

*- Information & Communications  
Technology (ICT) Cluster  
in British Columbia*



***LeadingEdge***  
*BRITISH COLUMBIA*

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# THE INFORMATION & COMMUNICATIONS TECHNOLOGIES (ICT) CLUSTER IN BRITISH COLUMBIA:

## OPEN FOR INVESTMENT AND PARTNERSHIPS

### Overview

British Columbia (BC) is home to a thriving ICT cluster which welcomes partnerships and investment opportunities. Not only have several leading multinationals such as Alcatel, Broadcom, Cray, eBay, Epson, Honeywell, IBM, Intel, Kodak, McKesson, Nokia and Raytheon chosen to operate facilities in British Columbia, numerous companies which have developed their world leading technologies and intellectual property locally serve global markets from their base here. Over the past few years, the growth of ICT has substantially outperformed the growth of the entire BC economy.

With over 6,000 establishments, British Columbia's ICT cluster is the province's largest technology cluster. The widespread use of the ICT cluster's enabling technologies across the province's industrial base (in forestry, mining, real estate, finance, insurance, manufacturing etc.) as well as by other high technology clusters<sup>1</sup> have positioned ICT as the largest revenue generator among BC's technology clusters. Within BC's ICT cluster, the strengths of the wireless and new media segments combined with a critical mass of companies means that they are considered clusters in their own right (detailed information on these clusters is available in separate Wireless and New Media cluster profiles). In 2004, of the BC companies on Deloitte's Technology Fast 500 List, two-thirds were from the ICT cluster.

British Columbia's ICT companies benefit from the fact that British Columbia is Canada's most wired province. Statistics Canada estimated that in 2003, BC had the highest percentage of households connected to the internet at 70.6% as compared to the Canadian average of 64.2%. As well, Canada is a significant player in the global ICT industry, with 32,000 companies providing substantial critical mass for continued growth and international expansion of the sector. The World Economic Forum in its 2004-2005 Global IT report ranks Canada as the tenth most prepared nation poised to participate in and benefit from ICT developments.

British Columbia's ICT cluster is strong across the value chain, having strengths in hardware, software and related services. Hardware strengths include advances in wireless, satellite, microwave and telecommunications networking technologies. As well the province is home to a very strong software publishing sector with special strengths in games and animation. The province's expertise in electronics and advanced manufacturing also contribute to the strengths of the ICT cluster.

### Performance & Growth<sup>2</sup>

ICT is the most geographically dispersed technology cluster in BC; over two-thirds of the companies are concentrated within the Vancouver Lower Mainland and the remaining one-third of ICT businesses are located on Vancouver Island, in the Interior of the province and in Northern British Columbia. Generating over \$9 billion in revenues in 2003, British Columbia is an important contributor to the national ICT sector, accounting for 10.4% of national ICT revenues.

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<sup>1</sup>Biotechnology, Energy and Sustainability technologies (separate brochures are available on these).

<sup>2</sup>ICT Sector Regional Report, 1997-2003, Industry Canada, ICT Branch. As defined by Statistics Canada, the ICT sector includes ICT Manufacturing and ICT Services (including Software & Computer Services & Communications Services). The sector definition also includes ICT Wholesaling, Rental & Leasing but no regional data are available for this.

Communications services are the major contributor to ICT revenues accounting for a little over half of all ICT revenues in BC. Software publishing is an especially important sub-sector in BC, accounting for 29% of software and computer services revenues in 2003, higher than in any other province (in Ontario and Alberta it accounted for 23% and 19% of software and computer service revenues respectively). In 2002, the software and computer services industries accounted for 94% of establishments, 34% of revenues and 50% of employment within the B.C. ICT sector. The software and computer services industries also accounted for the strongest employment growth rate within the ICT sector in BC between 1997 and 2003.

Major contributors to the Software and Computer Services sub-sector in British Columbia include Electronic Arts, Business Objects, Crystal Decisions, MDSI Mobile Data Solutions Inc. and Sierra Systems Inc. Electronic Arts is the world leader in games software publishing, while Business Objects publishes business intelligence solutions. MDSI is a provider of mobile workforce management software for the service industry. Sierra Systems is a systems integrator for vertical markets such as government, financial services, health care, and telecommunications.

British Columbia was the only one of Canada's larger provinces to show a positive compound annual growth rate in ICT manufacturing revenues from 1997 to 2003. As a consequence, its 6.6% annual growth rate in total ICT sector revenue from 1997 to 2003 was larger than that of Quebec, Ontario, Alberta and the Prairie provinces. British Columbia's growth in manufacturing ICT revenue from 2002 to 2003 was the highest in Canada at 13.2%. The growth in ICT manufacturing employment from 1997 to 2003 was the highest among all Canadian provinces in BC at 5.4%, reflective of the high growth rate in ICT manufacturing revenues.

