



STRENGTHENING CANADA'S DIGITAL ADVANTAGE

QUARTERLY MONITOR OF CANADA'S DIGITAL ECONOMY

LABOUR MARKET • ECONOMY • TALENT • TECHNOLOGIES

THE INFORMATION AND COMMUNICATIONS TECHNOLOGY COUNCIL (ICTC)

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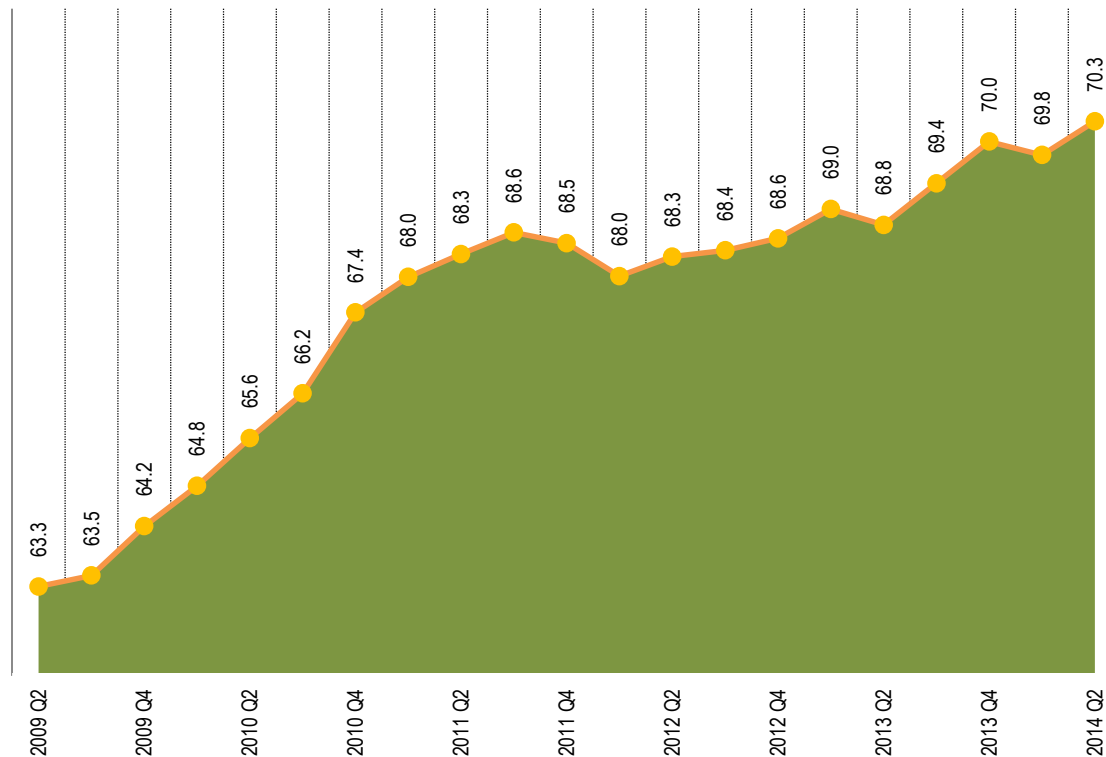


OUTPUT AND OUTLOOK	1
PROVINCIAL COMPARISON.....	3
LABOUR MARKET TRENDS	4
PROVINCIAL COMPARISON.....	6
WOMEN	7
YOUTH.....	8
IMMIGRANTS.....	9
IN-DEMAND JOBS.....	11
LATEST POLICY AND INDUSTRY DEVELOPMENTS.....	12
KEY TAKEAWAYS	16
Digital economy labour force	17
ICT sector	18
About ICTC	19



OUTPUT AND OUTLOOK

Figure 1. ICT sector GDP (in billion dollars)



Source: ICTC; Statistics Canada

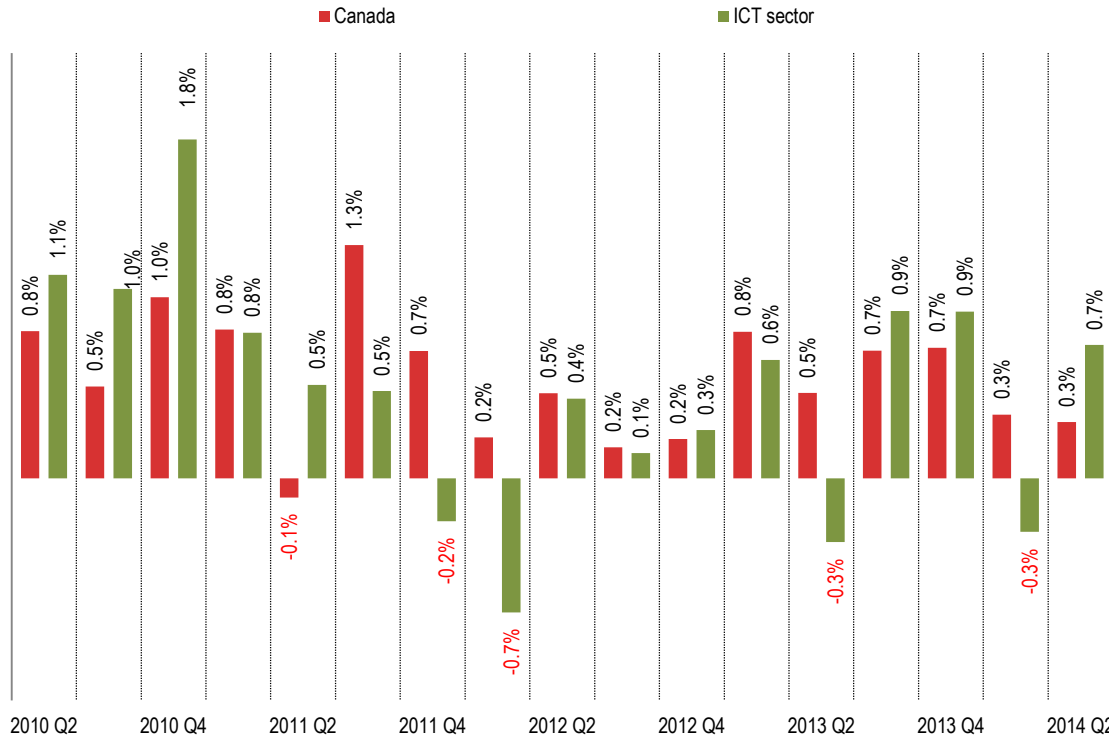
- ▶ Following a moderate (↓\$202 million) decrease in the first quarter of 2014 (2014 Q1), real gross domestic product (GDP) produced by the Canadian ICT sector in the second quarter of 2014 (2014 Q2) increased markedly (↑\$504 million), contributing \$70.3 billion to Canadian GDP (figure 1).^{1,2}
- ▶ The ICT sector accounted for 4.3% of Canada's total output of \$1,616 billion in 2014 Q2.
- ▶ The emergence and adoption of ICT products and services has created incremental economic opportunities for all economic sectors.
- ▶ ICTs are promising new frontiers for innovation and economic growth that will result in employment creation, efficiency gain, cost reduction, and revenue generation across all sectors. The overall impact of ICTs on the Canadian economy as a result is much greater.

