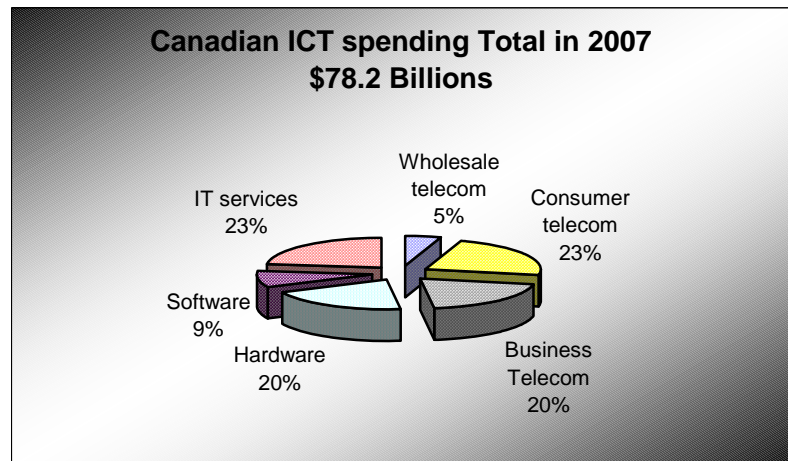Note: Due to the current US and Canadian dollar parity, the exchange rate used for all dollar figures in this report is: $1.00 US = $1.00 CDN.

Summary

Canada's Information and Communications Technology industry (ICT) has demonstrated a steady level of growth during the last five years. According to International Data Corporation (IDC) Canada, the total Canadian ICT market was valued at US$78.2 billion in 2007. The province of Ontario alone generates roughly 50% of the total ICT activity in Canada, (approximately US$40 billion), and 70% of the industry's research and development. Significant ICT clusters are located in Ontario, mainly in the urban areas of Ottawa, Toronto and Waterloo. Furthermore, the province is home to more than 5,000 ICT companies, with more than 230,000 people employed in the industry. Additionally, the largest number of multi-national operations in Canada is located in Ontario, and some of the country's major banks and corporations are headquartered in the province.

Ontario contributes to about 50% of the total ICT activity in Canada, (valued at $40 billion in 2007). It is estimated that during the next three years, the province's ICT industry will have a compound annual growth rate of 3.9%

Canadian ICT spending Total in 2007 $78.2 Billions

IT services 23%
Wholesale telecom 5%
Consumer telecom 23%
Software 9%
Hardware 20%
Business Telecom 20%

Ontario is very committed to ICT research and development. It has a well-developed network, and a demonstrable commitment to improved or efficient Internet and broadband access. Most of the R&D in this sector is developed in the major Ontario Centers of Excellence for Communications and Information Technology and Photonics, located in Ottawa. This is a major reason why the province has one of the most favorable research and development tax environments in the world for the ICT industry.

Finally, the ICT industry in Ontario has industry leaders in different sectors such as telecom equipment, software development and services, digital media and the web, microelectronics, wireless broadband and

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photonics, all of which represent a great opportunity for American firms to partner and/or work with Canadian firms in a variety of ICT sub-sectors.

Market Overview

Canada is divided into ten provinces and three territories. Spending on ICT varies significantly across these regions. For example, Ontario, with a population of 12 million, is Canada's largest province. It is also home to Canada's corporate and banking headquarters. Ontario's ICT industry is one of the world's leaders. The ICT industry in Ontario is clustered around three main centers:

Area	High Tech Companies
Greater Toronto Area (GTA)	Over 3,300
Ottawa	1,500
Waterloo Region	400

These clusters include leaders in every ICT sector, ranging from homegrown companies such as Nortel Networks, Mitel Networks, Cognos, Research in Motion and Open Text to foreign multinationals such as IBM, Alcatel, Cisco Systems, Dell, Ericsson, Microsoft, Siemens, Motorola, and McAfee.