Some of the main players in British Columbia's ICT Manufacturing industry include: Creo (now part of Eastman Kodak), PMC-Sierra Inc., Sierra Wireless Inc., Seanix Technology Inc. and Creation Technologies Inc. Creo caught Kodak's attention with its pioneering digital solutions for the graphic arts industry. Sierra Wireless' products include AirCard, the industry-leading wireless PC card line for portable computers; embedded modules for OEM wireless applications; and rugged modems for in-vehicle solutions. Seanix Technology is a leading Canadian manufacturer of personal computers. Creation Technologies is a global top-100 Electronics Manufacturing Services (EMS) provider and manufactures complex electronics with six manufacturing facilities. Smaller companies such as Extreme CCTV, a manufacturer of surveillance equipment show very positive growth.

Self employment was very important in BC, second only to Ontario, accounting for 30% of all employment in the software and computer services sub-sectors. The growth in self-employment in this subsector from 2002 to 2003 in BC was 9.6%.

In BC, ICT sector R&D grew at an annual growth rate of 13.8% between 1997 and 2003, the highest growth rate in Canada. Spending on R&D within the ICT sector accounted for 39% of total R&D spending in BC in 2002.

British Columbia accounted for 5.2% of Canadian ICT exports in 2003 (\$969 million) and ICT exports made up 3.3% of total exports from BC. BC's two most important ICT exports in 2003 were instruments and electronic components, contributing 30% and 27% respectively to total ICT exports. Commercial and service industry machinery, wired communications equipment and wireless communications equipment accounted for 27% of all ICT exports from BC in 2003.

### **Financing:**

The ICT cluster received over \$1.1 billion in venture capital from 1996 to 2004 as the most attractive technology cluster for financing in BC in the last 6 years. Though capital flows dropped substantially from \$342 million in 2000 to \$178 million in 2001 following the burst of the tech bubble, 2004 marked an upturn with an 80% increase in investment over 2003.<sup>3</sup>

### BC's ICT Cluster: A Few Financings and Acquisitions

Venture Financing	Digital Payment Technologies Corp. (\$2 million, 2005)
	Quadrus Financial Technologies Inc. (\$4.61 million, 2005)
	Radiant Communications Corp. (\$11 million, 2005)
	Antarctica Systems (\$4 million, 2004)
	Axonwave Software Inc. (\$8 million, 2004)
	Layer 7 Technologies Inc. (\$4 million, 2004)
	D-Wave Systems (\$11.8 million, 2003)
Public Financing	Ascalade Communications Inc. (TSX:ACG, June 2005 IPO)
	Contec Innovations (TSX-V:BUZ)
	Epic Data International Inc. (TSX:EKD)
	Extreme CCTV Inc. (TSX, EXC)
	Glentel Inc. (TSX:GLN)
	Icron Technologies Corporation (TSX-V:IT)
	Municipal Software Corporation (TSX-V:MSZ)
	Versatile Mobile Systems (TSX-V:VMS)
	Vigil Health Solutions Inc. (TSX-V: VGL)
	Voice Mobility International Inc. (TSX: VMY)
Acquisitions	Creo Inc. (Eastman Kodak Company, 2005)
	PureEdge Solutions Inc. (IBM Corporation, 2005)
	Flickr! (Yahoo! Inc., 2005)
	Schemasoft (Apple Computer Inc., 2005)
	Octiga Bay Systems Corporation (Cray Inc. 2004)
	Active State Corporation (Sophos plc, 2003)
	Pivotal Corporation (CDC Corporation, 2003)
	eXI Wireless Systems Inc. (Verichip Corporation, 2005)
	Telos Technology (UT Starcom, 2004)
	Wavemakers (Harmon International Industries Inc., 2003)
	ALI Technologies (McKesson Corporation, 2002)

## **Innovation Infrastructure**

For companies choosing to locate in British Columbia, the province boasts a strong world class educational and research infrastructure that supports both basic ICT research and commercial product development. The Double the Opportunity Initiative announced in 2002 by the provincial government aims to double the annual number of graduates in computer science, electrical and computer engineering to 1760 by 2007.