¹ In 2007 chained dollars. Chained dollars are real dollar amounts adjusted for inflation.

² GDP figures for 2014 Q2 are calculated using up to April 2014 data, due to lag associated with availability of output data.



Figure 2. Quarterly GDP growth



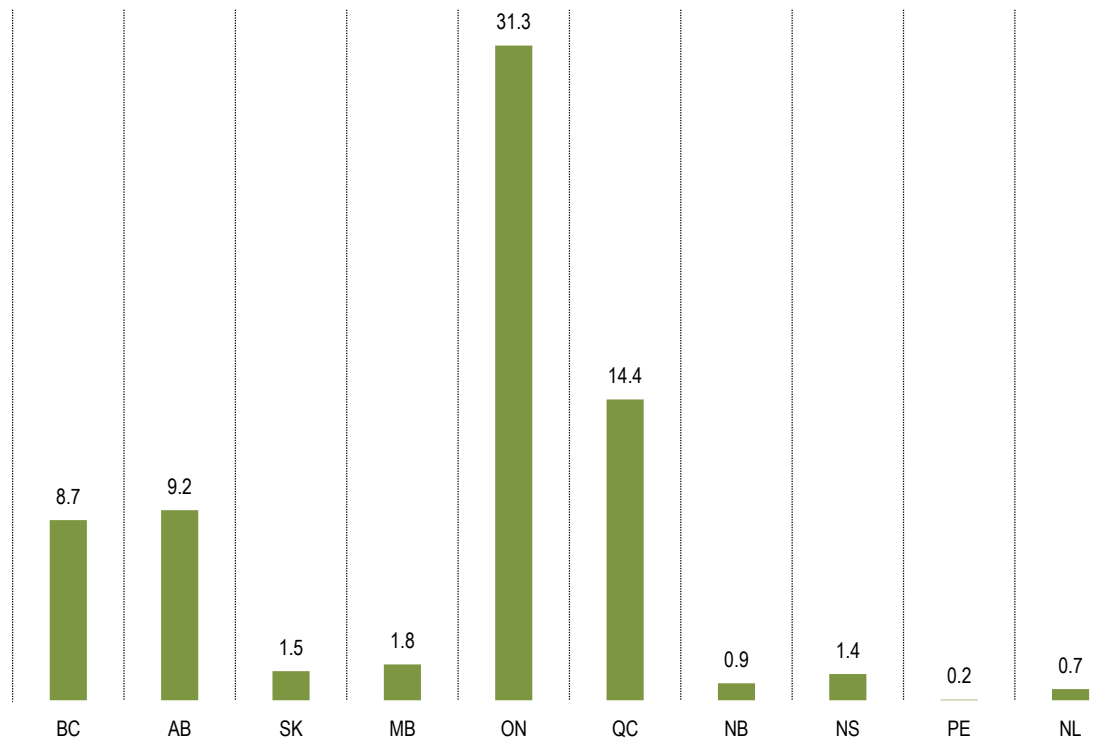
Source: ICTC; Statistics Canada

- ▶ ICT sector output of \$70.3 billion in 2014 Q2 was \$1.6 billion higher than it was in 2013 Q2 – a year-over-year (YOY) output growth of 2.3%.
- ▶ This output level represents a 3.0% increase compared to two years ago (2012 Q2).
- ▶ ICTs have a profound direct and enabling impact on the overall economy. These technologies enable workers and businesses to upgrade existing business strategies, workplaces, and operational procedures to improve productivity.
- ▶ ICTs were a contributing factor to 0.3% (▲) quarterly growth in the overall Canadian economy in the 2014 Q2.
- ▶ Growth in the overall Canadian economy was 2.1% (▲) in the second quarter of 2014 compared to the second quarter in 2013, and 3.7% (▲) compared to the second quarter in 2012.



PROVINCIAL COMPARISON

Figure 3. ICT sector output by province (in billion dollars)