The key factors for the ICT growth and success in Ontario are:

1. A well educated and experienced work force
2. Research and development initiatives
3. A positive investment environment
4. An excellent location in the North American industry

The province has a dominant role in the world ICT sector due to strong cooperation between research and educational institutions, business communities and the management of the Ontario Centers for Excellence of Communications and Information Technology and Photonics. These research consortia and centers are:

- National Research Council Canada: this organization is Canada's leading R&D organization. This is a group of institutes that specialize in information technology, nanotechnology and micro structural sciences.
- CA*net 4: this is a high speed optical research network that connects universities, research centers, laboratories and peer networks together, both nationally and internationally.
- Precarn Incorporated: this organization has programs to support R&D collaboration between companies and Canadian universities, with an emphasis on intelligent systems and robotics.
- Communications Research Centre Canada: this organization focuses on excellence in satellite and terrestrial wireless communications, in both rural and remote broadband access and broadcast technologies.

Market Demand

It is estimated that the ICT sector will have a compound annual growth rate (CAGR) of 3.9% through 2010. Ontario is the largest spender on ICT in Canada. This can be attributed to the high number of

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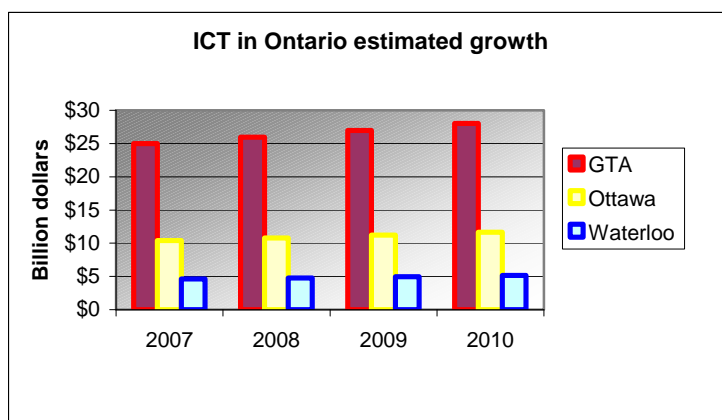
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corporate headquarters located in the province, more specifically in Ontario's three high-tech clusters, (Toronto, Ottawa and Waterloo).

The Greater Toronto Area, (GTA), has a population of 5.3 million. Toronto is the business and financial center of the country, and it has a diverse and flexible economy, a dynamic corporate presence and an educated workforce. The ICT industry in the GTA is one of the top three in North America with more than 148,000 people working in the industry for more than 3,262 companies.

The ICT industry in the GTA is distributed according to market and development activities. Facilities dedicated to financial or media applications are concentrated in the city of Toronto. On the other hand, facilities that specialize in developing industrial automation applications are located primarily in the manufacturing areas of the GTA, outside the city. Finally, ICT services are fairly dispersed throughout the GTA area. The main ICT markets in the GTA are companies in the domain(s) of financial services, business services and industrial markets. These firms create a demand for new business applications such as e-health, e-learning and e-banking. Annual ICT revenues in the GTA for 2007 were estimated at US$25 billion.

Ottawa is the country's capital city with a population of 1.2 million. According to the government of Ontario, about two-thirds of the U.S. venture capital investment in Canada is invested in Ottawa technology firms. This city has an entrepreneurial environment, with an excellent educational system, an educated workforce, and a high standard of living. The Canadian microelectronics industry began in Ottawa owing to significant funding by the federal government. Subsequently, a cluster of telecom microelectronics companies emerged and considerable expertise was gained in photonics, wireless, encryption, and reverse engineering technologies. In 2007, the annual ICT revenues in Ottawa were estimated to be US$10.4 billion.

