness for expatriates; » Cost of living; » Attractiveness for young international recruits

* Factor category weight; corresponding location factors are ranked in order of importance

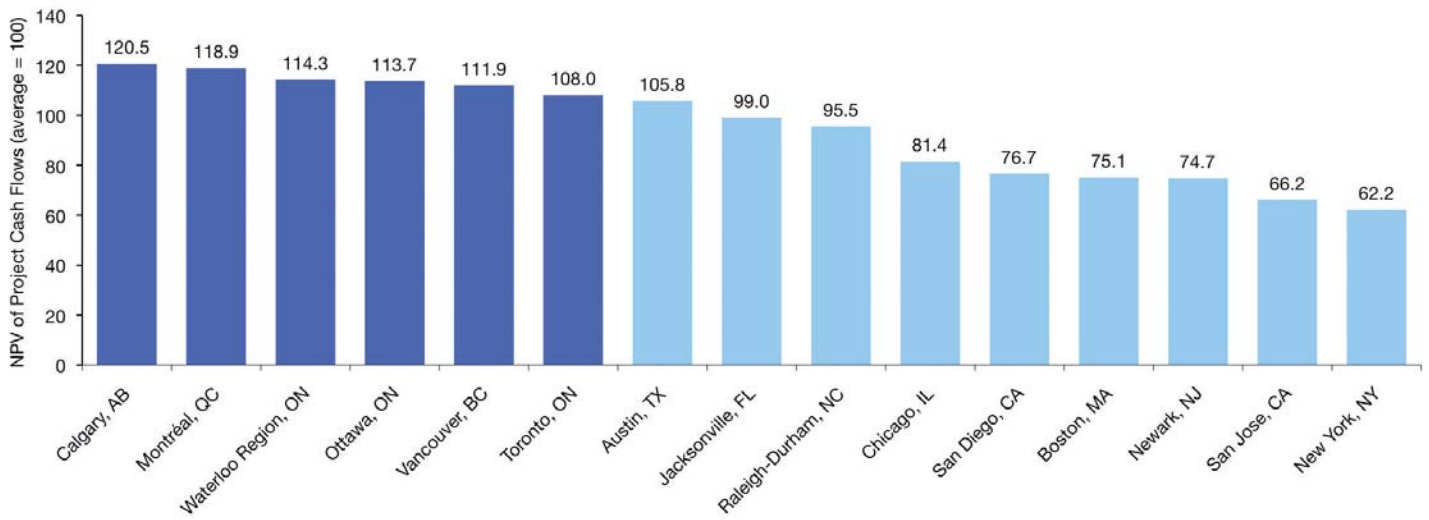
CANADA'S VALUE PROPOSITION

Canada offers wireless equipment manufacturing firms many highly cost-competitive locations that provide greater potential for profitability than U.S. and European alternatives.