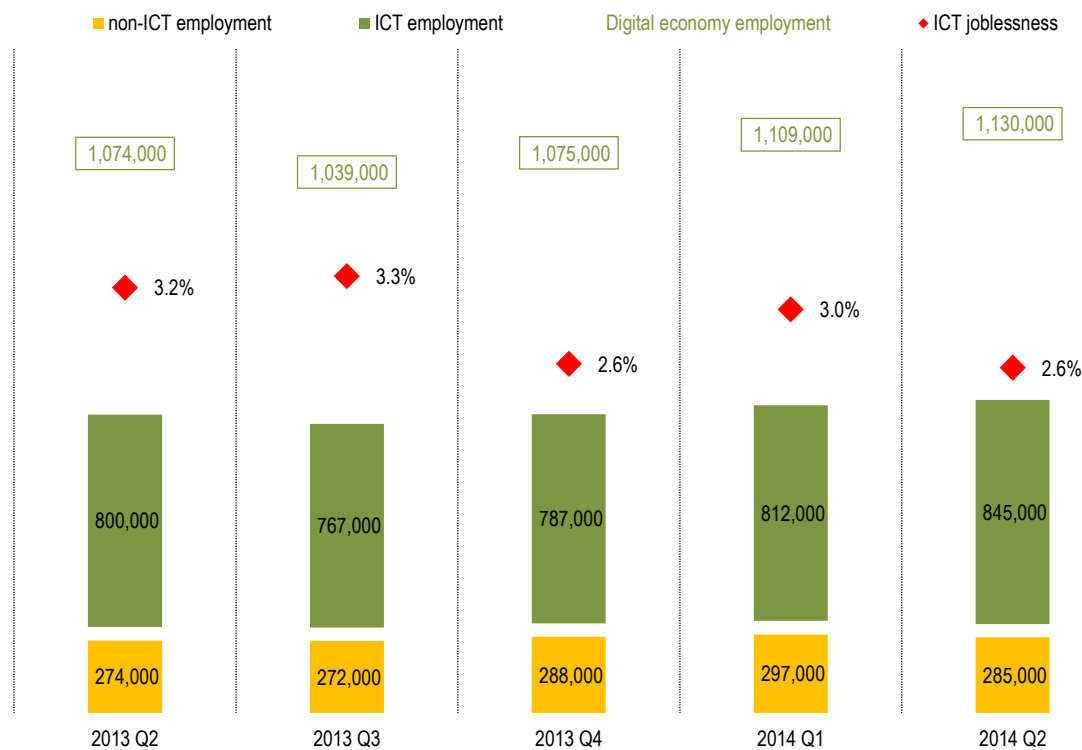
Source: ICTC; Statistics Canada

- ▶ Ontario is Canada's ICT leader and contributed \$31.3 billion to the total Canadian ICT output in 2014 Q2.
- ▶ In the same period, other notable ICT output contributors were Quebec (\$14.4 billion), Alberta (\$9.2 billion), British Columbia (\$8.7 billion), Manitoba (\$1.8 billion), Saskatchewan (\$1.5 billion), and Nova Scotia (\$1.4 billion).
- ▶ Each province has its unique attribute that gives it competitive advantage in an increasingly connected global marketplace, be it strong and robust industry verticals and clusters, pool of required skills, policy support, or enabling business environment.
- ▶ It is vital to raise awareness of technology options and benefits to encourage wider adoption and thus generate demand to increase output.
- ▶ Promoting the amazing skills and talent available in the provinces is important.
- ▶ It is also essential to recognize all available talent to improve understanding of the highly competitive global market and address the skills shortage.



LABOUR MARKET TRENDS

Figure 4. Employment in Canada's digital economy

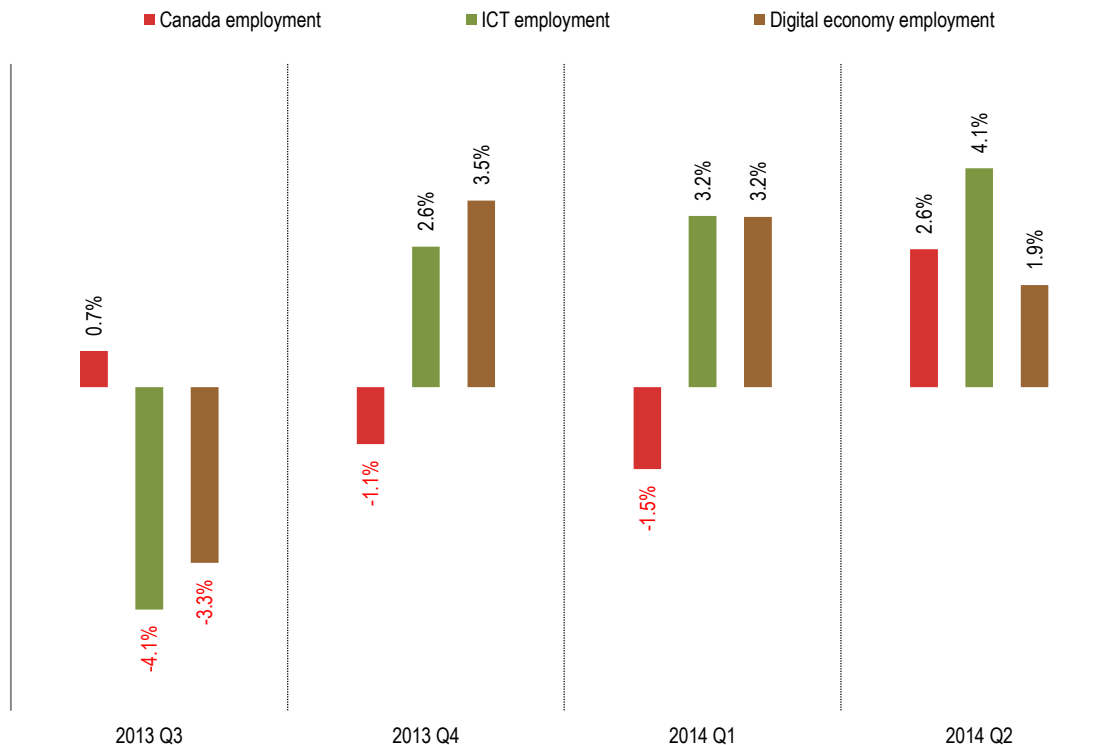


Source: ICTC; Statistics Canada

- ▶ 845,000 ICT professionals were employed in Canada in 2014 Q2, a significant increase (↑33,000) compared to 2014 Q1.
- ▶ The jobless rate decreased notably as a result from 3.0% in 2014 Q1 to 2.6% in 2014 Q2.
- ▶ Non-ICT professionals working in the ICT sector are key contributors to Canada's digital economy and are included in our overall consideration of this economy.
- ▶ Employment among these professionals decreased in 2014 Q2 to 285,000 (↓12,000) from 297,000 in 2014 Q1.
- ▶ The net effect of sizable increase in ICT employment and decrease in non-ICT employment was that employment in Canada's digital economy increased by 21,000 (↑) in 2014 Q2 compared to the previous quarter, bringing the employment level in Canada's digital economy to 1,130,000.



