

CANADA'S HIGH-TECH HUB

TORONTO

CANADA'S HIGH-TECH HUB: TORONTO

Executive Summary	3
1.0 Introduction	5
2.0 Emerging Tech and The City	6
2.1 Mobile Device Proliferation Will Drive Mobile Platforms and	6
2.2 Digital Media Will Transform Creative Communication &	
Interaction Apps	7
2.3 Social Networking Mania Will Demand Attention & Insight	8
2.4 Additional Thoughts	8
2.5 More on the Way	9
3.0 Sector Overview	10
3.1 A Statistical Overview of Toronto's Tech Hub	10
3.2 Key Facts	10
3.3 Manufacturing Sector	12
3.4 Services Sector	12
4.0 Research and Innovation	14
4.1 Research and Innovation	14
4.2 Key Facts	14
4.3 Publication Citations	15
4.4 Patents	15
4.5 Profiles of Local Centres of Excellence	17
5.0 Talent	19
5.2 Key Facts	19
5.3 Post-secondary Education	21
6.0 Investment	22
6.1 Key Facts	22
Appendices	25
1) Map: Greater Toronto Area and	
Toronto Census Metropolitan Area	25
2) Acknowledgements	26
3) Research References	26
4) Definitions	27
5) List of ICT-related Associations & Organizations	28
6) List of Government Support Programs/Incentives	31



EXECUTIVE SUMMARY

Toronto's Information and Communications Technology (ICT) Story

As one of the world's leading ICT and media hubs, Toronto has a rich technology ecosystem with remarkable breadth and depth. Located in a major urban centre, Toronto's ICT sector thrives on the rapid innovation and introduction of new technologies that stem from collaboration with a diverse range of sectors – for example, healthcare, education, social, cleantech, media and entertainment. The City's ICT sector is constantly evolving with impressive growth being driven by a wide array of segments such as cloud computing, mobile platforms and applications, gaming, social networking, 3D and consumer privacy and security.

These new ICT segments have tapped into Toronto's established ICT subsectors of communications, robotics, enterprise software, film, manufacturing and broadcasting which combine to create an urban High-Tech Hub. This combination of mature and emerging players make Toronto the largest most dynamic, vibrant and innovative hub of ICT focused businesses in Canada with over 11,500 firms (40,000 ICT firms in Canada). With 6% of overall Toronto employment in the high tech sector, the industry employs over 161,000 workers (not including the thousands employed in ICT-related sectors, such as financial services). The unemployment rate for ICT professionals is 4% (much lower than the general economy) and the need for new talent is increasing. The diversity of Toronto's economy means that ICT as an enabling industry complements and fuels the other sectors in the region.

Similar to the experience globally, Toronto's ICT sector has undergone major change in the last five years. Its traditional sectors of communications, manufacturing and enterprise software are in gradual recovery after the global economic downturn, and competing against the dominance of China and India as low cost centres for manufacturing and software development. These global challenges, combined with the rapid decline of traditional, wired line communication carriers and communication equipment providers, have resulted in significant job losses in Toronto over the last 10 years primarily in the manufacturing sub-sector, shedding more than 15,000 jobs since 2000 while the ICT services sector employment has remained stable and is now

showing signs of moderate increases. Entrepreneurship is thriving with the number of ICT service firms increasing by 2,000 companies (mostly smaller-sized firms) since 2002.

Toronto's ICT cluster has been able to weather this global pressure, maintaining a negligible drop in overall ICT employment since 2005 through an adaptive shift away from traditional large enterprise to high-value, knowledge-based, small business jobs. Not included in these employment figures are the ICT jobs that are being created in the emerging ICT area of interactive digital media nor the thousands of jobs that are embedded in other sectors that have a high reliance on ICT, like financial services and healthcare. These changes have been so rapid that much of today's ICT job growth is hard to capture in traditional statistical measures.

Positioning Toronto's ICT sector for intense global competition will require sustained effort in three critical areas:

- 1. **Research and Innovation**
- 2. **Talent**
- 3. **Investment**

Research and Innovation

Toronto-area companies and research organizations are international leaders in knowledge creation and commercialization. Toronto has a world-leading research base both in academic/clinical settings (The Citizen Lab at the University of Toronto, UHN's Centre for Global eHealth Innovation, OCADU's Mobile Enterprise Innovation Centre, York University's 3D FLIC project, Ryerson University's DMZ, Sheridan Institute of Technology and Advanced Learning) and within industry (IBM, AMD, ViXS, BCE, Ericsson and Alcatel-Lucent). The collaboration between these sectors is active, and it is further accelerated by strong government support through organizations such as OCE, MaRS Innovation, NSERC, FedDev Ontario and Mitacs. Almost a third or 31% of the top 100 Canadian R&D investors across all sectors are Toronto-based ICT companies.

EXECUTIVE SUMMARY

Talent

Toronto's diverse ICT workforce, educational infrastructure and proximity to essential adjacent skills are key to its competitive position. The local labour pool is broad and deep enough to meet the needs of ICT employers across the range of technical and creative skill sets. The Toronto ICT industry employs 30% of Canada's ICT workforce not including ICT workers who are employed in other industries such as financial services. The City's ICT workforce is young - 36.4% of ICT workers are under 35 years of age and 61.5% are under 45 years of age; educated - 96.9% of employees have a post-secondary certificate, diploma or degree; and global - business and personal linkages to nearly every country of the world, solidify Toronto's second-place ranking on the Mosaic Index of global cities.

Toronto's higher education institutions are active partners with ICT employers. Six Toronto colleges/polytechnics currently offer 40 programs that prepare students for careers in the ICT industry. Toronto's five universities offer 21 ICT-related undergraduate and graduate programs. Toronto's strength in the financial and creative industries (36% of the workforce according to Richard Florida) is providing ICT companies with access to key skills (design thinking, user experience, creative content, business and economic modeling) that are a must for the next generation of ICT.

Investment

Toronto is the largest centre for venture capital investment and accounted for an increase in disbursements of 8.3% last year despite a consistent decrease in Canada-wide total ICT venture capital deals since 2007.

Toronto's combination of talent and innovation make it Canada's leading hub for companies and organizations in every segment of the ICT industry, in both the traditional and emerging subsectors. Toronto-based firms have access to a wealth of entrepreneurial, technical and creative talent with global reach and the skills and connections needed to do business in nearly every corner of the world. Toronto's education and research institutions are second to none and are ranked not only top in Canada but also top in the world. Toronto is home to over 40 organizations that actively support the next generation of ICT that will drive much of the job and wealth creation in this sector in the next 5-10 years. Toronto needs to use these assets to increase its manufacturing sub sector as well as attract investment capital to the region.

This discussion paper has been prepared to provide participants at Technicity 2010 with a brief overview of Toronto's ICT sector¹. It attempts to capture the salient characteristics of an industry that continues to re-invent itself.

It has been six years since the City of Toronto and its partners commissioned and published the E&B study on the status of Toronto's Information and Communication Technology (ICT) industry. At that time (2004), the Toronto region ranked third in North America behind the San Francisco area (including Silicon Valley) and the New York region based on the concentration of private ICT facilities and employment. Since then, the Toronto region and Ontario have continued to consistently rank as the leading centres of technology and innovation in Canada and internationally. This discussion paper validates that leading position.

The data in this discussion paper also illustrate and confirm the City of Toronto's motto "Diversity Our Strength". The breadth, depth and scale of the technology sector in Toronto is tremendous. The firms in the many sub-sectors of the ICT industry within the Toronto region conduct business locally and globally and are actively engaged with numerous organizations, associations, institutions and agencies.

This paper compiles and contextualizes data that have been collected from a variety of those sources into one document to facilitate discussion about the industry in the Toronto region. The partners who worked together to produce this document are: the City of Toronto, MaRS Discovery District, KPMG, Toronto Region Research Alliance (TRRA), IDC Canada, the Impact Group, the Ontario Centres of Excellence (OCE) and

the Ontario Ministry of Economic Development and Trade (MEDT). All share a vested interest in the health, wellbeing and vibrancy of Toronto's ICT industry. It is presented as a starting point, a beginning to stimulate ideas, conversation and dialogue for greater engagement of the many actors that contribute to the success of the industry.

To that end, this first annual Technicity (www.technicity.ca) event provides a forum for key stakeholders to explore opportunities to leverage the many assets of the Toronto region, including our talent pool, infrastructure and geographic location, to take advantage of the increasingly important role of technology in all activities. It is hoped that this event will become an annual focal point for industry, academia, government and other stakeholders to work collaboratively to identify synergies and develop partnerships to facilitate economic growth and enhance competitiveness by working together on a few key initiatives and strategies throughout the year. (For instance, an initiative to develop a comprehensive sector Asset Map as a foundation for trends and issues analysis.)

Thank you for participating at the inaugural Technicity event. Your comments, input and feedback are greatly appreciated.

¹Unless otherwise noted "Toronto" refers to the Toronto CMA.

"TORONTO'S DIVERSE ECONOMY, HIGH-QUALITY WORKFORCE AND PROXIMITY TO THOUSANDS OF BUSINESSES HAVE FUELLED OUR GROWTH SINCE WE STARTED OUR COMPANY 25 YEARS AGO. THERE'S STRONG SUPPORT FROM GOVERNMENT FOR TECHNOLOGY BUSINESSES BY WAY OF ATTRACTIVE RESEARCH AND DEVELOPMENT INCENTIVES, COMPETITIVE TAX STRUCTURES AND ACCESS TO INTERNATIONAL PARTNERS. THE CITY'S OPEN DATA INITIATIVE ALSO DEMONSTRATES STRONG COMMITMENT TO FOSTERING INNOVATION. OPEN DATA PROVIDES A WEALTH OF OPPORTUNITIES TO INCREASE EFFICIENCIES IN BUSINESS, GOVERNMENT AND EDUCATION THROUGH THE USE OF GEOGRAPHIC INFORMATION SYSTEM SOLUTIONS. IN ADDITION, THE LARGE, HIGHLY ENGAGED TECHNOLOGY COMMUNITY FOSTERS AN IDEAL ENVIRONMENT FOR COLLABORATION, WHICH HELPS MEMBERS ACHIEVE MUTUAL SUCCESS AND STRENGTHEN TORONTO'S POSITION AS A LEADING INNOVATION HUB."

ALEX MILLER, PRESIDENT, ESRI CANADA
WWW.ESRICANADA.COM/ENGLISH/DEFAULT.ASP

2.0 EMERGING TECH AND THE CITY

Toronto's position as Canada's leading urban centre is key to its success as an ICT North American powerhouse. Many newcomers to Canada choose to settle in Toronto first and the region welcomes more than 70,000 new immigrants annually. This diversity creates the foundation for a burgeoning technology cluster as more people commercialize innovation and develop new companies.

There are a number of trends and areas of growth expected in Canada's technology sector over the next few years. IDC Canada predicts that Canada's tech market as a whole will grow at a Cumulative Annual Growth Rate (CAGR) of 3.6% for the period 2009–2014, with the communications sector driving much of that growth. Communications will grow to C\$48.5 billion by 2014, while IT spending is projected to reach almost C\$44.6 billion by 2014, spurred by growth in software and IT services, and small pockets of growth in hardware (ie. smartphones and media tablets). Within the broader tech market, there are segments of the market that are growing rapidly, and given Toronto's resources and talent, the City has become a hotbed for the proliferation of some of these leading-edge technologies including: mobile platforms, consumer privacy and security applications, digital media and social networking. Following is a discussion of the key opportunities, rising corporate stars and how the city is particularly well positioned to capitalize on these growth areas.

2.1 Mobile Device Proliferation Will Drive Mobile Platforms and Apps

Smartphones will see an adoption rate of about 30% of mobile users in Canada, or put another way, about 4.6 million devices will be installed in the market by the end of 2010 in Canada, and that number will continue to grow in double digits through 2014². With an increasing percentage of the population equipped with these powerful portable devices, businesses are looking at how these tools can be used to improve efficiency and accuracy whether that be in the field with healthcare workers, fleets, or sales staff. With improved networks in place and growing device usage, organizations of all types from content owners to media companies to banks, will want to start playing in the mobile/wireless space with robust products, solutions and experiences. However, given the current economic environment, many established companies are already stretched and lack the time and expertise to develop these mobile solutions. Start-ups, particularly in Toronto, can play a pivotal role assisting organizations with their mobile strategy.