The Waterloo region, which is known as Canada's technology triangle, consists of three cities: Cambridge, Kitchener and Waterloo. The region has an aggregate population of 500,000. The area is growing quickly due to its attractive location, available real estate, excellent educational system and a well-educated workforce. These factors are, in turn, attracting companies and people, and encouraging relocation to this region. ICT firms in Waterloo provide pre-packaged or custom software, IT and Internet services. The primary markets for ICT in this region are high-tech, fabrication assembly, insurance and financial insurance companies, small businesses, government offices and educational institutions. In the future, it is expected that these markets will change, with healthcare/medical becoming the most important sector, followed by fabrication-assembly-equipment manufacturing, high tech companies, government institutions, and lastly, small businesses. In 2007, annual ICT revenues in the Waterloo region were estimated at $US 4.6 billion.

Source: IDC Canada and Ontario Ministry of Economic Development and Trade

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The Ontario ICT industry has three major sub-sectors, which dominate the industry: software and system development, digital media and microelectronics. Furthermore, companies in Ontario's software industry have special expertise in graphics, multimedia tools, documents and database management, network applications and connectivity.

Companies in Ontario's digital media sub-sector are some of the top producers of computer animation software in the world, and they benefit from the presence of the province's educated, urbanized and multicultural consumers. In addition, Toronto has become a center for film and television production. This development is the result of a significant investment that the province has made in media education and R&D.

The microelectronics sub-sector has developed and grown in Ontario due to continued investment in R&D by the government, by educational institutions, and by the private sector. The province is emerging as a leader in biometrics, a new technology for measuring and analyzing human body characteristics.
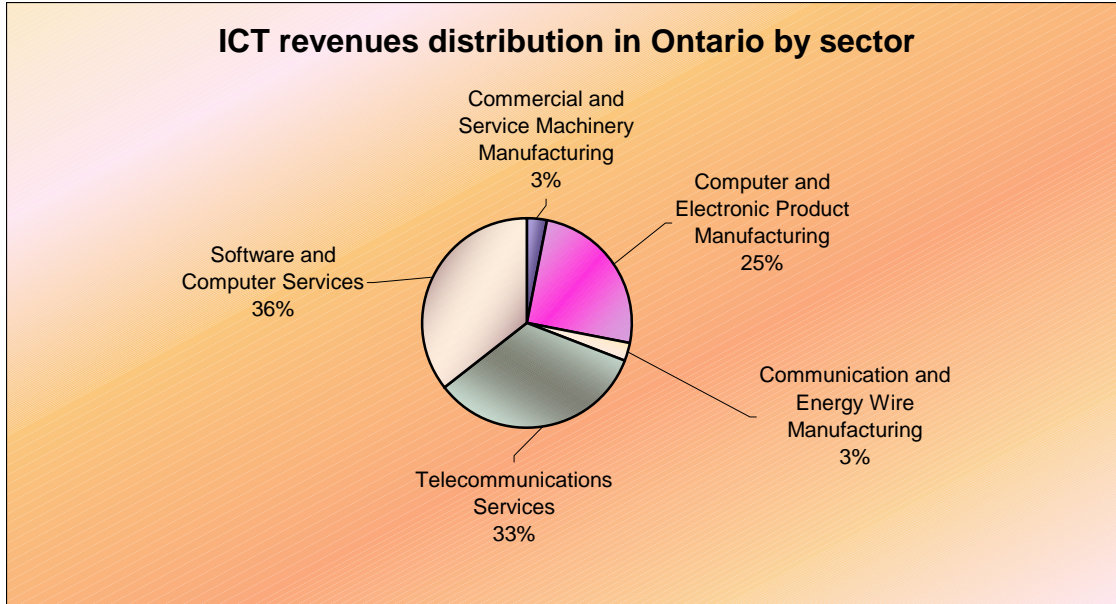
Market Data

The province of Ontario's overall GDP represents 39% of the total Canadian GDP. Ontario is considered to be the economic engine that powers the Canadian economy. The province's economic growth is expected to be positive over the long run because Ontario has a diverse, well-balanced economy and a high concentration of companies in the manufacturing, financial and business services sectors. The employment rate is expected to decrease due to these factors.   The inflation rate has also decreased, dropping to 1.8% in 2007, down from 2.2 % in 2005.