Figure 5. Quarterly employment growth



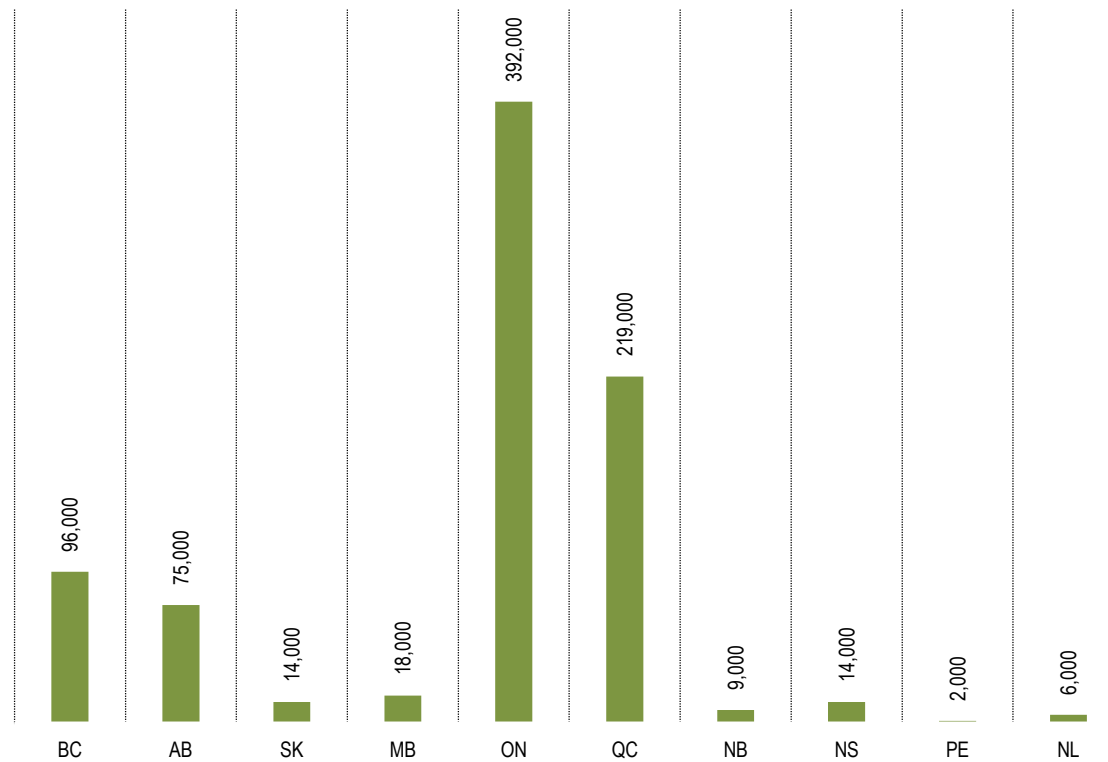
Source: ICTC; Statistics Canada

- ▶ The overall Canadian labour market experienced a sizable growth this quarter, as 448,000 (↑2.6%) jobs were created across all sectors in 2014 Q2.
- ▶ Nearly all of the jobs lost in Canada in the past two quarters were recovered as a result.
- ▶ Compared to a year ago, 45,000 ICT jobs were created across all sectors, while employment in Canada's digital economy increased by 56,000.
- ▶ All sectors of the economy employ ICTs to boost productivity and efficiency and ICTs played a leading role in the turnaround of the overall Canadian labour market and economy.



PROVINCIAL COMPARISON

Figure 6. ICT employment by province



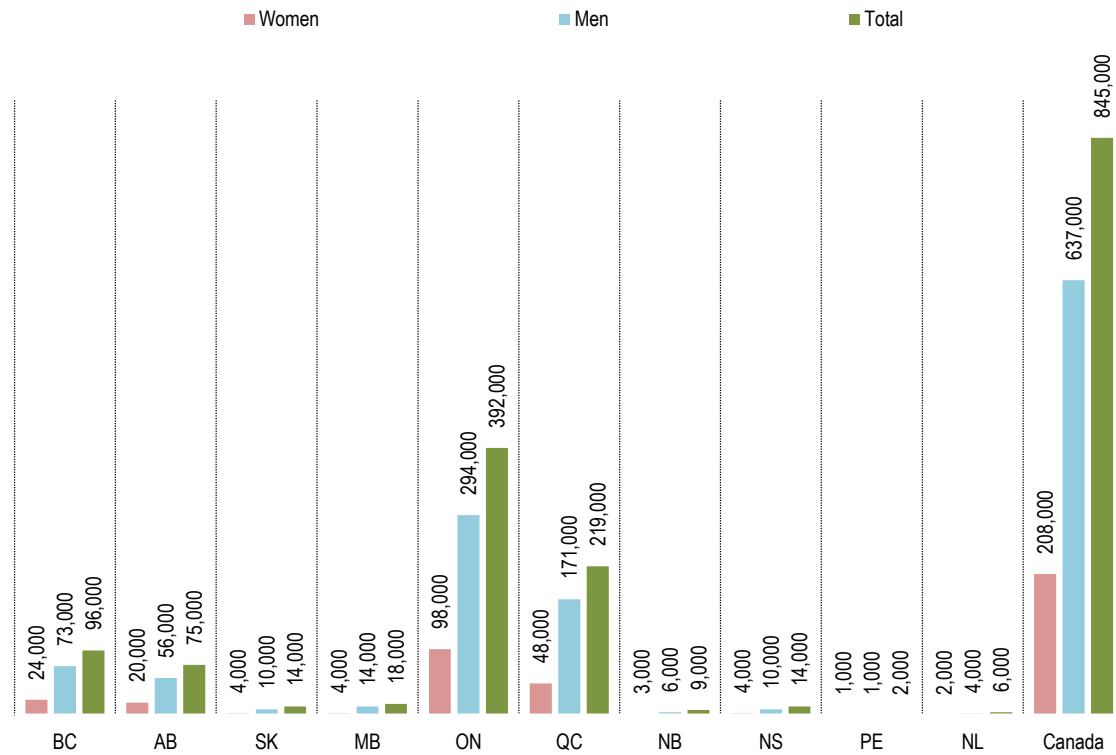
Source: ICTC; Statistics Canada

- ▶ The majority of the jobs created in the digital economy in 2014 Q2 were in Quebec – Canada’s second largest digital economy employer.
- ▶ 219,000 ICT professionals were employed in Quebec in 2014 Q2, increasing significantly (▲20,000) compared to 2014 Q1.
- ▶ In addition, employment among non-ICT professionals working in Quebec’s ICT sector also increased in 2014 Q2 (▲2,000).
- ▶ Elsewhere, ICT employment increased by 6,000 in British Columbia and 5,000 in Ontario in 2014 Q2.
- ▶ New Brunswick experienced ICT job losses for the second consecutive quarter.
- ▶ With respect to jobs in ICT professions, Ontario is Canada’s largest employer.
- ▶ In 2014 Q2, ICT employment in Ontario was 392,000, followed by 219,000 in Quebec, 96,000 in British Columbia, 75,000 in Alberta, 18,000 in Manitoba, 14,000 in Saskatchewan, 14,000 in Nova Scotia, 9,000 in New Brunswick, 6,000 in Newfoundland & Labrador, and 2,000 in Prince Edward Island.