On the consumer side, opportunities are exploding around gaming, music, and socializing through the convenience of a connected device. IDC has found that SMS usage in Canada has grown from 50% of smartphone users in 2008 to 63% in 2010, while taking pics/video has increased from 45% to 60% over the same time frame. Mobile app usage in particular has grown from a nascent market to 19% of the population in 2010³, driving an entirely new economy through mobile app stores, making it possible for startups to create a business and realize a recurring revenue stream with limited investment. As of 2009, only 12-17% of respondents in an IDC survey said they had downloaded apps from a storefront, although this adoption is expected to grow quickly as the number and relevancy of apps and number of consumers with phones supporting apps grows.

Toronto's Advantage: The mobile scene in Toronto has exploded in recent years, and will only continue to grow as Toronto attracts top-notch talent to the University of Toronto (U of T), which, according to the seventh annual The Times Higher Education World University Ranking, placed the highest of nine Canadian schools and 17th in the world. U of T's Computer Science and Electrical and Computer Engineering program has also seen two announced start-ups in the last 6 months and multiple spin offs from technology initiatives there. Coupled with this technology strength, is the design and artistic talent at Ontario College of Art and Design University (OCADU), one of Canada's top creative and design universities.

On the events side, Toronto's Mobile Monday series has erupted, growing from a small grassroots gathering at the modest Fort York Armoury, to a 500+ event, where investors, entrepreneurs, programmers, professional service providers, and not-for-profits meet to inspire, discuss and debate the future of mobile. The Mobile Institute, located in Toronto, is also helping to educate, enable and empower organizations to capture their share of the global mobile marketplace, and has hosted events such as Mobile Innovation Week in Toronto, which includes a MobileBiz Bootcamp geared toward mobile startups.

Driving mobility in the city is the support from organizations such as MaRS Discovery District, an incubator of technology with about 300 companies in its portfolio and has attracted \$30M in investment funding last year. The Mobile Experience Innovation

Centre (MEIC) is also playing a role as a not-for-profit organization founded in 2007 by OCADU that supports design leadership, innovation and applied research in Canada's mobile and wireless industries. Extreme Venture Partners, an apps incubator, is also an important player in Toronto that has invested in over 15 apps companies, most in the Toronto region.

Toronto's Emerging Companies: Just a few of the emerging companies based in Toronto in the mobile space include: FiveMobile, EndLoop Studios, Fixed Mo, Adenyo, Clip Mobile, XMG Studios, MiiToU, Burstn, Peraso Technologies, File Mobile, MyThum Interactive, Common Enterprise, JBBMobile, and Versult Group Inc..

2.2 Digital Media Will Transform Creative Communication & Interaction

Canadians are going digital: IDC has found that 42% of Canadians share pictures/photos online, 41% are gaming, 36% download music/movies, and 35% access online newspapers⁴. And these numbers are only expected to grow, especially since the introduction of the iPad in May 2010 in Canada and the RIM Playbook 2011 – which are well suited to create engaging experiences for consumers in the area of gaming, music, movies/video, and online discovery⁵. With around 600,000 media tablets expected to sell in Canada by the end of 2010, digital media is well positioned for healthy growth. Businesses are going digital as well, and early adopters are looking to leverage media tablets to support paperless education, C-level activities such as reviewing presentations proposals on the fly, sales presentations with clients on-site, and patient bedside care in hospitals.

Toronto's Advantage: There is an intersection of both tech and art that is taking place in Toronto at the upper educational level that is helping to drive the digital media wave in Toronto. Ryerson's Digital Media Zone (DMZ) is providing select students and graduates of Ryerson that are working on promising digital media projects, with a stunning fully equipped studio on the fifth floor overlooking the bustling Yonge-Dundas Square. Selected projects are provided access to computer and technical equipment for development; advice on planning, R&D, funding, and marketing through the StartMeUp program; and the opportunity to share ideas among other students of different disciplines. Since the DMZ's official opening in April 2010, there have been more than 80 innovators in 20 teams, 14 companies launched, 52 jobs

created through newly formed companies, and two companies that have outgrown the space and since leased their own.

Nearby, the OCADU is offering a digital media minor, which combines new age digital media with traditional art and design; Humber College is offering a diploma in Game Programming; and George Brown's Design institute has degree programs in advanced game and industrial design. Seneca College's Centre for Development of Open Technology (CDOT) also provides a physical and virtual environment for the development and research of open source software through collaboration with Seneca, the open source community, business, and other institutions like OCE. This has led to projects between Seneca students and Mozilla, as well as the rewrite of Processing.js to HTML5 and bug fixes and tools for Firefox development.

The 3D Film Innovation Consortium (3D FLIC), a two-year academic-industry partnership that will expand capacity for 3D film production in the GTA, was announced in early 2010. 3D FLIC has secured over \$1.4 million in funding and in-kind support from the Ontario Media Development Corporation (OMDC), Ontario Centres of Excellence (OCE), industry partners, and York University.

Numerous area events specializing in digital media are also helping to drive the exchange of ideas and highlight emerging technologies. These include nextMEDIA held in Toronto in November, which has been the launching pad for the newest products in the digital media industry since 2007. In February of 2010 an Augmented Reality Developers Camp was hosted at the OCADU where developers could spontaneously and democratically make suggestions, a demo or tell their own AR story. Canada's Digital Media Awards, are also held in Toronto in December and highlight Canada's leading talent across 20 different categories. Canada 3.0 held in Stratford has also been developed to drive digital media forward nationally.

Toronto's Emerging Companies to Watch: ScreenScape, Shiny Ads, Jigsee, QuickPlay Media, PushLife, Uken games, CognoVision (acquired by Intel), InGamer Sports, InteraXon, and mdialog, and ARB Labs Inc., Bright Bunny, Leanin, ePresence.TV, Phosporus Media, Cover it Live.

work together, across the continuum of care, to encourage health conscious behaviour and promote wellness. NexJ is ranked among the Deloitte Technology Fast 50™, a ranking of the 50 fastest growing technology companies in Canada, based on the percentage of revenue growth over five years. NexJ Systems' increase in revenues of 36,128 per cent from 2005 to 2009 resulted in a fourth-place ranking.

Ranked on Deloitte's 2010 Canadian Technology Fast 50™

2.0 EMERGING TECH AND THE CITY

2.3 Social Networking Mania Will Demand Attention & Insight

According to a 2009 IDC Canada consumer survey, 74% of respondents participated in or posted to a social networking or community site. Clearly, social networking is playing an increasingly important role in how not only consumers communicate, but also how Canadian organizations connect, with over 50% using it for recruiting employees, over 45% using it to interact with customers, and over 40% using it as an information source when making ICT purchase decisions. Still, most don't know what value social media contributes to their KPIs or bottom-line, with only 16% of businesses in 2010 in Canada having adopted social networking analytics tools, and about 50% having adopted a social networking policy.

Toronto's Advantage: LinkedIn has announced it will open its new Canadian office in Toronto, which is also home to Facebook in Canada, with its offices located downtown at the corner of Bay and Bloor in the heart of Yorkville. With two of the biggest social networking sites globally setting up their Canadian offices up in Toronto, opportunities for thought leadership, knowledge sharing, partnerships, and talented employees spinning off into new startups, will undoubtedly arise. Social networking will be viewed as an important part of customer relationship management (CRM) in the coming years as well, giving birth to a new area of study that Toronto's Rotman Executive Program will address with its inaugural and bleeding edge Social CRM course beginning November 2010. The course will look at managing customer engagement using social media and CRM.

From an events perspective, Social Media Week, a global platform that connects people, content, and conversation around emerging trends in social and mobile media, is held in Toronto annually, along with mesh – Canada's Web conference. Scotiabank's Nuit Blanche is using social media to enhance its programming and now has the largest facebook fan base of any cultural event in Canada.

With the increasing use of the Internet and these social media sites, Toronto is also taking a leadership role in the digital world with respect to consumer privacy. Researchers from U of T's Citizen Lab are monitoring and exposing overseas cyberspy rings, including major ones in India and China. Founded in 2000, CitizenLab, along

with Harvard and Cambridge Universities, takes part in a group called the OpenNet Initiative, or ONI, which calls attention to Internet filtering around the world.

Toronto's Emerging Companies to Watch: Sysomos, 80/20 Solutions, Pollstream, Vayyoo, The Cadmus, Rypple, iStopOver, MetroLeap Media, ChickAdvisor.com, Teampages, MyCityLives, Bitstrips, SoapBox, and TeamSave.

2.4 Additional Thoughts

A common theme connecting these growth technologies is the rise of the consumer. While social networking, user-generated digital content and mobile applications have rapidly changed consumer use and perception of on-line technologies, emerging firms are taking direct aim at the consumer with their willingness to embrace these technologies.

It's easier than ever for a startup to target and succeed with a B-to-C business model – given the growth of the Internet and the explosion of smartphones and now media tablets that make it easy to reach consumers; the rise of freemium and software-as-a-service business models requiring minimal capital to start and making it easier to deliver direct at affordable prices; and the emergence of mobile storefront and gaming economies to monetize ideas. This has led to a flip in recent years from B-to-B being the leader in driving innovation, to an overwhelming number of startups now focusing on B-to-C since there are new and more economical ways to target and monetize this market segment. Just look to the media tablet market as an example: media tablets were introduced years ago as business devices, but never took off in the market. Now, with the emergence of the iPad marketed primarily as a consumer device, this segment is seeing triple digit growth in Canada from 2010 to 2011, with the consumer segment representing the vast majority of units shipped this year. This consumer trend has fed back into the B-to-B market with the creation of a whole new line of SMB focused applications that are "consumerized" in nature.

The consumer-focused trend is not exclusive to Toronto – it is present across Canada and in other parts of the world, but it is clear here in Toronto where the sheer number of startups addressing the consumer makes the trend hard to ignore.

Toronto's tech community will continue to thrive, as it possesses an attractive combination of talent, education/mentorship, and financial support for growth (particularly in mobile apps), digital media, and social networking. Proximity to several educational institutions and incubators is one factor driving growth, while the support of public and private sector funding, coupled with angels and some investors attracted to Toronto's financial hub are also helping to fuel innovation in the city. With Toronto being home to many large organizations with deep pockets for sponsorship, there is no shortage of events taking place, which at certain times of the year, can occupy one's time almost every night of the week.

2.5 More on the Way

In addition to all of the innovation taking shape on these technological frontiers, the new iWaterfront development will reshape the way people incorporate technology into the fabric of their living and working environments. The new \$34 billion 2,000-acre development will attract 110,000 new residents and 20,000 new jobs to the shoreline of Toronto harbour. Over the next 25 years residents will be moving into fibre-connected homes that will deliver bandwidth speeds of 1 Gbps, 500 to 1,000 times faster than typical residential broadband speeds in North America today. This is one of the largest urban revitalization projects in the world that will deploy leading-edge technology in the foundational infrastructure of the buildings.

Clearly, the city possesses the right inputs to nurture innovative ideas, and put them on the right track to transform into brilliant business.

2.6 Learn More

Ten Canadian Mobile and Wireless Companies to Watch (May 2010, IDC # CA2TIW10)

The Coolest Stuff in Digital Media: Checking Out Ryerson's Digital Media Zone (May 2010, IDC # IcCA22315810)

Canadian ICT 2010–2014 Forecast Summary (May 2010, IDC #CA3ES10)

Ten Canadian Cloud Solutions to Watch (Aug 2009, IDC # CA4TIW9)

The Media Tablet War: Examining Competitive Strategies of Current and Expected Vendors in Canada (Nov. 2010, IDC # CA8CD10)

² IDC Canada, Mobile Phone Tracker, 2010.

³ IDC Canada Consumer n1 Survey, 2010

⁴ IDC Consumer Survey n2, Aug 2010, N=1,000

⁵ IDC Canada's Media Tablet Tracker, 2010.

“ TWO OF THE MAIN ADVANTAGES WE HAVE IDENTIFIED THAT WERE KEY IN OUR DECISION TO OPEN A STUDIO IN TORONTO ARE THE STRONG PRESENCE OF QUALITY UNIVERSITIES AND COLLEGES OFFERING TRAINING AND EDUCATION IN OUR FIELD AND THE FACT THAT TORONTO IS RECOGNIZED ACROSS NORTH AMERICA AS AN ENTERTAINMENT/CULTURAL HUB.