Ontario Economy (US$)	
GDP ($ millions, nominal)	557,784
% of Canada	38.6
Personal income ($ millions)	438,030
% of Canada	40.0
Personal income per capita ($)	
Ontario	34,526
Canada	33,556
CPI inflation (2007)	1.8%
Unemployment rate (2007)	6.4%

Source: Office of Economic Policy, Ontario Ministry of Finance

The ICT sector accounts for more than 5% of the total Canadian GDP, and Ontario accounts for 50% of this sector's total revenues. Within the ICT sector in Ontario, software and computer services generate the largest share of revenues at 36%, followed very closely by telecommunications services at 33% and computer and electronic product manufacturing at 25% (of total revenues). The smallest revenue generating sectors are the commercial and service machinery manufacturing and communications industry and the communications and energy wire manufacturing companies, each of which account for 3% of total revenues.
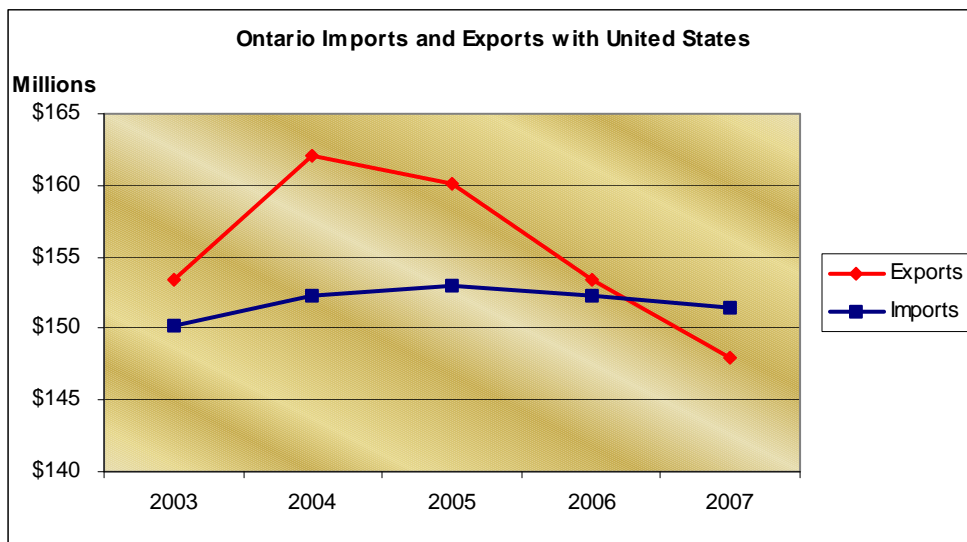
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ICT revenues distribution in Ontario by sector

Commercial and Service Machinery Manufacturing 3%

Computer and Electronic Product Manufacturing 25%

Software and Computer Services 36%

Communication and Energy Wire Manufacturing 3%

Telecommunications Services 33%

Source: Industry Canada

The United States is the number one source of imports to Ontario, accounting for 63.1% of the total imports worth US$151.5 billion (in 2007). U.S. companies have a commercial advantage in trading with Canada, and more specifically with Ontario, due to the geographic proximity, trade agreements such as NAFTA, a common language and cultural and business similarities.

Ontario International Import Suppliers, 2007 (%)	
United States	63.1
Asia (incl. Pacific Rim)	18.2
European Union	8.7
Latin America & Caribbean	7.5
Europe excl. E.U. members	1.0
Middle East	0.4
Africa	0.4

Source: Statistics Canada, International Trade Division

As is demonstrated in the chart below, the level of Ontario's exports to the United States has declined in the last 3 years. However, the level of imports from the U.S.A. has remained relatively stable during the same time period. In 2007, total exports from Ontario to the U.S.A. totaled CAN $147 billion, while total imports from the U.S.A. (into Ontario) reached CAN $ 151.5 billion.