**BCNET:** BC NET provides high-speed optical network capabilities to BC's higher education and research institutions. It operates the province's first and only high-speed research and education network: the Optical Regional Advanced Network (ORAN) which provides access to CA\*net4 (Canada's national research and innovation network) and through it to global research and education networks. It also provides transit exchange services to businesses in Vancouver (VANTX), Victoria (VICTX), and Prince George (PGTX). <http://www.bcnet.ca>

**TRIUMF:** Canada's national laboratory for advanced research in particle and nuclear physics and applied science is located on the University of British Columbia campus in Vancouver and is operated by a consortium of Canadian universities. It is one of three subatomic research facilities in the world that specialize in producing extremely intense beams of particles and the heart of the facility is the world's biggest cyclotron. TRIUMF is also a centre for the practical application of this basic research: its scientists participate in developing new radiopharmaceuticals, microchips, computer software, original new designs for small cyclotrons, remote-controlled equipment, analysis of mineral samples, and many other high-tech innovations. <http://www.triumf.info>

**WestGrid:** WestGrid provides high performance computing, networking, and collaboration tools to major research and educational institutions in western Canada including the University of British Columbia, Simon Fraser University and TRIUMF. Primary components of WestGrid include high performance computing facilities (to enable large-scale parallel computing, message passing parallel computing, and naturally parallel computing); tape, disk and scalable network storage facilities; and grid services. It is intended that WestGrid's main sites be accessible in a seamless manner from anywhere in WestGrid. Similar to the TeraGrid project in the US, WestGrid is an enormously ambitious project. It will enable all aspects of computing to be grid-enabled including visualization and data management in addition to the computing itself. Over 200 researchers affiliated with WestGrid use its resources to advance their research in many fields including physics, astronomy, oceanography, healthcare and new media. <http://www.westgrid.ca>

## **Educational Institutions**

Innovative research at universities and other research institutions has been instrumental in the growth of BC's ICT cluster. University research centres and laboratories supporting the ICT cluster in BC include:

### **University of British Columbia (UBC):**

UBC's Computer Science Department is ranked among the top three computer science departments in Canada. In addition to its M.Sc. and Ph.D. in computer science, UBC offers a unique and specialized Master of Software Systems program. The Department of Electrical and Computer Engineering's graduate school offers Master's programs, a Doctoral program and currently enrolls over 200 students from many countries.

Computational research resources at UBC include two main research hubs:

- **Advanced Materials and Process Engineering Laboratory (AMPEL):** AMPEL is a multi-disciplinary research centre with participation primarily from the Departments of Chemistry, Electrical and Computer Engineering, Metals and Materials Engineering, and Physics and Astronomy, with smaller activities belonging to Chemical Engineering and Dentistry. AMPEL facilities include a nanofabrication facility, a quantum materials laboratory and a superconductivity group. <http://www.ampel.ubc.ca>
- **Institute for Computing, Information and Cognitive Systems (ICICS):** ICICS is a research institute combining the expertise of over 136 faculty members from a diverse range of fields, including Computer Science, Electrical and Computer Engineering, and Mechanical Engineering. ICICS' current faculty membership and over 700 graduate students participate in seven main research themes that include Controls, Robotics & CAD/CAM, Multimedia, Graphics, & Human-Computer Interaction and VLSI Design, & Microelectronics. <http://www.icics.ubc.ca>

### **University of Victoria (UVIC):**

ICT research at UVIC is primarily carried out at two faculty departments and one inter-disciplinary research organization:

- **Department of Electrical and Computer Engineering:** UVic offers a mandatory co-op engineering program and designs by its engineering students regularly win national acclaim. It was the first university in BC to offer Computer Engineering and in 1999 it added another first when it offered a degree program in Software Engineering. Research facilities within this department include laboratories for parallel & intelligent systems, advanced wireless communication research, and advanced computational electromagnetic research. <http://www.ece.uvic.ca>
- **Department of Computer Science:** in addition to the more traditional graduate and undergraduate offerings the department has started some innovative new programs including health informatics, geomatics and a joint degree in music and computer science. Research groups include a combinatorial algorithms group and an inter-disciplinary centre for music information and sound technology. <http://www.ece.uvic.ca>
- **Centre for Advanced Materials and Related Technology (CAMTEC):** CAMTEC is a research centre committed to interdisciplinary work on advanced materials and technology. CAMTEC coordinates related theoretical and applied research among the Departments of Biology, Chemistry, Electrical and Computer Engineering, Mechanical Engineering, Physics and Astronomy, and Earth and Ocean Sciences. CAMTEC members work in close collaboration with scientists and engineers from the private and public sectors to facilitate technological transfer to industry. CAMTEC also serves as a teaching centre involving graduate students in the latest developments and applications of materials research.