DEVELOPING GAMES REQUIRES A STRONG INVOLVEMENT FROM DIFFERENT ARTISTS AND PERFORMERS ON TOP OF OUR INTERNAL DEVELOPMENT TEAM. WITH ITS SOLID REPUTATION AS AN ENTERTAINMENT CENTRE, BEING DIRECTLY IN TORONTO ALLOWS US TO MANAGE OUR RELATIONSHIP WITH VOICE TALENTS, MUSIC COMPOSERS, MOTION CAPTOR ACTORS WITH A NEW EFFICIENCY. BEFORE, WE NEEDED TO FLY FROM MONTREAL TO L.A. AND TORONTO TO MEET UP WITH THE ACTORS OR MOVIE DIRECTORS; NOW, IT'S ALMOST NEXT DOOR. THAT IS OF GREAT VALUE FOR US.”

CÉDRIC ORVOINE, DIRECTOR, COMMUNICATIONS

UBISOFT

WWW.UBISOFTGROUP.COM

3.0 SECTOR OVERVIEW

3.1 A Statistical Overview of Toronto's Tech Hub

Toronto is home to 30% of Canada's 40,000 ICT firms. At last count there were more than 11,500 ICT companies operating in the Toronto CMA - 605 manufacturing firms and 10,917 service firms, the majority of which have less than 50 employees.

A Primer on Statistics and Terminology

For the purposes of this paper, terms such as "technology hub" and ICT are used interchangeably to describe this sector. The Census Metropolitan Area (CMA) definition of Toronto is used as the base geography. And, the focus is classified within the sector, such as a software company and not the main uses of this technology, such as a bank or financial institution.

Figure 1

ICT Sector is Dominated by SMB's

Number of Employees	Manufacturing	% of Total	Services	% of Total	Total Firms	% of Total
1-9	312	51.6	9,201	84.3	9,513	82.6
10-49	184	30.4	1,259	11.5	1,443	12.5
50-99	59	9.8	242	2.2	301	2.6
100-499	44	7.3	174	1.6	218	1.9
500+	6	1.0	41	0.4	47	0.4
Total	605	100.0	10,917	100.0	11,522	100.0

Source: Canada Business Register, Statistics Canada, 2009

3.2 Key Facts

- Toronto ICT companies report combined revenue of over \$52 billion with \$21.8 billion in the manufacturing subsector and \$30.4 billion in the services sector in 2009.
- Looked another way, service companies (including communications providers, software developers and consulting firms) comprise about 95% of total ICT firms, and manufacturing companies account for about 5% of the total.
- As a result, manufacturing firms are usually much larger than service firms.
- There are 41 large service firms in the CMA (500+ employees) and 6 large manufacturing firms.
- In addition, 39.6% of the Top 250 Canadian ICT Companies are headquartered in Toronto.
- The sector is dominated by small firms (under 100 employees). Nearly 83% have fewer than 10 employees and nearly 98% have fewer than 100 employees.
- Twenty-one of the companies listed on the 2009 *Profit Magazine* 100 are Toronto ICT companies. (Profit Magazine measures the fastest growing companies in Canada, ranked by five-year revenue increase).

Figure 2

Sector Breakdown by Employment Range and Revenue

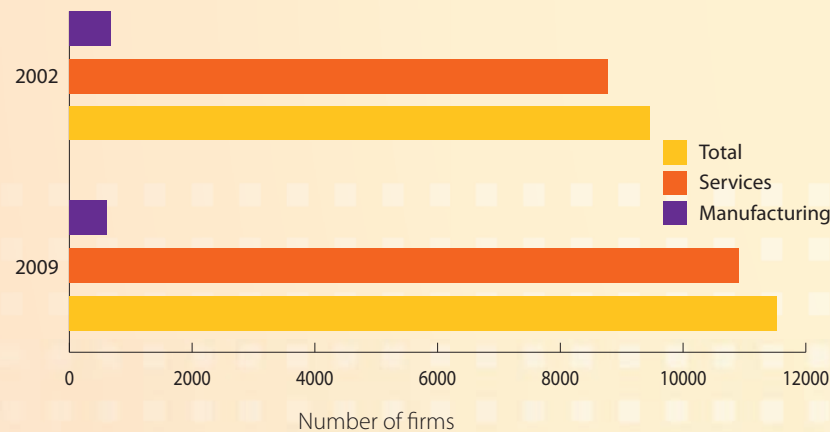
Manufacturing	Number of Employees					Subtotal	Total Revenue (\$ Millions)
	1 - 9	10 - 49	50 - 199	200 to 499	500 +		
333310 – Commercial and Service Industry Machinery Manufacturing	54	31	13	1	1	100	1,188
334110 – Computer and Peripheral Equipment Manufacturing	50	19	7	3	2	81	12,386
334210 – Telephone Apparatus Manufacturing	4	8	2	0	0	14	320
334220 – Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing	16	12	9	3	1	41	214
334310 – Audio and Video Equipment Manufacturing	23	5	3	1	0	32	252
334410 – Semiconductor and Other Electronic Component Manufacturing	65	38	24	8	0	135	7,402
334511 – Navigational and Guidance Instruments Manufacturing	4	2	1	1	1	9	38
334512 – Measuring, Medical and Controlling Devices Manufacturing	84	56	21	3	1	165	120
335920 – Communication and Energy Wire and Cable Manufacturing	12	13	2	1	0	28	203
SUBTOTAL	312	184	82	21	6	605	22,123
Services							
417310 – Computer, Computer Peripheral and Pre-Packaged Software Wholesaler-Distributors	299	133	36	9	7	484	358
417320 – Electronic Components, Navigational and Communications Equipment and Supplies Wholesaler-Distributors	239	116	26	5	1	387	787
417910 – Office and Store Machinery and Equipment Wholesaler-Distributors	191	90	24	7	3	315	232
511210 – Software Publishers	212	75	25	10	2	324	104
517112 – Cable and Other Program Distribution	23	10	6	2	2	43	80
517111 – Wired Telecommunications Carriers (except Cable)	40	22	6	0	2	70	1,582
517210 – Wireless Telecommunications Carriers (except Satellite)	39	12	4	2	2	59	22,010
517410 – Satellite Telecommunications	10	2	3	0	0	15	296
517910 – Other Telecommunications	110	34	15	2	2	163	343
518210 – Data Processing, Hosting and Related Services	107	40	26	4	6	183	1,091
519130 – Internet Publishing and Broadcasting and Web Search Portals	79	35	9	1	0	124	0
519190 – All Other Information Services	21	12	3	1	1	38	151
532420 – Office Machinery and Equipment Rental and Leasing	23	12	1	0	1	37	75
541510 – Computer Systems Design and Related Services	7,517	612	158	16	11	8,314	2,650
811210 – Electronic and Precision Equipment Repair and Maintenance	291	54	14	1	1	361	355
SUBTOTAL	9,201	1,259	356	60	41	10,917	30,114
TOTAL						11,522	52,237

Source: OneSource, includes all ICT companies in Toronto CMA

3.0 SECTOR OVERVIEW

Figure 3

Services sub-sector grows (Toronto CMA 2002 vs. 2009)



Source: Business Register, 2002, 2009

3.3 Manufacturing Sector

- The top manufacturing sub-sector by number of firms is Measuring, Medical and Controlling Devices with 165 firms (27% of total manufacturing sector firms) but by revenue is Computer and Peripheral Equipment Manufacturing at about \$12.4 billion (56% of total manufacturing sector revenue).
- From 2002-2009 the number of ICT manufacturing firms fell from 681 to 605.

3.4 Services Sector

- The top services sub-sector companies by number of firms is Computer Systems Design and Related Services with 8,314 firms (76% of total firms in services sector), while by revenue the top sub-sector is Wireless Telecommunications Carriers \$22 billion (72% of total services sector revenue).
- From 2002-2009 the number of service companies grew from 8,776 to 10,917 (a 20% increase).
- Service companies are dominating the emerging company space.

Figure 4

Top 10 Canadian-owned ICT companies headquartered in Toronto, by revenue

Company	2009 Revenues \$ Millions
Rogers Communications (wireless and Internet)	7,419
Celestica	6,275
Nortel Networks	4,500
Softchoice	1,004
Aastra Technologies	835
Constellation Software	449
Compugen	350
Procom Consultants Group	340
Evertz Technologies	315
Teranet	254

Source: Branham 300, June 2010

Figure 5

Top 10 highest-growth ICT companies headquartered in Toronto

Company	2009 Revenues \$ Millions	% Increase 2008-2009
JumpPoint	36	170
GuestLogix	18	122
Camilion Solutions	25	103
Cyberplex	114	100
IPICO	7	95
Diversinet	8	72
HighVail Systems	21	71
RuggedCom	63	54
ViXS Systems	34	51
Enghouse Systems	78	48

Source: Branham 300, June 2010

Figure 6
Top 25 Internationally Owned ICT Companies with Presence in Toronto

IBM Canada
HP Canada
Siemens Canada
Microsoft Canada
Apple Canada
Cisco Systems Canada
Xerox Canada
Wipro Technologies
Oracle Canada
Ericsson Canada
SAP Canada
General Dynamics Canada
Motorola Canada
Amdocs
Alcatel-Lucent Canada
Fujitsu Canada
ADP Canada
Sun Microsystems of Canada
Pitney Bowes Canada
CSC
Ajilon Canada
Symantec Canada
Sierra Systems
SunGard
CA

Source: Branham 300, June 2010

radical departure from the traditional POS machines currently in service on most airlines. The company is a partner to airlines around the world and its transaction technology is already the standard retail operating platform for the airline industry.

Ranked on Deloitte's 2010 Canadian Technology Fast 50™

4.0 RESEARCH AND INNOVATION

4.1 Research and Innovation: Evidence of Toronto's strategy on research and innovation can be indicated by such means as expenditures in selected private and public sectors, citations in academic publications, and patents.

4.2 Key Facts

Many of Canada's Top 100 Corporate R&D Spenders have research facilities or headquarters in Toronto. In total, these companies account for over \$2.5 billion invested in R&D in 2009 in Canada.

Figure 7

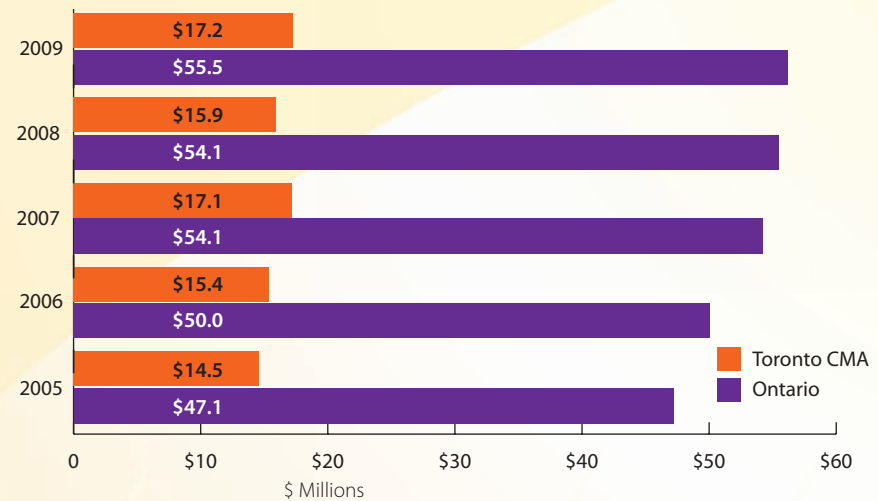
Company	R&D Expenditure (\$ Millions)			Industry
	2009	2008	%Change 2008-09	
BCE Inc	806	983	-18.0	Telecommunications Services
TELUS Corporation	653	210	211	Telecommunications Services
IBM Canada Ltd.	556	397	40.2	Software and computer services
Ericsson Canada Inc.	197	126	56.3	Comm/telecom equipment
Aastra Technologies Limited	86	105	-18.3	Comm/telecom equipment
Rogers Communications Inc.	81	53	52.5	Telecommunication services
CGI Group	76	54	38.8	Software and computer services
Constellation Software Inc.	74	51	45.8	Software and computer services
Psion Teklogix Inc.	20.0	24.9	-19.7	Computer equipment
ViXS Systems Inc.	19.8	19.4	2.1	Electronic parts and components

Source: Research Infosource inc.

The following chart compares the total National Sciences and Engineering Research Council of Canada (NSERC) funding awarded to Toronto university projects versus all university projects in Ontario over a five-year period. In this comparison Toronto accounts for approximately 30% of all NSERC funding year-after-year. NSERC aims to make Canada a country of discoverers and innovators for the benefit of all Canadians. The agency supports university students in their advanced studies, promotes and supports discovery research, and fosters innovation by encouraging Canadian companies to participate and invest in postsecondary research projects. NSERC researchers are on the vanguard of science, building on Canada's long tradition of scientific excellence.