WOMEN

Figure 7. ICT employment by gender and province



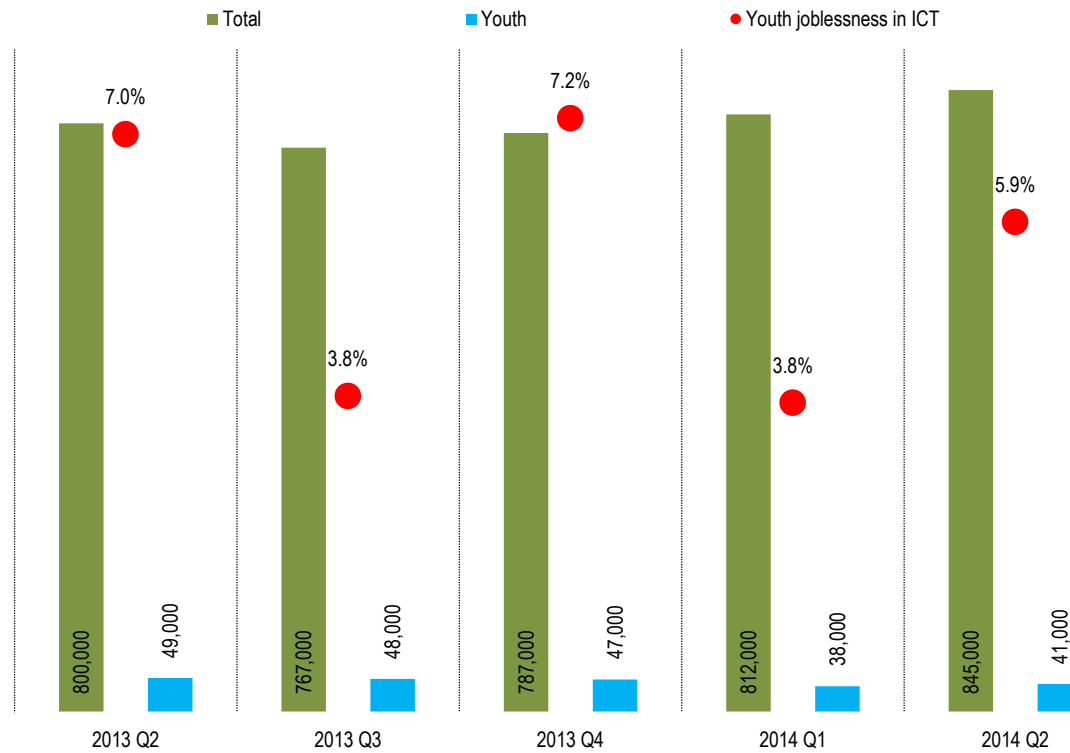
- ▶ The number of women employed in ICT occupations grew for the second consecutive quarter.
- ▶ Overall, 208,000 women were employed in ICT occupations in 2014 Q2, compared to 637,000 men.
- ▶ As Canada's largest digital economy employer, Ontario is naturally the hub where the highest number of women is employed – 98,000 in 2014 Q2.
- ▶ ICT employment for women in 2014 Q2 was 48,000 in Quebec, 24,000 in British Columbia, 20,000 in Alberta, 4,000 in Manitoba, in Nova Scotia, and in Saskatchewan, and 3,000 in New Brunswick.

Source: ICTC; Statistics Canada



YOUTH

Figure 8. Employment



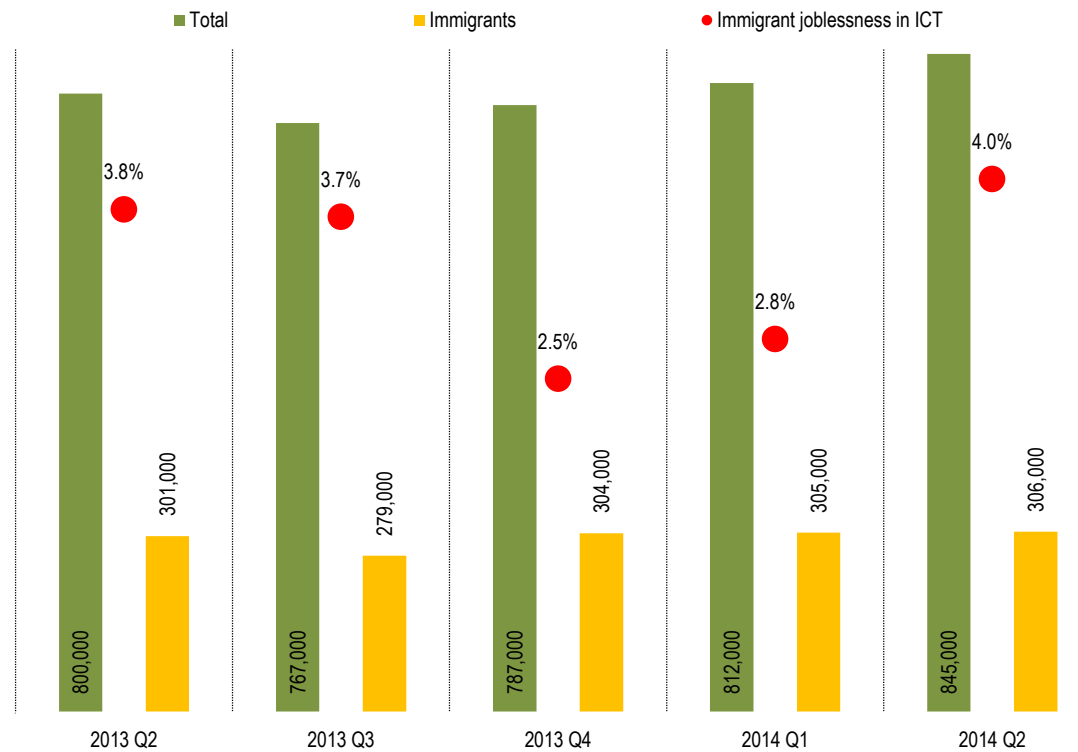
Source: ICTC; Statistics Canada

- ▶ Employment in ICT occupations among those aged 25 or younger saw a quarterly increase (▲3,000) in 2014 Q2, bringing the youth employment level in ICT to 41,000.
- ▶ That level is 16% lower than a year ago in 2013 Q2.
- ▶ Only 5% of all ICT jobs are held by youth currently, compared to 14% of the jobs held by youth below 25 in the overall economy.
- ▶ The jobless rate among those aged 25 or younger in Canada is 14.2% at present.
- ▶ In ICT occupations, joblessness among this age group is notably lower and is 5.9%.