### **Simon Fraser University (SFU):**

The School of Engineering Science<sup>4</sup> at SFU offers undergraduate and graduate programs in four major areas of concentration: computer engineering, electronics engineering, engineering physics and systems engineering. The School of Computing Science at SFU is a major computer science educational and research hub, hosting more than 17 ICT-oriented computing research groups and offering programs leading to the M.Sc. and Ph.D. degrees in Computing Science. It provides students with graduate studies in the following areas: artificial intelligence, bioinformatics, computer graphics & visualization, com-

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<sup>4</sup>Further information on mobile communications research undertaken by this department is available in the Wireless Cluster brochure.

puter vision, databases & data mining, human computer interactions, computational logic, medical imaging, multimedia, natural language processing, and network communications. The school also offers a dual degree program with Zhejiang University, one of China's leading universities, in Hangzhou, China. It is affiliated with the following large research centres:

- **Centre for Systems Science (CSS):** Formed in 1986, CSS brings together SFU faculty whose multidisciplinary research applies advanced computational methods to the study of systems. Such systems range from wireless phone networks, through semiconductor alloys, genetic maps and human organs, to name just a few. Nearly one-third of CSS faculty are from computer science. <http://www.css.sfu.ca>
- **Mathematics of Information Technology and Complex Systems (MITACS):** MITACS is part of the Network of Centres of Excellence program, a Canadian government program which fosters partnerships between university, government and industry. With its administrative centre based in SFU, MITACS is the only Centre of Excellence for the mathematical sciences. It has approximately 300 scientists, 600 students and 169 partner organizations working on 27 projects, involving 48 Canadian universities. MITACS is recognized worldwide as an effective new model for research and development in the mathematical sciences. In the ICT sector, MITACS' research focuses on information processing, and communications, networks and security. Projects cover a broad range of industrial issues from efficiency, cost-effectiveness and pricing improvements in business operations to privacy-enhancing technologies. Key research applications include data mining in telecommunications, insurance and pharmaceutical industries, as well as real-time signal processing for potential use in search and rescue operations. <http://www.mitacs.ca>
- **Interdisciplinary Research in the Mathematical and Computational Sciences (IRMACS):** The IRMACS Centre is one of the most technologically sophisticated and enabling environments available to researchers in the mathematical and computational sciences. IRMACS is a reconfigurable, adaptive research facility to house research projects for varying periods, providing workspace, expert IT support and state-of-the-art computational, visualization and communications resources. A proportion of the assignable space is set aside for short-term and sabbatical visitors. 90 Apple Power Macintosh G5 computers are configured as a Beowulf style cluster super-computer in addition to being the desktop computers for the IRMACS researchers. A very high-performance (Gigabit per second, non-blocking) Ethernet network connects the entire IRMACS computing infrastructure. Currently IRMACS is providing collaborative research space for a variety of projects areas including: health informatics, signal processing, computational genomics, cryptography and computational number theory. <http://www.irmacs.ca>
- **PolyLAB:** PolyLAB is a Sun Technology and Research Excellence Centre dedicated to high powered communication—from collaborative Java-based networks to wireless and space-based communication systems. Sun Microsystems extended an academic equipment grant to The PolyMath Development Group at SFU to build the lab—one of the most powerful facilities in the world dedicated to investigating the use of computers for scientific and engineering collaboration over the network. <http://www.polylab.sfu.ca>

### **British Columbia Institute of Technology (BCIT):**

BCIT offers the Master of Technology (MTech) and High-Tech Professionals (HTP) programs. While the first builds upon an academic infrastructure of undergraduate diplomas and degrees, the second offers a wide variety of certificate-level technical and business career-augmenting courses in programming, networking, project management and business/systems analysis.

Research facilities at BCIT include:

- **Canadian Bioinformatics Resource (CBR):** Jointly established by the National Research Council (NRC), BCIT and Vitesse Canada Inc., this is Canada's first dedicated industry-oriented training and support facility for bioinformatics. This \$1.3m facility provides small-to-medium sized enterprises with

access to workshops and consulting expertise and offers industry researchers easy access to expensive supercomputers and hundreds of biotech software tools and applications. <http://cbr-rbc.nrc-cnrc.gc.ca/>

- Group for Advanced Information Technology (GAIT): develops advanced computer technologies and concepts to solve complex problems for industry clients. GAIT's advanced software development team is currently developing application level expertise in both wireless and GIS. One GAIT project is the Internet Engineering Lab:

- o Internet Engineering Lab: one of only four research centers of its kind in North America. It focuses on the design and management of advanced networks involving layer 3/4 (TCP/IP) issues including network security, conformance to standards and network performance testing and evaluation. The lab contains \$1.5 million of network hardware and test equipment capable of emulating and testing both small- and large-scale network configurations. Researchers can emulate any network configuration, ranging from small plant floor networks to complex sets of interconnected backbone nodes of the Internet. The lab is also linked to Internet2 and is a member of the Advanced Test Engineering and Measurement research consortium, made up of the University of California's San Diego Super Computing Centre, North Carolina State University, Ohio State University and BCIT. <http://www.bcit.ca/appliedresearch/gait/>

- Technology Place: A three-story building on the BCIT Burnaby campus designed to house high tech companies who require office and wet or dry laboratory space for research and development. The facility provides tenants with access to BCIT's extensive resources of faculty and student expertise, as well as equipment and lab facilities from more than 200 technical programs. The incubation of many small and medium-sized high tech companies in one building creates synergy and an optimum environment for research and development.