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Ontario Imports and Exports with United States

Source: Statistics Canada, International Trade Division, March 2008 (3/2008) Export numbers are for domestic exports only.
Produced by Investment & Trade Division, Ministry of Economic Development & Trade

In this close trading relationship between Ontario and United States, ICT and related products rank within the top 10 types of goods imported into Ontario. Computer and computer peripheral products rank in fifth place with total imports reaching US$1.7 billion, and the level of imports of insulated wire, cable and fiber optic cable reached US$1.2 billion.

Best Prospects

Key trends that will drive the ICT sector in the future (and these may represent important opportunities for American companies) are:

- Virtualization technology that delivers the benefits of costs savings, better security, a more efficient use of resources, better disaster recovery plans and lower power consumption for companies.
- Nanotechnology processes to develop new or improved products and services, especially for energy conservation and water treatment and control of motor-vehicle pollution.
- Digital protection and security products have grown in terms of demand and spending, particularly in the enterprise sector, where information and digital files have increased in value and more threats to data emerge every day.
- "Green IT" also provides many opportunities for the ICT industry. Examples of these are: power-conserving technologies such as heat and lighting sensors, video conferencing devices and global positioning systems.

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The governments of Canada and Ontario have indicated that they are focusing on the following ICT trends in order to improve efficiency, consolidate infrastructure, reduce environmental impact and cut costs while improving service delivery:

- VoIP: Voice over IP
- SOA: Service oriented architecture
- Network Convergence
- IA&A: Identification, authentication and authorization
- IM: Information Management
- Wireless, mobile workers
- IT governance
- IT performance management and benchmarking
- Virtualization
- Security and Privacy Compliance
- Green Initiatives and Practices

IDC Canada has identified specific growth trends for a number of ICT sub-sectors. US companies seeking to enter into Ontario's market may consider these trends. The key trends in the hardware market are:

- In the PC market: the notebook segment will continue to have the biggest share in the hardware market, while the sale of desktops will decline.
- In the multi-user hardware or server market: spending on volume servers will be the key growth factor in this category.
- In the storage sector: the network attached storage and storage area networks will be the main growth areas for this segment.

The key trends in the software market are:

- Software as a Service business model (SaaS), which will drive the overall software spending in Canada. It is estimated that 65% of businesses will be using SaaS by 2010.
- Developments in the second generation of Internet-based technologies and trends such as Web 2.0. Also, The Voice over Internet Protocol (VoIP) developments will continue to grow in the communications field.
- "IT security" and "Green IT" are two major trends in the public and private sector.

Key Players in Ontario

The main players for the ICT sector in Ontario are located in the three clusters of technology region as follows:

Area	Companies	Sectors
GTA	Alias, Allstream (formerly AT&T Canada), ATI Technologies, Bell Canada, Call-Net Enterprises, Celestica, Cinram, EDS Canada, HP Canada, Hummingbird Communications, IBM Canada, IMAX, Microsoft Canada, Nortel Networks (world headquarters), Oracle, Rogers Communications, Siemens Canada, Telus, Xerox Canada.	Leaders in every sector, but they have national dominance in digital media and the Internet
Ottawa	Adobe, Alcatel Canada, Calian Technology, CGI Group, Cisco, Cognos Inc., Corel, EDS Canada, Hewlett-Packard (Canada) Ltd., JDS Uniphase, MDS Nordion, Mitel Networks, Mosaid, Nortel Networks	Strong in the fields of telecommunications equipment and networking, computer

	(R&D).	software and photonics
Waterloo	Agfa Healthcare Informatics, ATS Automation Tooling Systems, Christie Digital, COM DEV International, DALSA, Inscriber Technology, MapleSoft, Open Text, NDI, Research in Motion, Sybase (iAnywhere Solutions) and SiRiFIC Wireless.	Dominant in the fields of microelectronics, software and tele-communications.

Key Vertical Markets

In view of the fact that Ontario has the largest Canadian ICT market, the most populated province, and is home to the headquarters of major corporations and banks, opportunities for U.S. companies abound in both the public and the private sectors. Different vertical markets have increased the demand for ICT products to improve their operations and productivity.