IMMIGRANTS

Figure 9. Employment

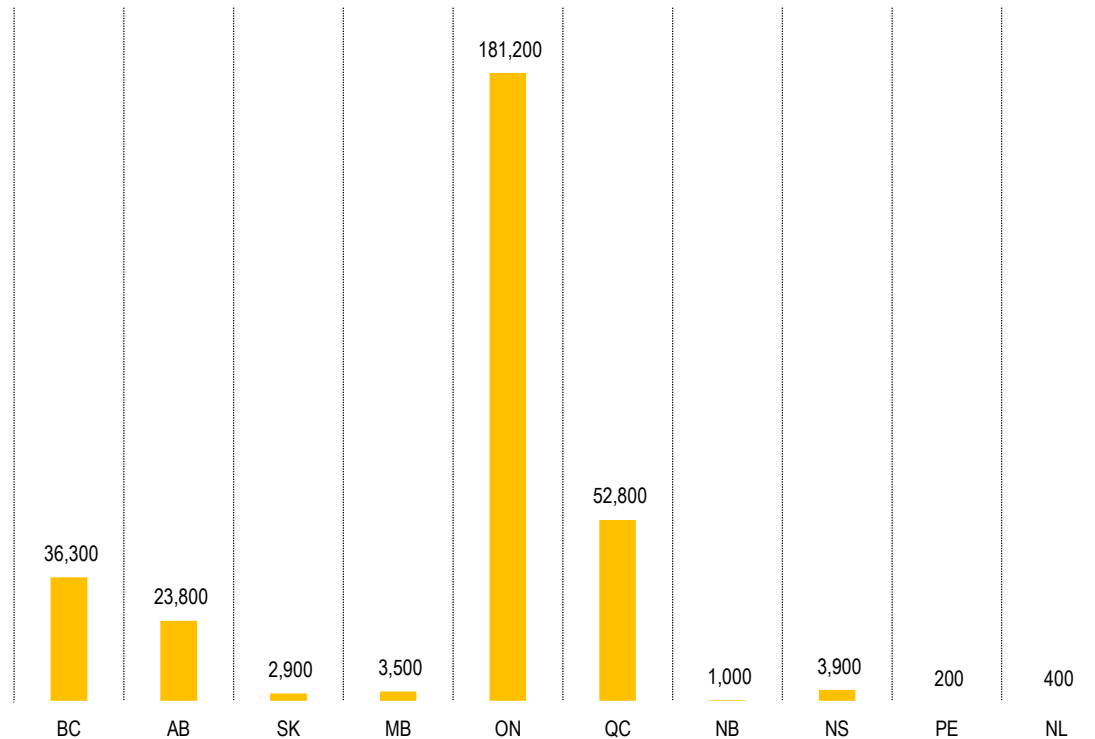


Source: ICTC; Statistics Canada

- ▶ Of the total employed workers in ICT occupations in 2014 Q2, 306,000 (36%) were immigrants – marginally up on the quarter (↑1,000).
- ▶ The proportion of immigrants has been consistent in recent quarters at above a third of the ICT workforce.
- ▶ This is in sharp contrast with the overall economy, where a quarter of all jobs are held by immigrants.
- ▶ The jobless rate among immigrants in Canada is 8.1% at present.
- ▶ In ICT occupations, joblessness among immigrants is consistently lower and is 4.0% at present.
- ▶ This is evidence of strong demand for skilled ICT workers throughout the economy.



Figure 10. Immigrant employment by province



Source: ICTC; Statistics Canada

- ▶ 306,000 immigrants were employed in ICT occupations in 2014 Q2.
- ▶ As Canada's most popular arrival destination for immigrants and also the largest digital economy employer, Ontario is naturally the hub where the highest number of immigrants are employed – 181,000 in 2014 Q2.
- ▶ By comparison, ICT employment for immigrants in the same quarter was 52,000 in Quebec, 36,000 in British Columbia, 23,000 in Alberta, and nearly or above 3,000 in Nova Scotia, Manitoba, and Saskatchewan.



IN-DEMAND JOBS

In the [Spring 2014 edition of SCDA](#), we projected the Canadian digital economy labour market would remain robust with a continuing strong labour market in the second quarter of 2014. With the creation of 56,000 new digital economy jobs in 2014 Q2, that is exactly how this has been borne out. We expect the momentum Canada's digital economy gained in the first half of 2014 to remain strong at least until fall and exhibit another strong labour market showing in the third quarter of 2014.

All industrial sectors in Canada use ICT products and services. The need for top ICT talent continues to grow economy-wide as a result. This has expanded career options for ICT professionals, placing competitive pressure on the employers seeking technical ICT talent.

It is a good time to be hunting ICT jobs in Canada. Based on active vacancies posted on job sites, employment growth in mid-2014 is expected to be the highest for the occupations below.

Note: To begin your search, click on a job title below to view current vacancies. You can narrow your search by selecting a job location from the right-hand sidebar in the new browser window.

- ➔ [software developers](#)
- ➔ [graphical user interface \(GUI\) developers](#)
- ➔ [mobile application developers](#)
- ➔ [software engineers](#)
- ➔ [application programmers](#)
- ➔ [software designers](#)
- ➔ [animation programmers](#)
- ➔ [electronics engineers](#)
- ➔ [systems architects](#)
- ➔ [IT/ICT analysts](#)
- ➔ [informatics / business systems analysts](#)
- ➔ [computer / network systems engineers](#)
- ➔ [information systems / IT managers](#)
- ➔ [software designers](#)



LATEST POLICY AND INDUSTRY DEVELOPMENTS

Canada's Anti-Spam Legislation (CASL)

[CASL](#) came into effect on July 1, 2014 and governs commercial electronic messages (CEMs), general electronic messages and computer downloads. A CEM is defined as, “any electronic message that encourages participation in a commercial activity, regardless of whether there is an expectation of profit” (ex. text message, email (to one or many people) or other electronic message). CASL requires consent (expressed or implied) prior to sending any CEMs; this must have been done before July 1, 2014. CRTC has received greater than 1,000 complaints since CASL came into effect. Non-compliance with CASL and its regulations may be subject to fines of up to \$10 million for corporations and up to \$1 million for individuals. ([...More details](#))

Digital Canada 150 (DC150) – Computers for School

[Digital Canada 150](#) is delivering computers and hands on digital skills and computer training to young Canadians in communities across Canada including [Manitoba](#), [New Brunswick](#) and [British Columbia](#) to help them succeed in the digital age. Through the Government of Canada's Economic Action Plan 2014 investments (\$36 million over four years to the [Computers for Schools Program](#)) it is expected that hundreds of thousands of young people will be given access to digital learning opportunities. Computers for Schools Program is an initiative that repairs, refurbishes and then donates computers to schools, public libraries and Aboriginal communities to give students access to the equipment and skills they need to succeed in the digital economy. ([...More details](#)).