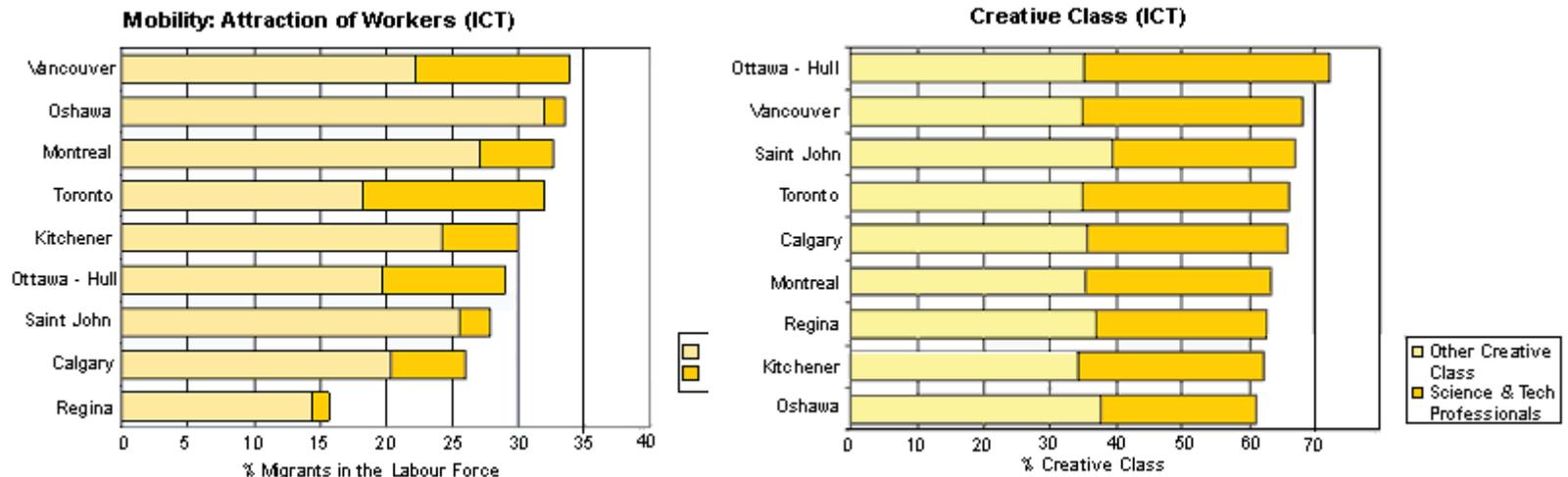
# BRITISH COLUMBIA'S ICT COMMERCIALIZATION INFRASTRUCTURE: INVESTMENT OPPORTUNITIES

British Columbia is an excellent location for ICT companies looking for investment and partnership opportunities:

- The province is home to a skilled ICT employee pool with strengths in engineering and computer sciences.
- BC's famed quality of life and natural beauty make it easier to recruit and retain skilled talent not just from across Canada and the US, but from around the world.
- The federal and provincial governments offer commercialization incentives in the form of Scientific Research & Experimental Development (SR & ED) tax credits.
- BC offers easy access to Asian and American markets
- Access to intellectual property for commercialization is easily available through university technology transfer offices. Canada offers a strong intellectual property protection regime.
- Proactive industry associations play an important role in advancing the growth of the ICT cluster in BC.

## Skilled ICT Talent

Among other Canadian cities, Vancouver competes very favourably in attracting skilled talent to its ICT cluster. Approximately 6-7% of ICT employees can work in French while there is an even greater international language capability in that 18.8% can work in various other languages.<sup>5</sup>



Source: Analytical Measures to Assess and Evaluate Clusters, Meric Gertler, Greg Spencer, Tara Vinodrai, David Wolfe, ONRIS-MEDT Joint Fall Workshop Toronto, Ontario, Canada, October 21, 2004.

For ICT companies choosing to locate in BC, a key factor in recruiting and retaining talent in British Columbia is the province's famed quality of life. BC ranks highest among all Canadian provinces in life expectancy and environmental quality.

### Commercialization Incentives

British Columbia offers innovative technology companies one of the most generous tax credit programs for scientific research and experimental development.