COST ASSESSMENT*

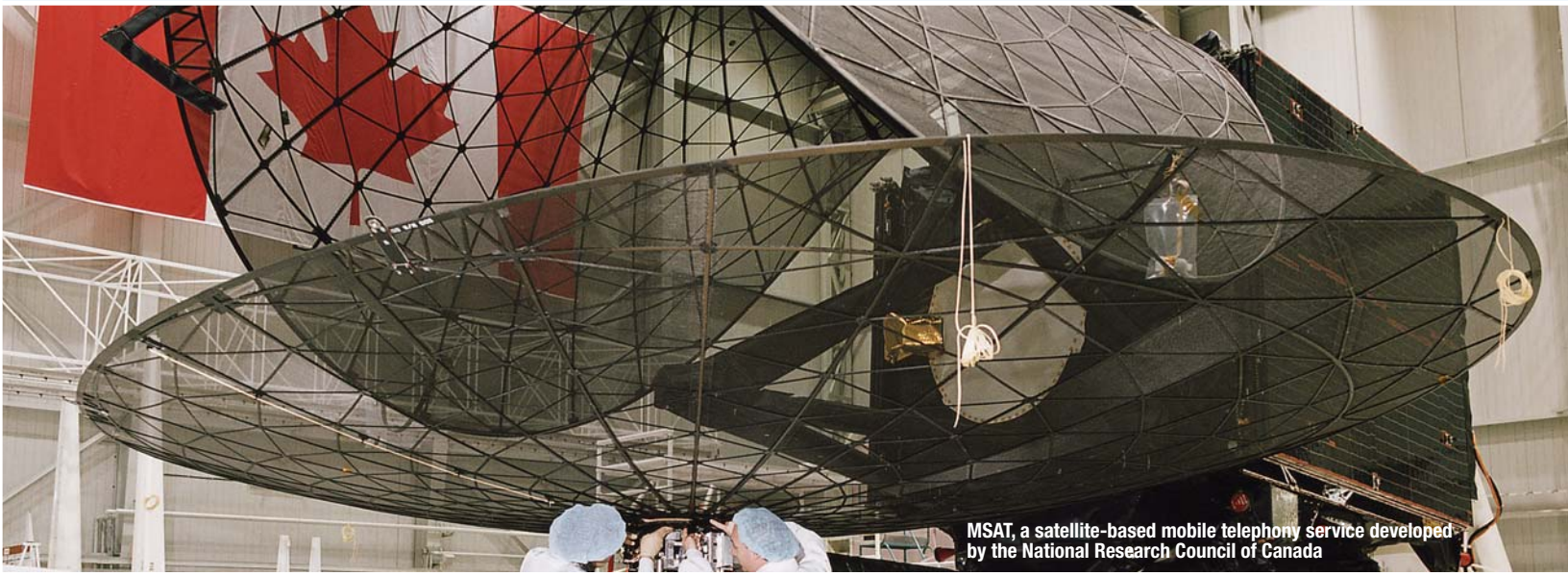
- Canadian
- Non-Canadian

C$1 = US$0.862



A better return on your investment

Canadian cities are more financially attractive than benchmarked U.S. locations. Low corporate tax rates, R&D incentives and competitive labour costs make Canadian locations, regardless of their size, more cost-efficient than other North American options for foreign investment in the wireless field.



MSAT, a satellite-based mobile telephony service developed by the National Research Council of Canada

*Unless otherwise noted, graphs represent IBM-PLI assessment scores.

CANADA'S VALUE PROPOSITION

Estimated annual labour costs (highest-ranking cities)*

Advantageous labour costs

In Canada, labour costs for employees such as assemblers, technicians and engineers are very competitive when compared with those of other North American cities.

An important contributor to Canada's labour cost advantage relative to the United States stems from its national healthcare system. In Canada, most medical insurance is publicly funded, rather than paid by the employer, resulting in significant savings for employers.

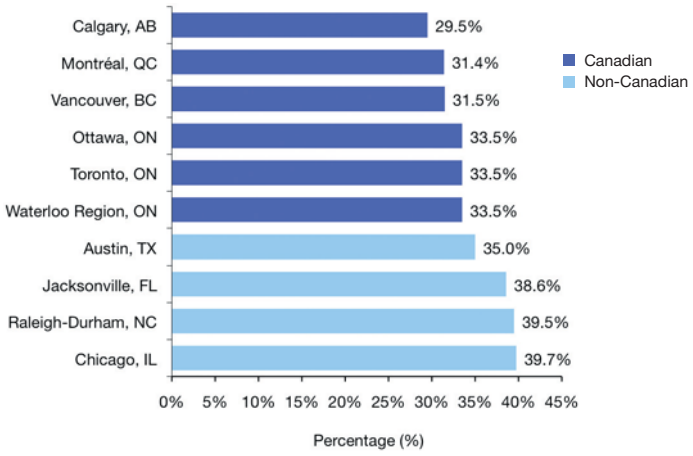
Medium and large-size locations such as Ottawa, Calgary and Waterloo Region, as well as Canada's three largest cities, Montréal, Toronto and Vancouver, all provide a cost-competitive labour force when compared to other cities in the study.

Low business taxes

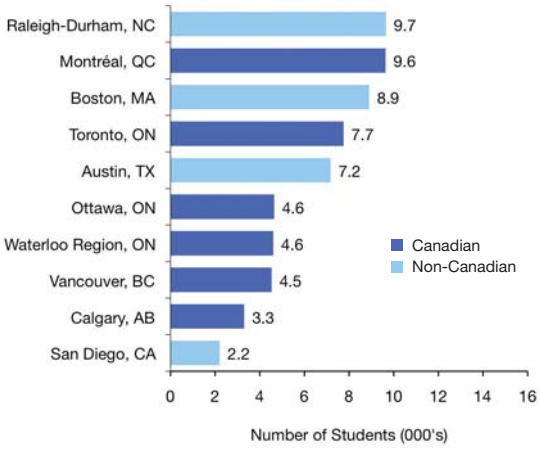
Lower corporate income tax rates, an important investment driver, contribute to the high profitability ranking of Canadian cities. Canadian cities are in the top range studied, providing greater profit cash flows to businesses located there. The Canadian tax rate provides an appealing tax environment for the location of a high value-added specialist manufacturing operation in the wireless sector.

Tax reduction initiatives announced by the federal government in 2007 will give Canada the lowest statutory tax rate in the G7 by 2012, at 12 percent, and the lowest overall tax rate on new business investment (the lowest marginal effective tax rate) in the G7 by 2010.

Corporate income taxes (lowest tax rates)**



Number of engineering students (selected cities)***



The people advantage

Investing in people is a core Canadian value. Canada has the world's highest percentage of college or university graduates and is ranked third globally for secondary school enrolment, well ahead of the United States (26th place)[1]. With several universities offering a variety of advanced programs, Canada boasts a large pool of new engineering graduates who can become successful participants in the workforce, helping companies stay innovative through new ideas and knowledge.