Wireless Spectrum Auction

The next wireless spectrum auction for the AWS-3 band is said to provide opportunities for new entrants into the market to have spectrum and thus compete with the three existing companies: Rogers, Bell and Telus. A fourth national wireless company could help increase competition but this has not truly happened as yet. Wireless spectrum is the set of radio frequencies over which cellular signals travel and transmit information and Canada controls who gets access to the spectrum and conducts the auctions. The AWS-3 spectrum is expected to occur in early 2015. ([...More details](#))

Digital technology and Internet use: Internet Sales Up

Recent [Statistics Canada study](#) highlights Canadian businesses sold >\$136 billion in goods and services over the Internet in 2013; increase of \$14 billion from a year earlier. Wholesale trade, manufacturing and retail trade accounted for the majority (61%) of the value of e-commerce sales, consistent with 2012. Approximately 13% of enterprises sold goods or services over the Internet in 2013, a 2% increase since 2012. Enterprises with 100 or more fulltime employees (excluding large sized manufacturing enterprises) accounted for nearly 100% of the growth in the value of online sales in 2013; about \$87 billion, or 64%, of the value of total online sales. ([...More details](#))



Drones dramatically increases in popularity and outpaces existing policy

Transport Canada's [policies for unmanned aerial vehicles \(UAV\)](#) may require further review in light of the growing popularity of aerial drones and potential increases of [near / collisions](#) or mid-flight failures as seen by television coverage ([The National – The Rise of Drones video](#), [60 Minutes – Drones over America video](#)). Transport Canada issued 945 certificates for UAV in 2013, six times that of 2011's 155 certificates. UAVs have current and potential uses in commercial and recreational applications: Real Estate (aerial view of properties), Athletics, (ex.: Winter Olympics in Sochi), Journalism (natural disasters, floods and wildfires) (ex. [building explosion NYC](#)), Law enforcement (accident reconstruction) (ex. RCMP in Saskatchewan located missing man), Farming (monitor crops, [apply pesticides](#)), Product delivery (ex. Amazon and Domino's testing the use of drones to deliver products to customers), Dog walking. Unmanned air vehicles are different from model aircraft as "Model aircraft" means an aircraft with a total weight which does not exceed 35 kg (77.2 pounds) that is mechanically driven or launched into flight for recreational purposes and that is not designed to carry persons or other living creatures. ([...More details](#))

Russia's s Largest Computer Company Aquarius Signs Letter of Intent to Acquire Equity Position in Zecotek Display Systems

Zecotek Photonics Inc. is a developer of leading-edge photonics technologies for medical, industrial and scientific markets. Aquarius, a member of Russia's National Computer Corporation, has signed a letter of intent to acquire 20 percent of Zecotek Display Systems Pte Ltd for US\$7 million. The investment in Zecotek Display Systems will be used to complete the commercialization of two patented 3D displays for flat screen and large screen formats, and a novel high-speed 3D printer for rapid manufacturing and rapid prototyping. ([...More details](#))

Government Funding Opportunities in ICT Innovation available for Oil and Gas Sector

Information and communications technology (ICT) is expected to increasingly converge with the oil and gas sector. There are funding opportunities available but industry must see the value and overcome perceived barriers to technology adoption. Funding opportunities available are Scientific Research and Experimental Development (SR&ED) Tax Credits and Industrial Research Assistance Program (IRAP). Further supporting ICT, and all technologies, the relatively new organization "[Technology Alberta](#)" established in 2012 is an industry-led association made up of Alberta-based technology companies with [key priorities](#) based on [technology's importance](#) in Alberta. ([...More details](#))

Drones in Saskatoon: Draganfly Innovations supplier for hobby market

In the above section, policy related to unmanned aerial vehicles (UAV) and "Model aircraft" was discussed and this is applicable to Saskatchewan too. For example, [Draganfly Innovations](#) established in 1998, became the first commercial unmanned aircraft systems (UAS) to receive Transport Canada approval to operate full time in civilian airspace with its unmanned aircraft systems X6 model, followed by the newer [Draganflyer X8](#) with [applications](#) suited for industrial and government needs. Draganfly has sold in Canada, the U.S., Australia, New Zealand, Europe and Asia. In Canada, the RCMP and the OPP have used Draganfly models. ([...More details](#))



New offering - MTS Allstream offers superior 4G LTE cellular experience to summer's two most popular music festivals

[MTS](#), Manitoba's leading telecommunications provider, deployed small cell wireless technology at Dauphin's Countryfest and the Winnipeg Folk Festival. This is the first time this innovative wireless technology was used in Manitoba and gave attendees a superior 4G LTE cellular experience. With speeds of up to 150 Mbps, [small cell wireless technology](#) provide distributed coverage and capacity to areas of high population density like the festival's approximately 15,000 attendees. Previously, mobile cell sites provided temporary cellular service but now small cell wireless technology can provide a permanent, efficient solution that offers better coverage and capacity. ([...More details](#)).

Spotify signals potential launch in Canada

Spotify, started by Swedish entrepreneur Daniel Ek in 2006, is an online music streaming service where listeners can stream for free without having to purchase music. Although there is no official Canadian launch date for Spotify it has been hinted that it will be soon. ([...more details](#))

Ontario introducing legislation to strengthen the province's economy

The [Better Business Climate Act, 2014](#) aims to reduce red tape for business, drive regional economic growth by developing clusters and support long-term infrastructure planning. Ontario has set a target of \$100 million for reducing burden on business and other stakeholders by 2016-17. The Act would also help create jobs and drive innovation through cluster development. Clusters would help attract investment and talent in key sectors across Ontario, clusters such as the strong Information and Communications Technology (ICT) clusters in the GTA, Kitchener-Waterloo and Ottawa which support Ontario's top tier North American ranking within this sector, with the province second only to California in terms of number of ICT companies. ([...more details](#))

Quebec aims for cloud-computing advantage

Quebec has been [seeking to attract companies](#) to establish their cloud-computing and data operations in the province and in 2012 it was observed that Cogeco Cable Inc. was to set up its Montreal facility in the summer of 2014. Recently, Cogeco Cable Canada's launch of two new High Speed Internet (HSI) packages with unlimited data transfer capacity for its Quebec and Ontario customers. Designed to meet the needs of heavy data users (i.e. downloading music and movies, uploading photographs and videos, online gaming and streaming Web content) it demonstrates Cogeco Cable Canada is responding to market demand. Cogeco Cable Canada is the second largest cable operator in Ontario and Quebec in terms of the number of Basic Cable service customers served. ([...more details](#))

Information Technology Finalist for EY's 2014 Atlantic Entrepreneur Of The Year™

The 2014 Ernest & Young (EY) "[Entrepreneur Of The Year](#)" finalists for the Atlantic were chosen based on their vision, leadership, financial success and social responsibility. EY's research found that Canada's 2013 program finalists recorded average revenue growth of 37% annually, 8% above the global average of 29% for developed countries where 74% also had an international footprint. Furthermore, last year's finalists created jobs at an average annual pace of 25% for their business. The 2014 Atlantic finalists represent 2,200 jobs in Atlantic Canada and the winners will be announced on October 3, 2014 with the overall Atlantic winner representing the region at the national gala in Toronto on November 25, 2014. ([...more details](#))



World-class IT service in Fredericton

Steven Burns, [Bulletproof Solutions](#) - Offers Atlantic Canada and the Maritimes the type of world-class IT service professionals that would otherwise only be available to the very largest enterprises.