#### BC Tax Credits for R&D (CAD)

For example, for every \$100 spent on R&D, incentives would amount to:

Washington	\$ 10
Oregon	\$ 12.50
California	\$ 17.50
British Columbia	\$ 28

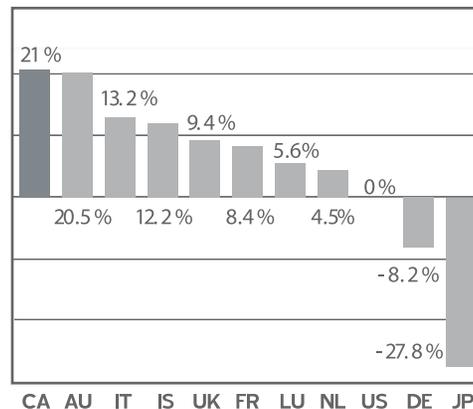
Source = Ministry Small Business  
Economic Development

#### Scientific Research & Experimental Development Tax Credits (SRED) Program

20% Federal
10% Provincial (British Columbia)

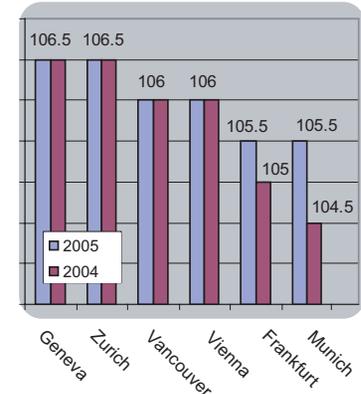
Source: [www.cra-arccg.ca/sred/](http://www.cra-arccg.ca/sred/)  
[www.rev.gov.bc.ca/itb/sred/sred.html](http://www.rev.gov.bc.ca/itb/sred/sred.html)

#### Canada's R&D Cost Advantage



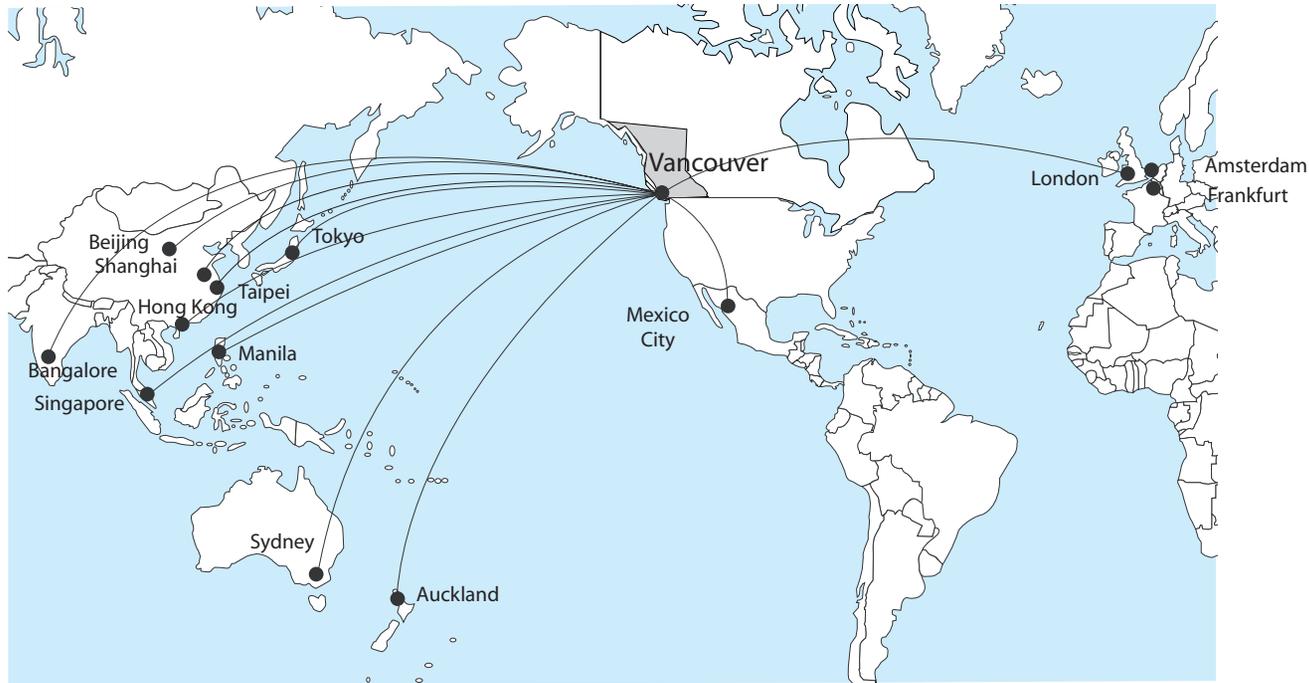
Source: KPMG 2004 Cost Alternatives

#### Quality of Life: Vancouver, BC. is 3rd in the world (New York = 100)



Source: Mercer Human Resource Consulting, 2005

Though the cluster has can be proud of its largely organic growth, larger anchor companies arrived here through acquisitions of cutting-edge technology and invested heavily in R&D and product creation facilities to serve their global markets. With its increasing commercialization focus and market-ready products, BC's ICT cluster offers numerous partnership opportunities. As well BC is a strategic location for access to the US and Asian markets.