The Canadian federal and provincial governments have recently updated the procurement process for the IT infrastructure. They are interested in "Green IT" such as recycling initiatives, power-management strategies and virtualized work environments. The ITAC Public Sector Business Committee focuses on sales to government and advice on procurement policies and practices.

The Ontario government has a specific procedure for any purchase of equipment, software and services used for creating, storing, processing and communicating information. When the government acquires goods valued at $25,000 or more, and/or services valued at $100,000 or more, the government opens a Bid process using the national electronic tendering service called MERX http://merx.com/ and newspaper advertisements. It is recommended that companies interested in supplying the provincial government check this website frequently to apply for opportunities in the ICT sector.

One of the major events that IT vendors interested in supplying the Ontario Government should consider is the trade show "Showcase Ontario" http://www.showcaseontario.com/2007/. This trade show is the largest technology trade show that features products of interest to public sector.

Another major event that IT vendors interested in penetrating the Ontario market should consider is the U.S./Canada ICT partnering seminar. The U.S. Commercial Service organizes this important one-day event. The seminar begins with a breakfast briefing, which includes presentations by key Canadian IT executives. Afterwards, there will be opportunities for American companies to make 20-minute presentations to an audience of carefully screened Canadian IT personnel. The American executives will also have the chance to hold up to three, one-on-one, scheduled meetings with handpicked Canadian executives. Additionally, there will be breakout sessions and tabletop displays.

Market Entry

It is very easy for American companies to access the Ontario market. The market's characteristics are very similar to those in the U.S.A., in terms of language, location, and business practices. Market entry through local partners, where the options range from licensing agreements, distribution agreements, joint venture arrangements and/or manufacturing partnerships are common.

Some multinational enterprises have invested in Canadian ICT expertise by direct investment, strategic alliances, subcontracting and R&D collaborations. Successful options for innovative R&D exist with provincial organizations, programs and academic institutions, from establishing a core R&D lab in Canada, to partnering with a Canadian company for R&D services, or connecting with a Canadian university.

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Market Access

Entrance into Ontario's ICT market does not present any trade barrier or obstacle for American companies. In fact, due to the NAFTA agreement, American companies enjoy the right of free trade of goods. Moreover, the province has a receptive business environment that provides companies with opportunities to create, develop and build new technologies.

In addition, with the Canadian dollar on the rise, American goods now represent lower costs for Canadian companies in terms of imported inputs and imported machinery/equipment.

Under the terms of the North American Free Trade Agreement (NAFTA), there are no tariff barriers to trade in computer hardware and software between Canada and the United States. All computer hardware and software products of U.S. origin are duty-free when exported to Canada. NAFTA has reduced restrictions on movement of key personnel who are required to perform technical support or pre-shipment and post-sales activities. Technical personnel from the United States can enter Canada without restrictions for temporary periods for research, design, production, and service related to marketing.

A five percent Goods and Services Tax (GST) applies to all goods and services produced or imported into Canada. GST is applicable on software products based on the combined value of software and physical carrier medium. To avoid double taxation on the software that requires a license fee, GST is applicable to the carrier medium only at the time of importation, and on license fee payments. In general, GST is applied on the full value of goods and services on a value-added basis at each resale level. U.S. exporters pay GST to Revenue Canada when their products cross the border. Information on GST registration requirements for U.S. exporters is available on the Revenue Canada website (http://www.rc.gc.ca).

The third (3rd) Protocol amending the Tax Treaty Convention between Canada and the United States was ratified on January 1, 1996. This protocol has a positive effect on U.S. exports of software to Canada. One of the provisions exempts U.S. computer software products imported into Canada from a ten percent withholding tax. This tax was formerly levied on the buyer, not the vendor, of the software. The elimination of this tax, which applies to both shrink-wrap and custom software, reduces the overall cost of U.S. software for the Canadian buyer. Note that a ten percent withholding tax still applies to royalties on trade names and trademarks.