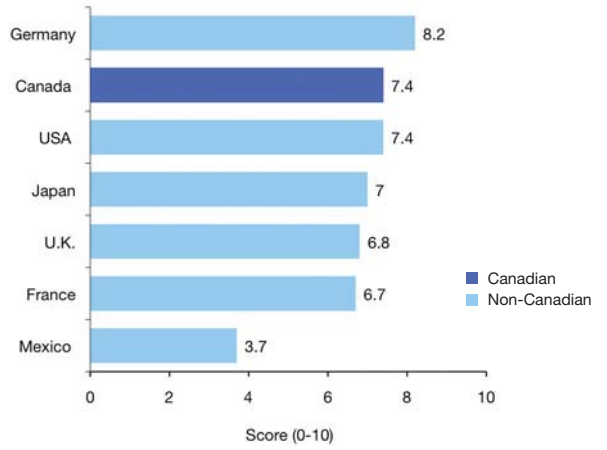
*Unless otherwise noted, graphs represent IBM-PLI assessment scores. **Deloitte, 2008 ***National Center for Education Statistics, Integrated Postsecondary Education Data, Canadian Engineers for Tomorrow and Various Sources for USA/global 1 IMD World Competitiveness Yearbook, 2008

Protecting intellectual property

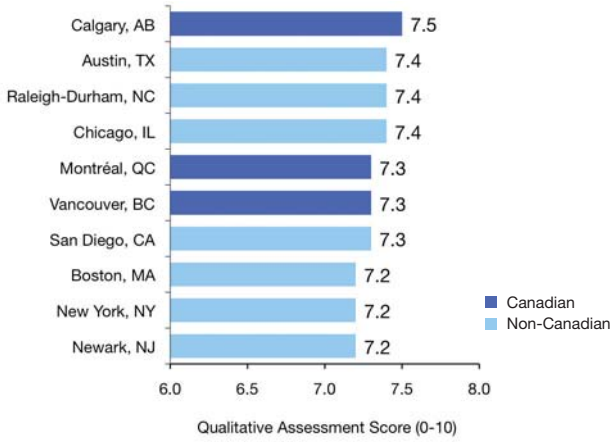
Both Canada and the United States maintain vigilant patent and copyright protection laws. Developers and manufacturers of wireless communication devices using innovative designs and technology, like nanotechnology and optical media, rely heavily on protection of intellectual property to safeguard their business interests.

According to the 2007 IMD World Competitiveness Report, Canada ranks second in the G7 for patent and copyright protection.

Protection of intellectual property rights (selected countries)**



General business environment (highest-ranking cities)*



A conducive business environment

Economic stability, support from government, support from local economic development agencies, R&D incentives, procedures for business permits, financial support available to business, privacy regulations, information security and IP rights are all important considerations in the investment location decision process.

Canadian locations offer a very strong overall business environment thanks in part to generous provincial and federal credits and accelerated tax deductions for a wide variety of R&D expenditures. The Scientific Research and Experimental Development (SR&ED) incentive covers 20 percent of R&D-related costs, such as salaries, overhead, capital equipment and materials, allowing firms to reduce R&D costs of direct investment or subcontracting in Canada.

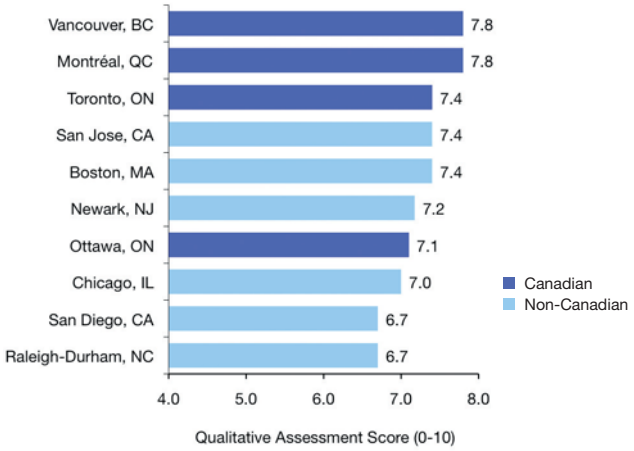
Outstanding quality of life

In the competition to attract global talent, a highly rated living environment is an important consideration in this very specialised industry sector; it is also another advantage to locating in Canada.

With its natural beauty, comparatively low cost of living, high quality of life and values, it comes as no surprise that Canada is one of the best places in the world to live. That is also why our cities attract young international recruits and talented expatriates from around the globe.

Some of Canada's major cities such as Vancouver, Montréal, Toronto and Ottawa, consistently rate highly in living environment surveys including studies by Mercer and the Economist Intelligence Unit.

Living environment (highest- ranking cities)*



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We offer the following valuable services to our clients:

- strategic market intelligence on your specific sector
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- referrals to contacts in firms and industry associations, as well as experts
- information and advice on setting up a business in Canada
- help in identifying a suitable place in which to invest
- assistance in developing a business case for your next investment decision

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Catalogue Number FR5-38/13-2009E-PDF
ISBN Number 978-1-100-12055-3