### University Technology Transfer

University-Industry Liaison Offices or “UILOs” at UBC, SFU, UVIC and BCIT have been successful in creating many ICT spin-offs over the last two decades. UBC has been one of the most successful UILOs in Canada in forming high-technology startups. Since 1984, UBC’s UILO has spun-off 20 companies in Information Technology, representing 18% of its total spin-offs. Since its inception in 1992, the Innovation and Development Corporation at UVIC has created 13 spin-off companies in the ICT sector, approximately 55% of the office’s total spin-offs. The BCIT Technology Centre is the applied research and technology transfer office of the British Columbia Institute of Technology (BCIT). Through this Centre, BCIT conducts contract applied research and development for industry in a wide range of technical fields. At Simon Fraser University, approximately half of the 69 companies spun-off have been in the IT sector.

## Flintbox—An Opportunity to License BC technologies

An on-line platform to license early stage research results, Flintbox was initiated in 2001 by UBC Research Enterprises (a wholly owned subsidiary of UBC) and WestLink Innovation Network Ltd. It has since signed on 35 organizations from across North America and over 2,300 licenses have been issued in over 75 countries. To licence some leading technologies developed in BC visit <http://www.leadingedgebc.ca>.

## Supporting Success: Industry Associations

Industry associations have played an important role in the growth of BC's ICT cluster and support companies looking for partnership or investment opportunities in BC.

### Provincial

- **British Columbia Technology Industries Association (BCTIA)**: the largest and most influential association representing British Columbia's world-class technology industries is an industry-funded member-driven organization that has grown to over 350 member companies since its incorporation in 1993. BC TIA programs and services are designed to meet the needs of the industry in the areas of networking, education, public awareness, marketing and government relations. It also works to promote key issues such as education and training as vital components in the successful growth and development of technology. [www.bctia.org](http://www.bctia.org)
- **New Media BC**: as the primary association devoted to promoting and connecting BC's thriving digital media companies New Media BC is building the new media community locally and promoting it abroad through networking events, peer-to-peer mentoring programs, advocacy work and marketing. [www.newmediabc.com](http://www.newmediabc.com)
- **Wireless Innovation Network of British Columbia (WINBC)**: WINBC is the focal point for wireless in BC and one of the first and leading regional wireless associations in North America. WINBC provides the leadership to accelerate the growth of over 200 companies represented across the entire wireless value chain. [www.winbc.org](http://www.winbc.org)
- **British Columbia Photonics Industry Association (BCPIA)**: a cross functional industry association connecting businesses in the BC photonics industry, including suppliers, manufacturers and users of lasers, sensors, lightwave communications, spectrometry, imaging tools, robot vision, infrared and visible sources and detectors. [www.jgkb.com/bcphotonics/main.html](http://www.jgkb.com/bcphotonics/main.html)
- **BC Innovation Council (BCIC)**: by leveraging resources from federal, private and commercial institutions, BCIC supports the transfer of technology research into industry and accelerates commercialization of technology-based products for the economic benefit of BC. [www.bcinnovationcouncil.com](http://www.bcinnovationcouncil.com)

National associations such as the CATAAlliance (Canadian Advanced Technology Alliance), the Canadian Photonics Consortium, the Information Technology Association of Canada (ITAC) and the Software Human Resources Council also play an important role in advancing ICT issues at the national and international level.

## British Columbia Leaders in ICT : Company Profiles

This brochure profiles just a few of the leading firms that are leveraging BC's knowledge base and strategic location to commercialize their technology from BC. We invite your firm to draw on this expertise and ride on the momentum of this cluster to maximize your potential in the global marketplace.