ICT helps the energy sector in St. John's

Cindy Roma, Sydney Ryan, [Telelink](#) - A leading provider of multi-channel 24/7 live safety and inbound customer support solutions to North America's energy sector.

Nova Scotia supplier providing education technologies

Jim Fitt, [Velsoft](#) - A global educational content company distributing training materials, eLearning and educational technologies to over 10,000 organizations in 164 countries world-wide.

Charlottetown consulted by Government of Canada on new Labour Market Development Agreements

Key economic developments currently underway in the aerospace, information technology, renewable energy and biosciences sectors is expected to generate 2,000 new jobs in Prince Edward Island by 2016. The Government of Canada, as part of its plan for creating jobs, economic growth, and long-term prosperity, is seeking to modify LMDAs to reorient training toward labour market demand by ensuring Canadians have access to the training that will enable them to develop the skills employers need.

Through roundtables, governments, employers, and other stakeholders have the opportunity to discuss how to make the LMDAs more employer-driven and responsive to the needs of the labour market, including local skills shortages and gaps. ([...more details](#)).

Kids use Technology to Access ICT Mentors

Each week Ryerson University professor helps answer questions and “e-mentor” students in Canada’s territories who are interested in science and engineering careers. In fact, more than 800 Canadian professionals have been paired with approximately 1,500 students from 26 communities in the Yukon, Northwest Territories and Nunavut through the non-profit [DreamCatcher Mentoring](#) program. With the need for more people in science and engineering jobs this program can make a difference in the lives of students and Canada as a whole by helping reduce dropout rates and increase the employment opportunities for aboriginal students. Due to the great success of this program it will now be run by Big Brothers and Big Sisters of Canada to manage and expand. ([...more details](#))



KEY TAKEAWAYS

- ➔ Talent and skills mismatch in labor market demands are some of the foremost challenges faced by the Canadian labor market. Not all demographic groups, however, face the same difficulty in accessing labour market opportunities or advancing their careers. Youth, and particularly aboriginal youth, are specially challenged in this regard. In addition, women are still not proportionately represented among ICT professionals. The inclination among these groups to participate in Canada's digital economy remains low. One of the solutions is to make programs available to students at an early age, though not in isolation, and definitely in partnership with industry to understand required competencies. Equipping students in grade 7 and onwards with technology knowledge and skills will make them interested in this area at an early age that will stay with most of them for the rest of their careers. And not only youth, public education must do more to encourage a greater diversity of students – inclusive of Canada's all populations under-represented in ICT careers – to consider pursuing technology careers, and better equip them for eventual employment in ICT professions. This will also boost the supply of talent available to companies adopting emerging technologies.

- ➔ Consultation with industry demonstrates that small and medium enterprises (SMEs) need an injection of capital to grow their operations and are finding it challenging to access the required funding. Investment will also help with adoption of ICTs, highly beneficial for all economic sectors, as competing in today's connected global economy requires a company to utilize technology in order to boost productivity. A broader change in Canadian corporate culture is urgently needed in this regard and all stakeholders have important roles to play. Large companies should consider assisting SMEs by helping them adopt the technology necessary to integrate into global supply chains, or adopt technologies that strengthen the entire value chain and business ecosystem. Policymakers can pilot mechanisms such as crowdfunding, patent box, preferential tax treatment, and tax exemptions for a limited time to ease resource constraints and thus can provide a great boost for SMEs in this regard. This will be particularly beneficial for early-stage technology companies that are otherwise not as well served by risk-averse financial institutions.



DIGITAL ECONOMY LABOUR FORCE

ICTC's labour market research captures critical economic and labour market indicators to inform competitive business and human resource strategy planning, decision-making and career development in ICT, thereby driving the development of a more prosperous Canadian ICT workforce and industry in a global digital economy.

The sum total of workers (workers that are employed in these occupations as well as workers that are currently unemployed, but actively looking for work) in these occupations and workers in all other (non-ICT) occupations in the ICT sector (ICTC's framework of Canada's ICT sector is explained below) is the total digital economy labour force in Canada. The table below summarizes the core ICT occupations:

Index	National Occupational Classification (NOC)	Occupation Title
1	0131	telecommunication carrier managers
2	0213	computer and information system managers
3	2133	electrical and electronics engineers
4	2147	computer engineers
5	2171	information systems analysts and consultants
6	2172	database analysts and data administrators
7	2173	software engineers
8	2174	computer programmers and interactive media developers
9	2175	web designers and developers
10	2241	electrical and electronics engineering technologists and technicians
11	2281	computer network technicians
12	2282	user support technicians
13	2283	systems testing technicians
14	5224	broadcast technicians
15	5241	graphic designers and illustrators



ICT SECTOR

The table below summarizes the ICT sector:

Index	North American Industry Classification System (NAICS)	ICT Sub-sector
1	3333	Commercial & Service Industry Mach. Manuf.
2	3341	Computer & Peripheral Equip. Manuf.
3	3342	Communications Equip. Manuf.
4	3343	Audio & Video Equip. Manuf.
5	3344	Semiconductor & Other Electronic Component Manuf.
6	3345	Navigational, Medical & Control Instruments Manuf.
7	4173	Computer & Comm. Equip. & Supplies Wholesale distribution
8	5112	Software Publishers
9	5171	Wired Telecommunications Carrier
10	5172	Wired Telecommunications Carrier (except satellite)
11	5174	Satellite Telecommunications
12	5179	Other Telecommunications
13	5182	Data Processing, Hosting, and Related Services
14	5415	Computer Systems Design & Related Serv.
15	8112	Electronic & Precision Equip. Repair & Maintenance



ABOUT ICTC

The Information and Communications Technology Council (ICTC) is a leading not-for-profit national centre of expertise conducting research, policy development, and creating talent solutions for the digital economy.

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YouTube

<http://www.youtube.com/user/DigitalEconomyPulse>