NAFTA has also increased the range of Canadian government procurement tenders that are open to bidding by U.S. computer equipment suppliers by lowering the threshold for American firms to US$25,000. NAFTA extends national treatment to U.S. suppliers of computer hardware and software without requiring them to establish facilities within Canada. Furthermore, Canada and the United States have agreed to work toward greater liberalization of government procurement practices and to negotiate further improvements in their trade relations and market access.

Major ICT Events in Ontario

U.S.-Canada ICT Partnering Seminar
Date: SEPT-23-08
Toronto, Ontario, Canada
http://www.buyusa.gov/canada/en/ictpartnering.html

IT 360 Conference and Expo
Date: APR-09
Toronto, Ontario, Canada.
http://www.it360.ca/

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Project World & business Analyst World
Date: APR-09
Toronto, Ontario, Canada.
http://www.projectworldcanada.com/toronto/

Massive Technology Show
Date: APR-09
Toronto, Ontario, Canada.
http://www.massivetechshow.com/tor08/

Infosecurity-Canada
Date: 10-JUN-08 to 12-JUN-08
Toronto, Ontario, Canada.
http://www.infosecuritycanada.com/App/homepage.cfm?moduleid=42&appname=100358

Real –Time & Embedded Computing Conference
Date: SEPT-08
Ottawa, Canada.
http://www.rtecc.com/ottawa/

Showcase Ontario 2008
Date: 8-SEPT-08 to 10-SEPT-08
http://www.showcaseontario.com/2007/

Toronto Technology Week
Date: 22-SEPT-08 to 27-SEPT-08
Toronto, Canada.
http://www.techweek.to/

Government Technology Exhibition & Conference (GTEC)
Date: 27-OCT-08 to 30-OCT-08
Ottawa, Canada.
http://www.gtec.ca/

Resources and Key Contacts

Advanced Card Technology Association of Canada - www.actcda.com
Association for Media and Technology in Education in Canada (AMTEC) - www.amtec.ca
Association of Internet Marketing and Sales (AIMS) - www.aimscanada.com
Canada IT.com - www.canadait.com
Canadian Association of Internet Providers (CAIP) - www.caip.ca
Canadian Association of Supply Chain and Logistics Management (SCL) - www.sclcanada.org
Canadian Cable Television Association (CCTA) - www.ccta.ca
Canadian Interactive Digital Software Association - www.media-awareness.ca/english/index.cfm
Canadian IT Law Association - www.it-can.ca
Canadian Telecommunications Consultants Association - www.ctca.ca
Canadian Wireless Telecommunications Association - www.cwta.ca

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CATA Alliance - www.cata.ca
CA*net 4, Canada's Advanced Network http://www.canarie.ca/canet4/index.html
Canada - Ontario Business Service Centre (COBSC) http://www.canadabusiness.ca/ontario
Canadian Advance Technology Alliance www.cata.ca
Communications Research Centre Canada http://www.crc.ca/
Greater Toronto Marketing Alliance (GTMA) www.greater.toronto.on.ca
IDC Canada www.idc.com
Industry Canada www.ic.gc.ca
Information Research Management Association of Canada - www.irmac.ca/index.htm
Information Technology Association of Canada - www.itac.ca
Information and Communications Technology Council (ICTC) www.ictc-ctic.ca
Information Technology Association of Canada www.itac.ca
IT World Canada.com - www.itworldcanada.com
National Research Council Canada http://www.nrc-cnrc.gc.ca/
Ontario Ministry of Economic Development and Trade www.ontario-canada.com/
Precarn Incorporated http://www.precarn.ca/home/index.html
The Ontario Chamber of Commerce http://www.occ.on.ca

For More Information

For additional information regarding this report, or related opportunities in this sector, please contact
National Sector Coordinator for Information and Communication Technology, Viktoria Palfi, at
viktoria.palfi@mail.doc.gov or at phone number (416) 595 5412 ext. 229.

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Service trade specialist in the US nearest you by visiting http://www.export.gov/