Figure 8

Toronto consistently accounts for approximately 30% of all NSERC Funding

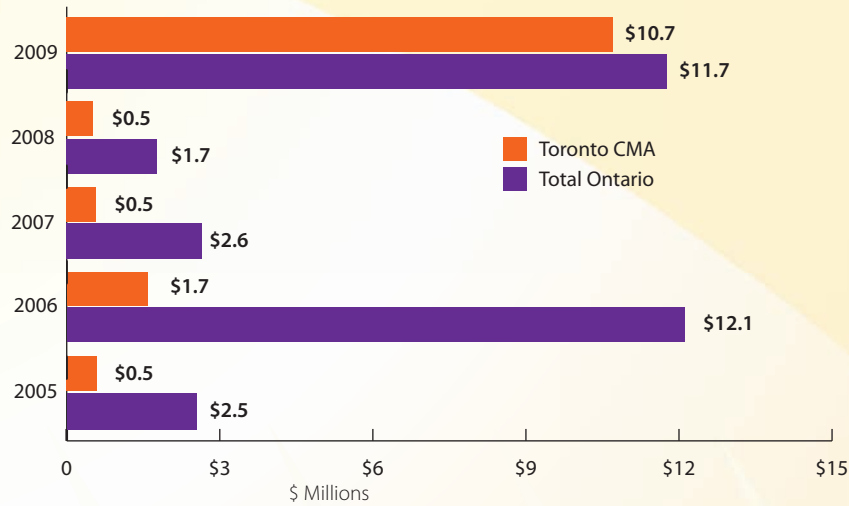


Source: NSERC, 2010

The Canada Foundation for Innovation (CFI) is an independent corporation created by the Government of Canada to fund research infrastructure. The CFI's mandate is to strengthen the capacity of Canadian universities, colleges, research hospitals, and non-profit research institutions to carry out world-class research and technology development that benefits Canadians.

Figure 9

Toronto captures a high proportion of ICT funding from the Canada Foundation for Innovation (CFI).



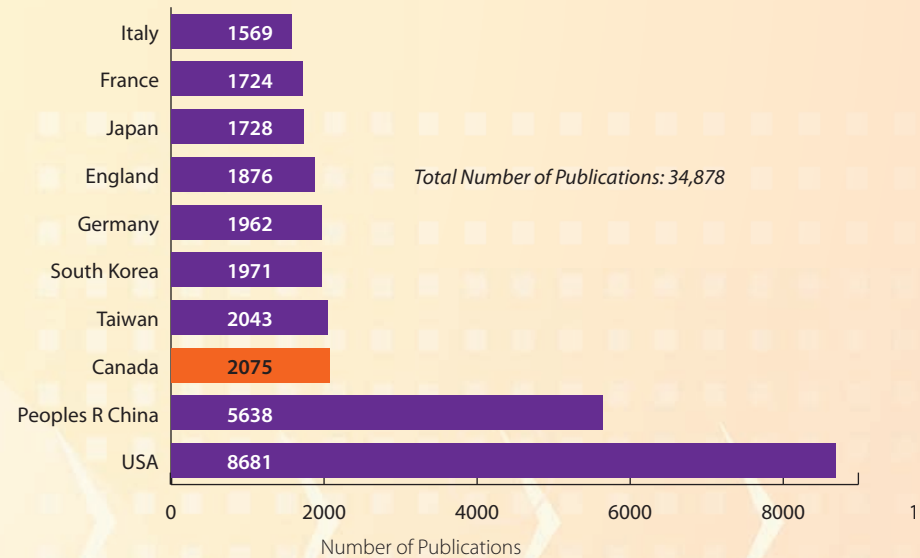
Source: Canada Foundation for Innovation, 2010

4.3 Publication Citations

The publication information is based on the Delphion Publications Search. On a global scale, Canada produces a significant portion of all ICT-related publications. Based on an analysis of English language journals in science and technology, Canada is the third highest producer of ICT-related material. The large difference between the number of articles published by the US and China as compared to the rest of the world can be linked to the corresponding difference in population. When compared on a per-capita basis, Canada ranks 2nd.

Figure 10

ICT Related Publications by Numbers of Publications per Country (2005 - 2010)



Source: Canada Foundation for Innovation, 2010

4.4 Patents

Patent protection applies in the country that issues the patent. In Canada, this protection extends for 20 years from the date of filing. Patents are granted for products or processes that are novel, useful, and inventive (new, workable, and ingenious). In this way, patents serve as a reward for ingenuity.

Patents are vital resources for businesses, researchers, inventors, academics, and others who need to keep abreast of developments in their fields.

Patents are also an important means of sharing know-how, because each patent document describes a new aspect of a technology in clear and specific terms and is available for anyone to consult.

Eighteen months after a patent application is filed, the document is made public in order to promote the sharing of knowledge.

4.0 RESEARCH AND INNOVATION

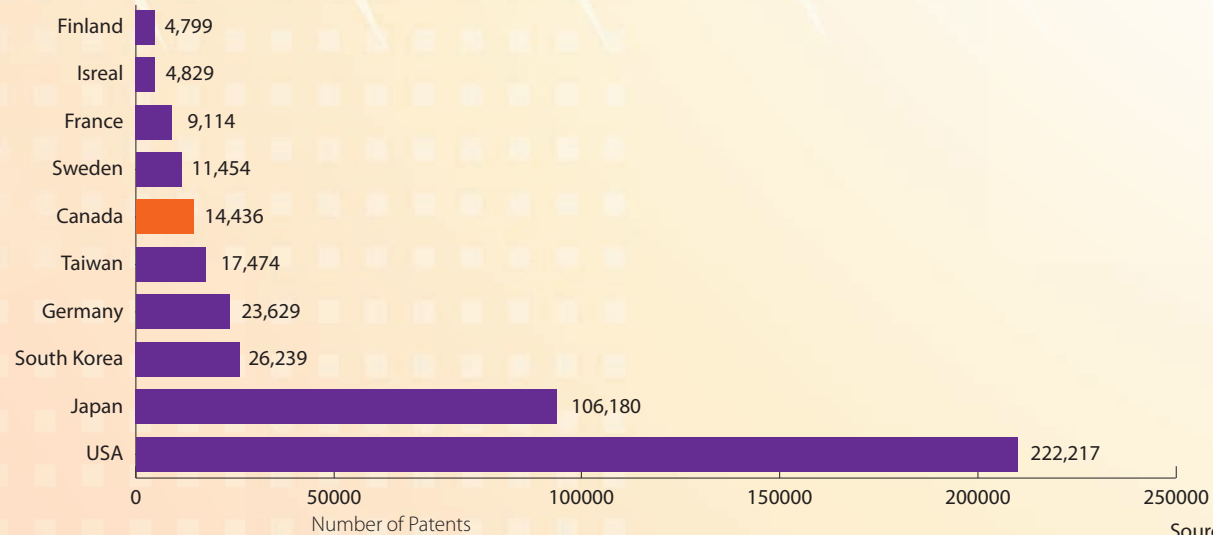
In Canada, a patent is given to the inventor who first files an application. It's therefore wise to file as soon as possible after completing an invention because someone else may be on the same track.

The patents are grouped into 15 subject areas, namely Artificial Intelligence, Circuit Design, Control, Digital Media, Digital Signal Processing, Informatics, Information Theory, Information Technology Security, Neurosciences, Optics, Radio and Frequencies, Robotics, Software Development, Telecommunications, and Web Applications.

In order to choose comparator cities for a city-level analysis, the top 10 publishing cities were compared with Toronto based on the number of patents filled at the United States Patent and Trademark Office during the five-year study period. Comparator countries were chosen for their prominence in the ICT sector. Specifically 17 countries, namely the United States, Japan, South Korea, Germany, Taiwan, Canada, Sweden, France, Israel, Finland, Spain, India, Singapore, Australia, China, Italy and the Netherlands, were compared based on the number of patents each country filed between 2005 and 2010.

Figure 11

Canada ranks 6th in the world in terms of ICT-related Patents (2005 - 2009)



Source: US Patent & Trademark Office, 2010

4.5 Profiles of Local Centres of Excellence

Toronto is a hotbed of research and innovation in the ICT sector. Toronto-area companies and research organizations are international leaders in knowledge creation and exploitation. Here are a few examples:

The Citizen Lab at the University of Toronto

Based at the Munk School of Global Affairs, University of Toronto's Citizen Lab is an interdisciplinary laboratory which combines its focus on advanced research and development with digital media, global security, and human rights. It was established in 2000 by Professor Ronald Diebert. Involving multiple disciplines – political science, sociology, computer science, engineering, and graphic design – and employing a pioneering 'fusion' methodology that combines technical reconnaissance, field investigations, and data mining, analysis, and visualization, it performs advanced research and engages in development that monitors, analyzes, and impacts the exercise of political power in cyberspace. Its collaborative partners are leading-edge research centres, organizations, and individuals around the globe.

The Lab's ongoing research network includes the Information Warfare Monitor, Opennet Asia, and the OpenNet Initiative (ONI). Harvard and Cambridge universities also take part in the ONI group. While Harvard researches legal aspects of Internet censorship and Cambridge organizes activists in censored countries to do research, Toronto takes on the technical research. The ONI receives funding from several major US foundations that promote peace and democracy. In addition, the Citizen Lab has received funding from the New York-based Open Society Institute. The Citizen Lab developed the Psiphon censorship circumvention software. Psiphon Inc., a privately held Canadian corporation headquartered in Toronto, was then established in 2008 for the commercialization of the software content delivery. The Lab continues to provide services for the open source development for the company through the Psi-Lab project.

Source: <http://citizenlab.org/about/>

OCAD Mobile Enterprise Innovation Centre

The Mobile Experience Innovation Centre (MEIC) at the Ontario College of Art and Design (OCAD) University is a critical broker in the Toronto region's advancing, diverse mobile sector.

Supported by the Government of Ontario's Media Development Corporation, MEIC connects and leverages ideas, expertise and funding across institutions and industry on design-rich R&D projects. Some 30 MEIC members and project partners cover the spectrum from global IT, media and gaming companies to start-ups and university and college labs.

One MEIC project brought together IBM's Markham-based innovation division and OCAD University to envision the future of mobile and web interfaces, applications and hardware. The collaboration is to conceive interactive, collaborative technologies that are tailored to different types of teachers and students in a classroom of the future. The resulting concepts range from mobile device applications to a website for collaborative learning to table hardware that enables document sharing. Tentacles, another MEIC project, involves OCAD University, York University and Canadian Film Centre laboratories. It is a unique, multi-player application developed for the Apple iPhone and iPod Touch.

Source: <http://www.trra.ca/en/profiles/meic.asp>

IBM Toronto Software Lab and Ontario Cancer Institute (UHN)

IBM's worldwide software business is fuelled by Canada's largest software development facility. With over 2,500 employees, the IBM Toronto Software Lab is the largest R&D arm within IBM Canada and the third largest software lab worldwide. The Lab partners with research institutions such as the Ontario Cancer Institute at University Health Network (UHN) and the University of Toronto to recruit highly skilled graduates and develop innovative partnerships.

Founded in 1967, the Lab benefits from a dynamic mix of experienced professionals and young employees; about half of all employees are in the first five years of their careers. Uniquely, the Toronto Lab has worldwide mission responsibility for a broad cross-section of IBM's global products. These include leading-edge products such as WebSphere, e-commerce and DB2 information management technology. The Lab develops these products for clients around the world.

application solutions to meet rapidly growing needs for safe, on-the-go storage and exchange of personal health information. All major mobile platforms are supported. The company uses advanced technologies to support such applications as personal health record creation and storage, encrypted data communication, secure faxing of health information summaries, and text messaging between patients and their providers and payers.

Ranked on Deloitte's 2010 Canadian Technology Fast 50™

4.0 RESEARCH AND INNOVATION

Developing strong links to the region's world-class research institutions is an integral part of IBM Canada's business plan. Established in 1990, The Centre for Advanced Studies allows IBM to collaborate with academic and government partners on projects of mutual interest. Each year, the Centre hosts about 150 faculty members and 60 graduate students from some 50 universities around the world. In 2006, the 12 founding universities and IBM Canada were awarded the Natural Sciences and Engineering Research Council of Canada's (NSERC) Synergy Award for their outstanding model of collaboration. Because of the success of the Centre, over 15 IBM labs and research facilities around the world have opened their own Centres for Advanced Studies modeled after the one here.

Source: <http://www.trra.ca/en/profiles/IBM.asp>

Side Effects Software, Sheridan Institute and University of Waterloo

Side Effects Software is one of Hollywood's top developers of 3D animation and visual effects software. Its lead product, Houdini, has been used in over 250 feature films including nine of the last 11 films to win the Academy Award® for best visual effects. Based in Toronto, the company has received two Academy Awards® for scientific and technical achievement. Examples of their technology are apparent in the Spiderman film series, the Harry Potter series, as well as The Matrix and the Lord of the Rings trilogies.

For this industry leader, the best place to be is Toronto, not southern California. The company relies on the superb talent emerging from local universities and colleges such as the University of Waterloo and the Sheridan Institute of Technology and Advanced Learning. Toronto's rich history of digital media leadership, tax relief programs such as the federal government's Scientific Research and Experimental Development tax credit, and investments made by the provincial government in digital media R&D are strong advantages for the development of the company.

Side Effects is harnessing the strength of both the Sheridan Institute of Technology and Advanced Learning, and the University of Waterloo.

Source: <http://www.trra.ca/en/profiles/sideeffectsoftware.asp>

With operations in North America and Europe, Adenyo provides mobile marketing software solutions that simplify the delivery of highly targeted, interactive and engaging mobile content and maximize customer retention and brand awareness. The portfolio of services spans Predictive Analytics, Mobile Websites & Applications, Mobile Messaging Campaigns and Mobile Advertising, providing customers a range of innovative and compelling ways to engage customers. Adenyo's services integrate with traditional marketing and advertising campaigns

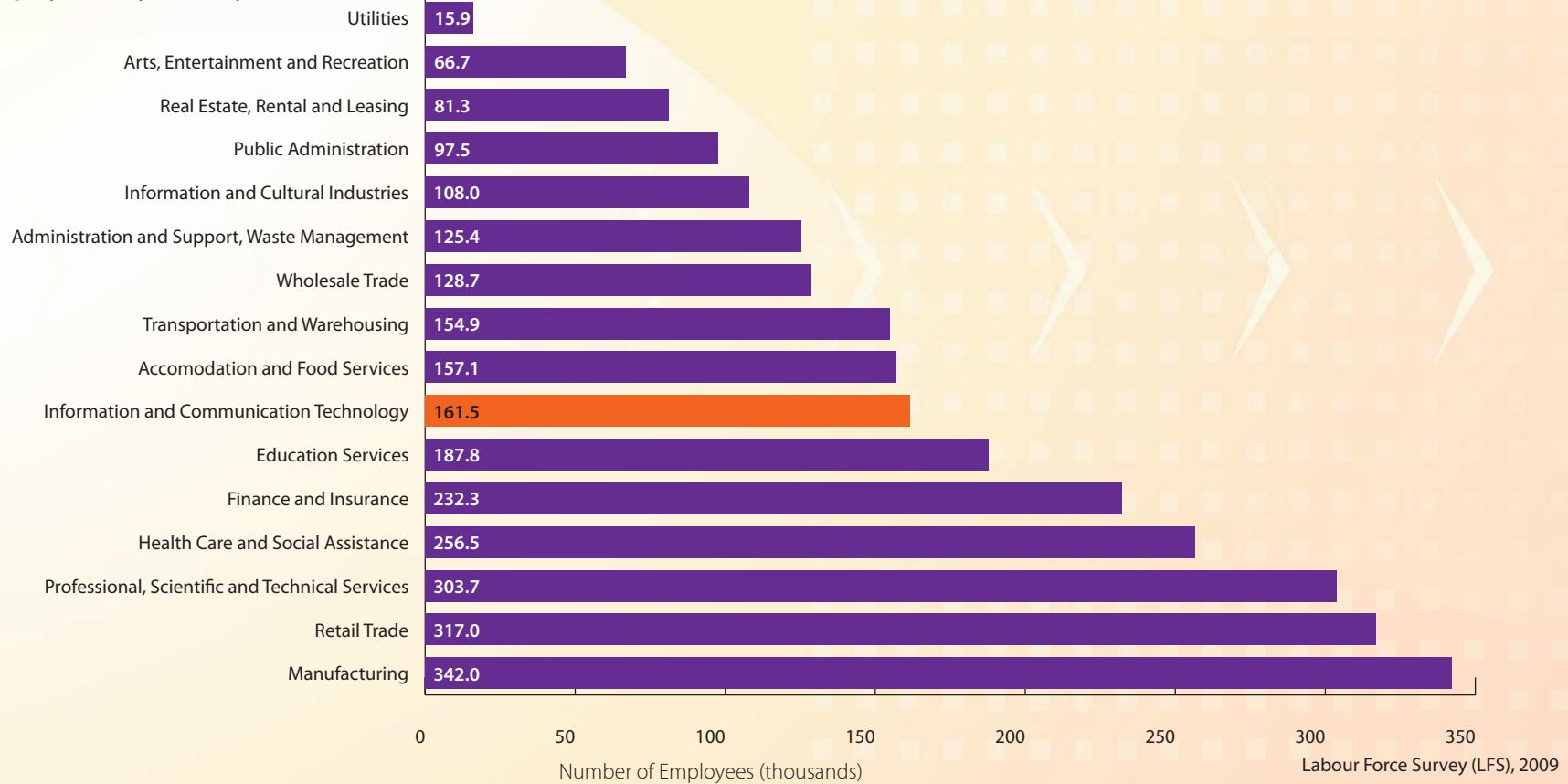
5.1 Toronto's diverse ICT workforce and educational infrastructure are key to its competitive position. The local labour pool is broad and deep enough to meet the needs of ICT employers across the range of manufacturing and service sub-sectors.

5.2 Key Facts

Toronto ICT organizations employ over 161,000 workers – 56.4% of all ICT workers in Ontario and 30% of all ICT workers in Canada. This figure does not include ICT workers who are employed in other sectors, such as financial services.

Figure 12

Employment by Industry Sector in Toronto



in order to deliver a message tailored to the right audience, on the right device and at the right time. A pioneer in the mobile space since inception in 2005, Adenyo has delivered thousands of successful campaigns and is the trusted partner of the world's leading agencies, enterprises and communications providers.

Ranked on Deloitte's 2010 Canadian Technology Fast 50™

5.0 TALENT

- Figure 13 captures ICT-related occupations in other sectors which total over 89,000 employees.
- The sector's employment rate is 95.9% (i.e. only 4.1% unemployment rate) in 2009, less than half of Toronto's overall rate of 9.4%.
- Average ICT wages of \$64,725 are 6.6% above the Toronto wage average.
- The ICT sector has a young workforce – 36.4% of ICT workers are under 35 years of age and 61.5% of the ICT workforce is under 45 years of age.
- 50.2% of the ICT workforce is in the prime management age group (35 to 54 years of age).
- The sector has high levels of educational attainment: 96.9% of employees have a post-secondary certificate, diploma or degree, compared with 88.9% for the general labour force.
- The labour force is internationally minded, with business and personal linkages to nearly every country of the world.

Figure 13

ICT-related Employment in Various Sectors

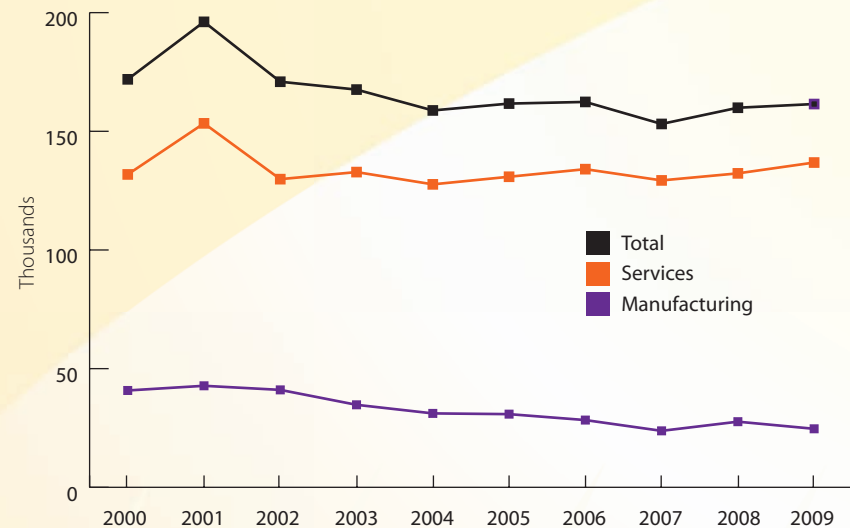
Occupation - National Occupational Classification for Statistics 2006

Occupation	C07 Computer and information systems professionals		% of Canada
	Toronto CMA	Canada	
Total Labour Force	89,755	307,685	29.2%
334 Computer and electronic product manufacturing	2,455	8,020	30.6%
335 Electrical equipment, appliance and component manufacturing	115	715	16.1%
336 Transportation equipment manufacturing	545	2,400	22.7%
485 Transit and ground passenger transportation	120	375	32.0%
516 Internet publishing and broadcasting	145	450	32.2%
517 Telecommunications	2,580	8,210	31.4%
518 Internet service providers, web search portals, and data processing services	1,120	3,330	33.6%
519 Other information services	315	955	33.0%
524 Insurance carriers and related activities	2,570	9,405	27.3%
541 Professional, scientific and technical services	40,865	138,550	29.5%
611 Educational services	1,425	9,705	14.7%
911 Federal government public administration	550	14,790	3.7%
912 Provincial and territorial public administration	1,795	10,525	17.1%
913 Local, municipal and regional public administration	950	3,995	23.8%

Source: Statistics Canada 2006

Figure 14

ICT Services Employment is Increasing



Source: Total Employment (LFS) 2010

5.3 Post-secondary Education

Universities

Toronto is home to five prominent universities. The largest three, University of Toronto, York University and Ryerson University offer a total of 21 ICT-related programs. During the 2008/2009 school year over 3,700 students enrolled and over 1,300 degrees conferred at the undergraduate and graduate levels in ICT-related programs.

Toronto universities attract world renowned researchers with expertise that span the entire spectrum of ICT and related technologies. In total, there are over 470 faculty members involved in teaching and research positions in these programs and lead more than 40 ICT-related research groups. Two newer universities – Ontario College of Art and Design University (OCAD) and the University of Ontario Institute of Technology (UOIT) are emerging to deliver several niche ICT-related programs, in mobile, cryptography and security, and game development.

In The Times Higher Education-QS World University Rankings in 2010, U of T ranked 13th in the world for Engineering and Information Technology.

Colleges

Toronto is home to six colleges that offer ICT-related programs. Seneca College, Humber College, Centennial College, Sheridan College, Durham College and George Brown College offer a combined 40 programs that prepare students for careers in the ICT industry. Toronto’s college programs are exceptionally popular, drawing over 2,600 first year students in the 2008/2009 school year. In addition, the schools granted a combination of over 1,000 ICT-related degrees, diplomas, and certificates in the same year.

Key Facts

- Post-secondary enrolments in Computer Science are falling in Toronto, as they are throughout Canada. However, curriculums are in transition and more technology-related content is becoming increasingly integrated into converging fields of study such as Finance and Life Sciences. This trend is masked by these statistics.
- In addition, demand for ICT Skills and labour is high and growing across Canada. Between 2008 and 2015 Canadian employers will need to recruit around 126,400 to 178,000 ICT workers, an average of 15,795 to 22,345 per year. (Source: ICTC).

Figure 15

Computer Science Enrolment in Toronto Universities is declining

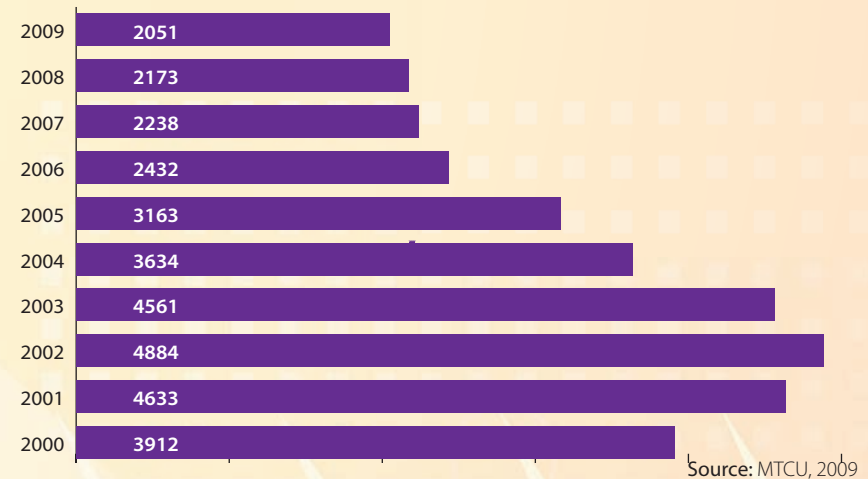
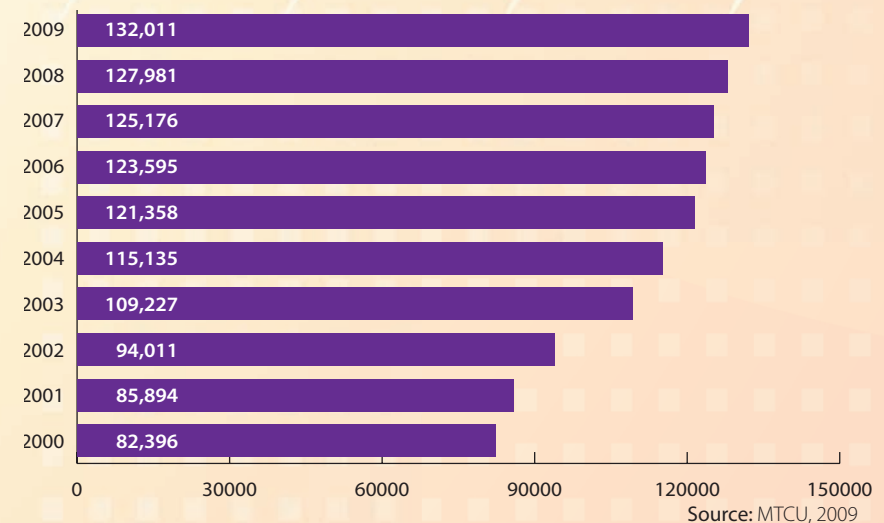


Figure 16

Overall Enrolment in Universities is increasing. Technology is being incorporated into other disciplines



6.0 INVESTMENT

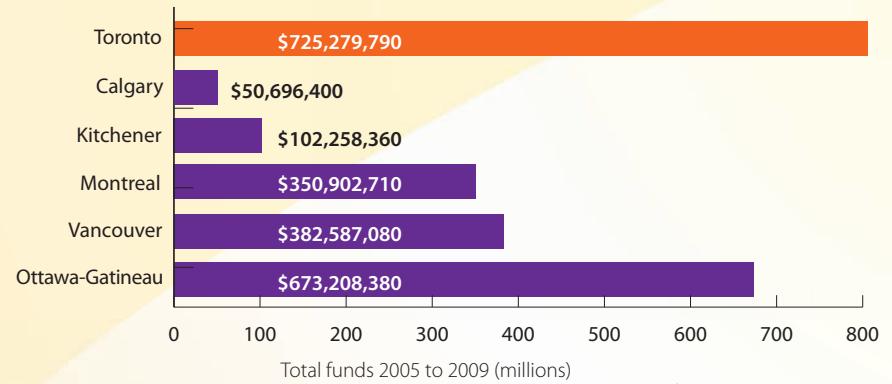
Toronto is Canada's investment capital for companies in the ICT sector.

6.1 Key Facts

Toronto ICT VC disbursement increased 8.3% last year whereas, the Canada-wide total disbursement on ICT venture capital deals has dropped steadily since 2007. ICT venture capital investment across Canada has declined considerably, but Toronto remains a stronger environment for VC investment compared with other CMAs.

Figure 17

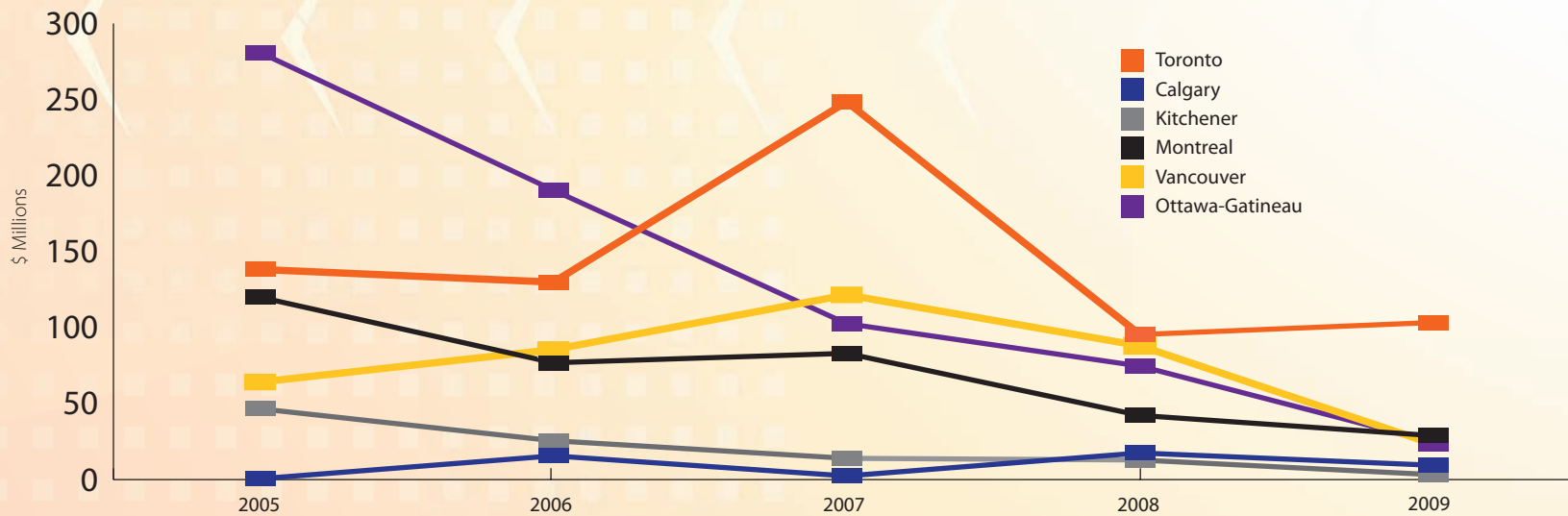
Toronto has led Canada's major cities in Venture Capital Investments



Source: Thomson Reuters, 2010

Figure 18

ICT VC Deals by CMA, 2005 to 2009



Source: Thomson Reuters, 2010

COMPANY PROFILE - UPTIME SOFTWARE INC.

Uptime software inc. is a privately held corporation founded in 2001 and headquartered in Toronto. With over 700 clients in 32 countries, Uptime is a premier provider of systems management software for virtual server monitoring and physical server monitoring, capacity planning, and service and application monitoring. Uptime delivers deep server monitoring for mid-enterprises by simplifying the management of virtual, physical and cloud resources

Figure 19

Most VC Investment is at later stages of company growth

	2005	2006	2007	2008	2009	Grand Total
Seed	-	\$7,500,000	-	-	\$1,916,000	\$9,416,000
Startup	\$29,281,640	-	\$11,383,000	\$17,750,000	\$1,986,400	\$60,401,040
Other Early Stage	\$31,807,320	\$60,992,030	\$33,160,560	\$10,300,000	\$10,066,000	\$146,325,910
Expansion	\$75,620,320	\$71,372,300	\$203,928,700	\$67,342,100	\$89,373,420	\$507,636,840
Other Stage	\$1,500,000	-	-	-	-	\$1,500,000
Grand Total	\$138,209,280	\$139,864,330	\$248,472,260	\$95,392,100	\$103,341,820	\$725,279,790

GTA ICT – Venture Capital by Investment Stage – Amount Disbursed

Source: Thomson Reuters, 2010

- Software companies and *Communications and Networking* companies have received the most consistent investment in recent years, whereas investment in Electronics and *Computer Hardware* companies and Medical Devices and Equipment companies has dried up considerably.
- Within the last five years, OANDA Corporation had the largest VC deal in the Toronto ICT sector. Specializing in online currency trading, OANDA received \$104.5 million in 2007 from a consortium of investors. The second largest deal went to Varicent Software, a maker of sales performance management software, which received \$35 million from a consortium in 2009.

Figure 20

More VC funds have been invested in Software companies than any other ICT category

	2005	2006	2007	2008	2009	Grand Total
Communications and Networking		5	2	2	6	15
Electronics and Computer Hardware		3	3	1	1	8
Internet Focus	1	7	9	11	8	36
Medical Devices and Equipment		2	1		4	7
Medical/Biotech Software and Information Services		2	1	1	1	5
Other IT Services			2			2
Other Technologies		1				1
Semiconductors		2	2	1	1	6
Software	5	11	12	18	16	62
Grand Total	6	33	32	34	37	142

GTA ICT - VENTURE CAPITAL BY INDUSTRY – NUMBER OF DEALS

Source: Thomson Reuters, 2010

and applications with a single tool. Uptime also helps solve difficult virtualization challenges, including identifying virtualization candidates, optimizing VM density and ensuring end-user performance. uptime's proactive capabilities include outage avoidance and automated healing.

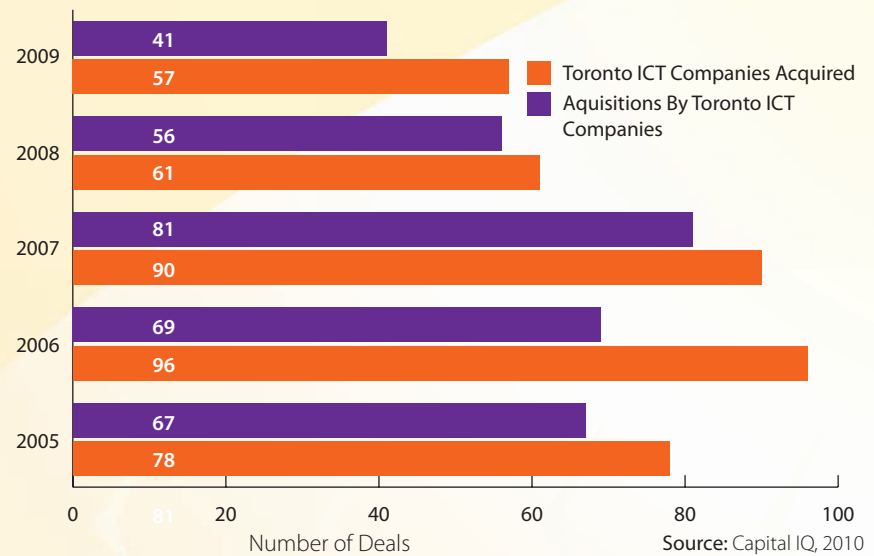
Ranked on Deloitte's 2010 Canadian Technology Fast 50™

6.0 INVESTMENT

- While VC levels are not where they once were, public sector investment and angel investors are filling this capital gap to some degree. Currently public sector investment avenues available to Toronto ICT companies include:
 - The Ontario Emerging Technologies Fund – a \$250 million program that matches VC and private investments in technology-focused companies (Source: Ontario Ministry of Research and Innovation)
 - Ontario Centres of Excellence – A provincially funded program focused on promoting the commercialization of research, which invested \$25.8 million and leverage an additional \$40.1 million to support research, commercialization, and talent projects in 2009. (Source: Ontario Centres of Excellence Annual Report)
 - Ontario Media Development Corporation – a provincial agency that promotes and supports the media cluster with direct and leverage investments and through tax credits. (Source: OMDC website)
- In the area of M&A, the ICT sector in Toronto has experienced significantly less activity over the last several years.
- Between 2005 and 2009, the total disclosed value of all acquisitions by Toronto ICT companies was \$9.2 billion. In contrast, acquisitions of Toronto ICT companies amounted to \$26.2 billion

Figure 21

More Toronto ICT companies have been the hunted rather than the hunters

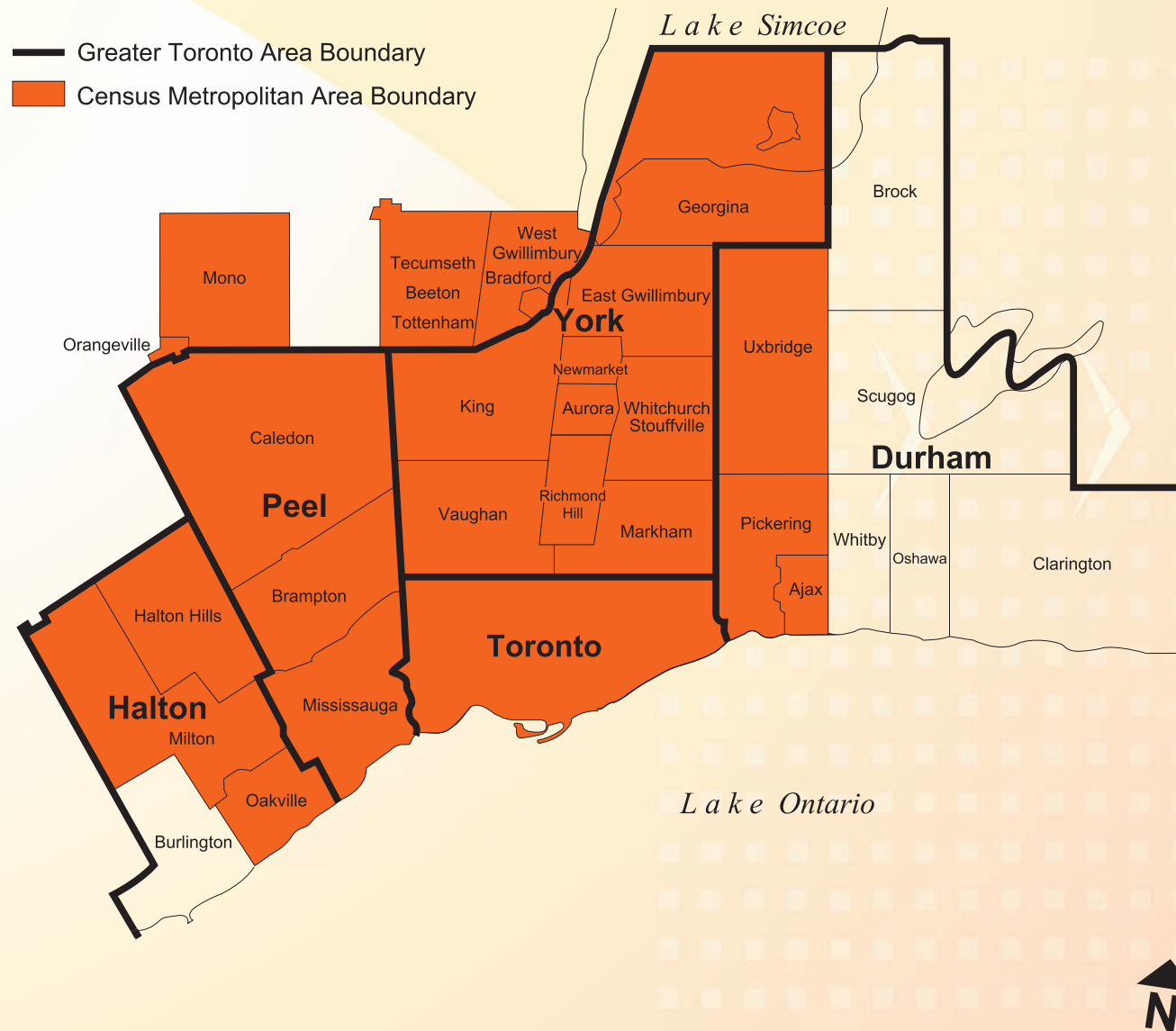


“ ACCESS TO FINANCIAL SERVICES CLIENTS HELPED ME KEEP MY FOCUS HERE. MOREOVER, ACCESS TO RESOURCES (CURRENT AND FUTURE EMPLOYEES), KEEPS ME FROM MOVING AWAY FROM TORONTO. THE WEALTH OF UNIVERSITY STUDENTS SITUATED IN TORONTO IS A MAJOR ADVANTAGE. THOUGH A LOT OF OFFSHORING IS TAKING PLACE, THE DECISION MAKERS STILL RESIDE IN MAJOR METRO CITIES LIKE TORONTO.”

NISHCHAL BHALLA
FOUNDER, SECURITY COMPASS
WWW.SECURITYCOMPASS.COM

Greater Toronto Area and Toronto Census Metropolitan Area

Appendix 1



APPENDICES

Appendix 2

Acknowledgements

- Michael H. Williams**, General Manager, Economic Development & Culture, City of Toronto
- Krista Jones**, Practice Lead, IT, MaRS Discovery District
- Earl Miller**, Director, Strategic Partnerships, MaRS Discovery District
- Usha Srinivasan**, PhD, Director of Market Intelligence Market Readiness Program, MaRS Discovery District
- John MacRitchie**, Regional Director, Central Region, Ontario Centres of Excellence
- Paul Swinwood**, CEO, Information and Communications Technology Council (ICTC)
- Vasudave Daggupati**, Senior Advisor, Ministry of Economic Development & Trade
- Dr. Cindy Gordon**, CEO & Founder, Helix
- Dr. Karen Sievewright**, Director, Research, Toronto Region Research Alliance (TRRA)
- Dave Findlay**, Director, ICT, Toronto Region Research Alliance (TRRA)
- Moran Friedman**, Analyst, Toronto Region Research Alliance (TRRA)
- Krista Napier**, Senior Analyst, IDC Canada
- David T. McLean**, Manager, Market Analytics, KPMG
- Ron Freedman**, Co-Founder, The Impact Group
- Rob Berry**, Manager, Sector Partnerships, Economic Development & Culture, City of Toronto
- Joe Mazzei**, Senior ICT Advisor, Economic Development & Culture, City of Toronto
- Ned Sabev**, Policy and Research Consultant, City of Toronto
- Randy McLean**, Manager Strategic Growth, Economic Development & Culture, City of Toronto

Appendix 3

Selected References

- Branham 300 (June 2010). *Canada's ICT Industry: A National Perspective*. www.branham300.com
- Canada Foundation for Innovation www.innovation.ca/en
- Capital IQ www.capitaliq.com/main.asp
- City of Mississauga Economic Development (2005). *Mississauga: A Leading Canadian ICT Cluster (2005)*
- E&B Data (2004). Greater Toronto Information and Communications Technologies (ICT) Industry Profile.
- IBM Global Business Services (2007). *Global Investment Trends and Toronto's Competitive Positioning in the ICT Sector*
- Information and Communications Technology Council (ICTC) www.ictc-ctic.ca/en
- Information and Communications Technology Council – ICTC. *Outlook for Human Resources in the Information and Communications Technology Labour Market, 2008 to 2015, Summary Report Information and Communications Technology* www.ictc-ctic.ca
- National Sciences and Engineering Research Council of Canada (NSERC) www.nserc-crsng.gc.ca
- OECD, (2005). *New Perspectives on ICT Skills and Employment*. DSTI/ICCP/IE(2004)10/FINAL
- OneSource – www.onesource.com
- Ontario Ministry of Training, Colleges and Universities (MTCU) www.edu.gov.on.ca/eng/tcu
- PROFIT (2009). PROFIT100 – *Canada's fastest-growing companies*. Toronto: Rogers Media.
- Research InfoSource www.researchinfosource.com
- Statistics Canada, (2001). Information and Communications Technologies in Canada. Catalogue No. 56-506-XIE
- Statistics Canada, (2008). *Definitions and Concepts Used in Business Register*. Retrieved from <http://www.statcan.gc.ca/ads-annonces/61f0040x/index-eng.htm>
- Statistics Canada (2009). *Canada's Business Register*.
- Thomson Reuters www.thomsonreuters.com
- US Patent and Trademark Office www.uspto.gov

APPENDICES

Appendix 4

Definitions

Information and Communications Technologies (ICT)

The term “information and communications technologies” (ICT) is used to describe both the fast-paced, new growth industrial segments of the economy, as well as the ongoing introduction of new technologies that promote the information society (Statistics Canada, 2001). The ICT sector has an increasing importance in the global economy and has a growing impact on the organization of economic activity. However, capturing the importance and impacts of ICTs is not always straightforward. Measurement problems are complicated further by an often unclear terminology, combined with the existence of a multiplicity of definitions (new economy, e-economy, ICT sector, etc.), while analytical results vary according to the precise definition adopted (OECD, 2005).

Statistics Canada defined the ICT sector in 2001 as “the combination of manufacturing and services industries, which electronically capture, transmit, and display data and information.”

Manufacturing industries in the ICT sector include establishments that manufacture products intended to fulfill information processing and communications functions including transmissions and display, or use electronic processing to detect, measure, and/or record physical phenomena, or to control a physical process.

The process of the ICT services industries must be intended to enable the function of information processing and communication by electronic means.

The 2001 Statistics Canada definition used 1997 North American Industry Classification System Codes (NAICS). However, there are more recent classifications systems available, so in order to be able to take advantage of these changes, concordances were developed among the 1997 NAICS, 2002 NAICS, and 2007 NAICS.

Concordances were required because the available data are based on the 2002 and 2007 NAICS. One additional issue had to be taken into account, and it was that Statistics Canada definition is based on five-digit NAICS codes, whereas the Census data is only coded to four-digits. To address this limitation, the Business Register (which provides CMA data at the six-digit level) establishments were used as a proxy to determine if it made sense to include some of the industries in our definition. (See Appendix A for a detailed explanation of CMA boundaries.)

Sources:

Statistics Canada, (2008). Definitions and Concepts Used in Business Register. Retrieved from <http://www.statcan.gc.ca/ads-annonces/61f0040x/index-eng.htm>

Statistics Canada, (2001). Information and Communications Technologies in Canada. Catalogue No. 56-506-XIE

OECD, (2005). New Perspectives on ICT Skills and Employment. DSTI/ICCP/IE(2004)10/FINAL

Venture Capital Terms

Early Stage

Seed: A developing business entity that has not yet established commercial operations and needs financing for research and product development.

Start-up: A business in the earliest phase of established operations and needs capital for product development, initial marketing and other goals.

Other early stage: A firm that has begun initial marketing and related development and needs financing to achieve full commercial production and sales.

Late Stage

Expansion: An established or near-established company that needs capital to expand its productive capacity, marketing and sales.

Acquisition/Buyout: An established or near-established firm that needs financing to acquire all or a portion of another business entity for growth purposes, such as an Acquisition for Expansion Financing.

Turnaround: An established or near-established company that needs capital to address a temporary situation of financial or operational distress.

Other stage: Includes Secondary Purchase, or the sale of portfolio assets among investors, and working capital.

Appendix 5

Technology-related Organizations & Associations

Toronto Region		Acronym	Website
1	AfterEffects Toronto		http://www.aeto.ca/
2	Centre for Social Innovation		http://socialinnovation.ca/contact
3	CIPS Toronto Section		http://www.cipstoronto.ca/
4	CITO - Centre for Communications and Information Technology		http://www.cito.ca/
5	Demo Camp		http://democamp.com/
6	Digital Arts & Technology Association	DATA	http://www.datato.ca/
7	Flash In the Can		http://www.fitc.ca/
8	FlashinTO		http://www.flashinto.com/
9	Greater Toronto Area Linux User Group		http://gtalug.org/wiki/Main_Page
10	Innovation Synergy Centre (Markham)	ISCM	http://www.iscm.ca/
11	International Association of Business Communicators	IABC	www.toronto.iabc.com
12	IT Toronto		http://www.linkedin.com/groups?gid=96438&mostPopular=
13	Knowledge Media Design Institute	KMDI	http://www.kmdi.utoronto.ca/
14	Learning Enrichment Foundation	LEF	http://www.lefca.org/
15	Liberty Village		http://www.lvbta.com/footer/contact.asp
16	MaRS Discovery District	MARS	http://www.marsdd.com/MaRS-Home.html
17	Media Awareness Network		http://www.media-awareness.ca/english/
18	Mediacaster Magazine		http://www.mediacastermagazine.com
19	MESH Conference	MESH	http://www.meshconference.com/
20	Mississauga Technology Association	MTA	http://www.mississaugatech.com
21	Mississauga Ubuntu MeetUp		http://tech.groups.yahoo.com/group/mumu-ca/
22	Mobile Developer & Designers of Toronto		http://www.facebook.com/group.php?gid=59283678804
23	Mobile Experience Innovation Centre	MEIC	http://www.meic.ocad.ca/
24	MobileMonday Toronto		http://www.mobilemondaytoronto.com/
25	Society of Cable Telecommunications Engineers	SCTE	http://www.scte-ontario.com/
26	Start Up North		http://www.startupnorth.ca/
27	The Mobile Institute		http://mobileinstitute.ca/contact-us.php
28	TOJam	TOJam	http://www.tojam.ca
29	TORCHI – Toronto Region – Computer Human Interaction		http://www.torchi.org/
30	Toronto Asterisk Users Group		http://taug.ca/
31	Toronto Board of Trade - ICT Committee	TBoT	http://www.bot.com/
32	Toronto Business Development Centre	TBDC	http://www.tbdc.com/
33	Toronto ColdFusion User Group		http://www.cfugtoronto.org/
34	Toronto Digital Marketing Professionals		http://www.dmpa.ca/welcome.html
35	Toronto Flex		http://www.torontoflex.com/torontoflex/index.html#
36	Toronto Interactive Marketing Association	TIMA	www.torontoima.ca
37	Toronto Java users group	TJUG	http://199.246.31.75/
38	Toronto Regional Research Alliance	TRRA	http://www.trra.ca/en/
39	Toronto Society for Technical Communication	STC Toronto	http://www2.stctoronto.org/
40	Toronto Spin		http://www.torontospin.com
41	Toronto Talks		www.torontotalks.org

APPENDICES

42	Toronto Wireless Group	TORWUG	http://torwug.org/
43	What's Your Tech.ca	WYT	http://whatsyourtech.ca
44	York Technology Association	YTA	http://yorktech.ca/
Other: Ontario + Canada			
1	Acetech	Acetech	http://www.acetech.org/
2	Association of Internet Marketing and Sales	AIMS	http://www.aimscanada.com/
3	Association of Professional Computer Consultants	APCC	www.apcconline.com
4	BitNet		http://www.bitnet.ca/
5	Canadian Digital Media Network	CDMN	http://www.cdmn.ca
6	CABiNET		http://www.cabinet-business-network.ca/about.shtml
7	Canada's Technology Triangle	CTT	http://www.techtriangle.com/
8	Canadian Advanced Technology Alliance	CATA	http://www.cata.ca/
9	Canadian Coalition for Tomorrow's ICT Skills	CCICT	http://www.ccict.ca/
10	Canadian Information Processing Society	CIPS	http://www.cips.ca/
11	Canadian Information Technology Providers	CITPA	http://citpa.ca/index.php
12	Canadian Instituted for Advanced Research	CIFAR	http://www2.cifar.ca/
13	Canadian Interactive Alliance	CIA	http://ciaic.ca/
14	Canadian Standards Association	CSA	http://www.csa.ca/cm/home
15	Canadian Women in Communications	CWC	http://www.cwc-afc.com/home.cfm
16	Canadian Wireless Telecommunications Assn	CWTA	http://www.cwta.ca/
17	CATA WIT (Women in Technology)	CATA WIT	http://www.catawit.ca
18	Communitech		http://www.communitech.ca/en/
19	CIO Association of Canada		www.ciocan.ca
20	Entertainment Software Association of Canada	ESA	http://www.theesa.ca/
21	Health Technology Exchange	HTX	www.htx.ca
22	icanada		http://www.cata.ca/
23	Information Communication & Technology Council	ICTC	http://www.ictc-ctic.ca/en/Default.aspx
24	Information Technology Association of Canada	ITAC	http://www.itac.ca/
25	Infotech London		http://www.infotechlondon.com/home/
26	Interactive Ontario	IO	http://www.interactiveontario.com/
27	International Game Developers Association	IGDA	www.igda.org
28	National Association of Computer Consulting Businesses Canada	NACCB	www.naccb.ca
29	Northwestern Ontario Technology Association	NOTA	http://www.nota.ca/
30	Networked Vehicle Association	NVA	www.networkedvehicle.org
31	Ontario Library & Information Technology Association	OLITA	http://www.accessola.com/olita/bins/content_page.asp?cid=64-564
32	Ontario Centre for Environmental Technology Advancement	OCETA	http://www.oceta.on.ca/
33	Ontario Technology Corridor		http://www.ontariotechnologycorridor.com//
34	Ontario Workforce Shortage Coalition		http://workforcecoalition.ca/
35	Ottawa Centre for Research and Innovation	OCRI	http://www.ocri.ca/
36	Ottawa Clean Tech		http://www.ottawacleantech.com
37	Ottawa Med Tech		http://www.ottawamedtech.com
38	Sault Ste. Marie Innovation Centre	SSMIC	http://www.ssmic.com/

APPENDICES

39	Society of Internet Professionals	SIP	http://www.sipgroup.org/
40	Software Process Improvement Network	SPIN	http://www.torontospin.com/torontospin/default.shtml
41	The Learning Partnership	TLP	http://www.thelearningpartnership.ca/
42	Wired Women	WW	http://www.wiredwoman.com/
43	Tech Alliance of Southwestern Ontario		www.techalliance.ca

		Acronym	Website
1	Alberta ICT Council		www.infoport.ca
2	Backbone		http://www.backbonemag.com/
3	Computer dealer news		http://www.itbusiness.ca/IT/client/en/CDN/Home.asp
4	Destiny Sault Ste. Marie		http://www.destinysm.com/index.cfm?fuseaction=content&PageID=1030&PageCategory=12
5	Innovators Alliance	IA	http://www.innovators.org/index.php
6	Infoport		www.infoport.ca
7	IT 360		http://www.it360.ca/
8	IT Career Guide		http://www.itcareerguide.com/index.asp
9	IT World		http://www.itworldcanada.com/
10	Quebec Technology Association	AQT	www.aqt.ca
11	Strategy Institute		http://strategyinstitute.com/dsp_about.php
12	International Institute of Communications	IIC	http://www.iic-canada.ca/english/index.cfm
13	Canadian Network for Innovation in Education	CNIE	http://www.cnie-rcie.ca/?q=node
14	Colleges Ontario Network for Industry Innovation	CONII	http://www.conii.ca/
15	nGen Niagara Interactive Media Generator		http://ngen-niagara.com/en/content/home/index/
16	Centre for Development of Open Technology		http://cdot.senecac.on.ca/
17	Endeavour Volunteer Consulting for Non-Profits		http://www.endeavourvolunteer.ca/
18	SecTor - Security Education Conference		http://www.sector.ca/
19	The Design Exchange		http://www.dx.org/
20	The NewPath Network		http://www.newpathnetwork.org/
21	Ontario Society of Professional Engineers		http://www.ospe.on.ca/index.asp
22	Professional Engineers of Ontario		http://www.peo.on.ca/
23	ACT Canada - The Stakeholder Association		http://www.actcda.com/
24	Clean Tech Corner		http://www.cleantechcorner.com/
25	One Degree	CNMA	http://www.onedegree.ca/aboutus.html
26	Canadian New Media Awards		http://www.nextmediaevents.com/cnma/

		Acronym	Website
1	Society of Canadian Women in Science and Technology (BC-based)	SCWIST	http://www.scwist.ca/
2	IEEE Canada		http://www.ieee.ca/

		Acronym	Website
1	Casual Games Association	CGA	www.casualgamesassociation.org
2	State Science & Technology Institute	SSTI	www.ssti.org
3	Technology Association of America (formerly ITAA)	ITAA	http://www.ita.org/newsroom/release.cfm?ID=3024
4	Tecna		http://www.technologycouncils.org/index.htm
5	Business Software Alliance	BSA	http://www.bsa.org/country.aspx?sc_lang=en-CA

Appendix 6

List of Government Support Programs/ Incentives

Financing Incentives

1. Applied Research and Commercialization Initiative
2. BDC Financing for Innovation
3. Canada Media Fund (CMF)
4. Canada New Media Fund
5. Canada Small Business Financing Program (CSBF)
6. Champions of Innovation
7. Collaborative Research
8. Community Futures (CF) Program
9. Community Ventures Capital Fund (CVCF)
10. Defense Industrial Research Program (DIR)
11. EDC's Export Guarantee Program in Support of SR&ED
12. EDC Equity Direct and Indirect Investment
13. EDC Export Express Credit
14. EDC Export Guarantee Program
15. EDC Project Finance
16. Global Commerce Support Program - Going Global Innovation
17. Ontario Emerging Technologies Fund (OETF)
18. Entertainment and Creative Cluster Partnership Fund
19. Export Market Access: A Global Expansion Program
20. First Job
21. Going Global Science and Technology Fund
22. ICTC Career Focus
23. Industrial Research Assistance Program (IRAP)
24. Innovation Demonstration Fund (IDF)
25. Intellectual Property Development Fund (Pilot Project)
26. Interact
27. International Strategic Opportunities Program (ISOP)
28. Investment Accelerator Fund (IAF)
29. Labour Market Partnerships
30. Mathematics of Information Technology and Complex Systems (MITACS) ACCELERATE
31. Market Readiness
32. Martin Walmsley Fellowship for Technological Entrepreneurship
33. Mass Media Initiative
34. OMDC Export Fund
35. OMDC Interactive Digital Media Fund (IDM)
36. Ontario Research Fund Research Excellence (ORF-RE)
37. Ontario Research Fund Research Infrastructure Program (ORF-RI)
38. Ontario Targeted Wage Subsidy

39. Ontario Venture Capital Fund (OVCF)
40. Proof of Concept
41. Smart II Program
42. Strategic Aerospace and Defense Initiative (SADI)
43. Strategic Jobs and Investment Fund (SJIF)
44. Strategic Project Grants (SPG)
45. Southern Ontario Development Program (SODP)
46. Summer Jobs Service
47. Sustainable Development Technology Canada
48. Technology Development Program (TDP)
49. Tandem Expansion Fund

Tax Incentives

1. Apprenticeship Job Creation Tax Credit (AJCTC)
2. Ontario Apprenticeship Training Tax Credit (ATTC)
3. Ontario Capital Tax Elimination for Manufacturing and Resources Activities
4. Ontario Business Research Institute Tax Credit (OBRITC)
5. Ontario Computer Animation and Special Effects Tax Credit (OCASE)
6. Ontario Co-operative Education Tax Credit (CETC)
7. Ontario Current Cost Adjustment (OCCA)
8. Ontario Employer Health Tax Exemption
9. Ontario Innovation Tax Credit (OITC)
10. Ontario Interactive Digital Media Tax Credit (OIDMTC)
11. Ontario New Technology Tax Incentive
12. Ontario Research Stock Option Credit (ORES0)
13. Ontario Retail Tax Exemption on R&D and Manufacturing Equipment
14. Ontario Tax Exemption for Commercialization (OTEC)
15. Scientific Research and Experimental Development (SR&ED) Tax Credit
16. Ontario Sound Recording Tax Credit
17. Computer Capital cost Allowance

Other Incentives


1. Business Mentorship and Entrepreneurship Program (BMEP)
2. BizPaL
3. Communications Research Centre Canada's Innovation Centre
4. New Exporters to Border States (NEBS)
5. Small Business Internship Program (SBIP)
6. Technology Transfer Office (TTO)

Websites for information on Ontario Government programs and services:

Invest in Ontario: <http://www.investinontario.com/>

The Ontario Business Program Guide: http://www.ontario.ca/en/business_program/index.htm

FedDev Ontario – Our Programs: http://www.feddevontario.gc.ca/eic/site/723.nsf/eng/h_00122.html



“ TORONTO HAS A GREAT POOL OF EDUCATED AND QUALIFIED PEOPLE TO SUPPORT ALL AREAS OF OUR COMPANY’S GROWTH. A TORONTO ADDRESS PROVIDES ACCESS TO INNOVATION ACCELERATOR PEOPLE THROUGH WORLD-LEADING INSTITUTES, LIKE MARS DISCOVERY DISTRICT, AND CLOSE PROXIMITY TO A NUMBER OF KEY POTENTIAL CLIENTS/CORPORATIONS THAT ARE RECOGNIZED GLOBALLY IN THEIR FIELDS. TORONTO IS A GREAT COMMUNITY TO LOCATE A HEAD OFFICE AND GENERATE R&D FOR GLOBAL COMMERCIALIZATION.

THE FEDERAL AND PROVINCIAL TAX CREDITS ARE FORWARD-THINKING, AND THERE IS AN INCREASING AMOUNT OF GRANTS AND OPPORTUNITIES AVAILABLE TO SUPPORT EARLY-STAGE GROWTH COMPANIES LOCATED HERE. THERE ARE SOME FANTASTIC GRASS-ROOTS SUPPORT AND NETWORKING OPPORTUNITIES FOR THE ICT SECTOR THAT ARE DOING AN EFFECTIVE JOB OF BRINGING INNOVATION ENTREPRENEURS AND LOCAL CAPITAL TOGETHER.»

NIALL WALLACE, CEO
INFONAUT INC. - PUTTING HEALTH ON THE MAP
[HTTP:WWW.INFOAUT.CA](http://www.infonaut.ca)