The ICT cluster has been classified into the following sectors:

- *Hardware: Computer Systems; Handheld & Accessories; Networking Equipment; Peripherals & Storage*
- *Electronics: Components; Semiconductors*
- *Software & Services: ASPs & Web Hosting; Business Intelligence, CRM & Database; Development Tools, Operating Systems & Utilities; E-commerce; Engineering, Scientific & CAD/CAM; Enterprise & Productivity Applications; Graphics, Publishing & Content Management; Industrial & Institutional; Messaging, Conferencing & Communications; Networking & Connectivity; Security; Supply Chain Management, Retail & POS;*
- *Telecommunications: Broadband Carriers & Service Providers Satellite & Broadcast*

Profiles for companies specializing in Wireless and New Media are available in the brochures for those clusters.

### **Absolute Software Corp.**(TSX-V:ABT)

[www.absolute.com](http://www.absolute.com)

*Software & Services: Development Tools, Operating Systems & Utilities*

Incorporated in 1993 and public since 2000, Absolute Software is a leading provider of asset tracking and recovery solutions to Fortune 1000 companies, small and medium businesses, educational institution and government organizations. Absolute Software's patented Computrace® technology platform, optimized for remote and mobile users, enables businesses to track computer assets, deter computer loss, reduce incurred liability costs and increase productivity. Absolute's products can be delivered via the company's Computrace agent as services over the Internet or as enterprise software installed at the customer's site. Absolute Software has partnered with a number of global original equipment manufacturers, including Apple, Dell, IBM, Gateway, HP, Phoenix Technologies and Toshiba. The Absolute Recovery Team has relationships with more than 800 police departments, government security agencies and private security firms throughout North America to facilitate recovery of lost or stolen computers.

### **ACCPAC International Inc.** (Sage Software, Sage Group plc, LSE: SGE)

[www.accpac.com](http://www.accpac.com)

*Software & Services: Business Intelligence, CRM & Database; Enterprise & Productivity Applications*

British Columbia-based ACCPAC which was acquired by the Sage Group in 2004 is a provider of a suite of business management solutions for small and

medium-sized businesses (SMEs). The acquisition established Sage with a market-leading position in Canada while strengthening its position in the US market for larger SMEs. ACCPAC's businesses in Australia and South Africa complemented Sage's existing operations while its strong position in Singapore provided Sage with its first entry to Southeast Asian markets. ACCPAC's applications support the following business functions: accounting and operations, warehouse management, point-of-sale, e-commerce, manufacturing, electronic data interchange, customer relationship management, and human resource management. In addition, ACCPAC offers hosted application services through ACCPAC Online where small and mid-size businesses can select applications from ACCPAC's end-to-end business management portfolio and access these applications anytime from anywhere.

### **ACD Systems International Inc. (TSX:ASA)**

[www.acdsystems.com](http://www.acdsystems.com)

*Software & Services: Messaging, Conferencing & Communications*

Headquartered in Victoria on Vancouver Island, ACD specializes in digital image management and technical illustration software. Its globally utilized ACD™ Family of products provides users with a platform to manage, create, edit, share, and publish content for print, presentation and the web. ACD Systems' flagship products ACDSee and ACDCanvas have received numerous awards and industry recognition from leading business, technology and trade publications, corporate and photography associations, and shareware sites. ACD Systems has ranked in the Deloitte Canadian Technology Fast 50 three years in a row, one of only six companies in Canada to do so. ACD operates offices in Canada, the United States, Japan, and Switzerland. Fortune 500 Companies including Daimler Chrysler, Boeing, and NASA rely on ACD Systems for asset management and technical illustration solutions

### **Business Objects SA (NASDAQ: BOBJ; Euronext: BOB)**

[www.businessobjects.com](http://www.businessobjects.com)

*Software & Services: Business Intelligence, CRM & Database*

Ranked by IDC as the Business Intelligence (BI) tools market share leader, Business Objects develops integrated BI solutions with reporting, query/analysis and performance management functions. The company's business intelligence platform, BusinessObjects™ XI includes Crystal Reports®, the industry standard for enterprise reporting. Business Objects' 2003 acquisition of Vancouver-based Crystal Decisions positioned it as the leader in the BI industry by strengthening and completing its product line. The acquisition also increased its customer base and revenues by adding distribution channels and significant new growth opportunities. Following the acquisition, Business Objects made significant investments in its Vancouver operations which are now its largest worldwide facility and its largest research facility in the world. Business Objects boasts an impressive line-up of global partnerships with original equipment manufacturers (OEMs), value-added resellers (VARs) and system integrators (SIs), including HP, Oracle, IBM, Microsoft, SAP, CapGemini, Bearing Point and Accenture. Business Objects has dual headquarters in San Jose, California and Paris, France.

### **D-Wave Systems Inc. (TSX-V:BUZ)**

[www.dwavesys.com](http://www.dwavesys.com)

*Semiconductors*

D-Wave designs and builds superconductor-based software programmable custom integrated circuits for quantum computing systems with applications in logistics, cryptanalysis, bioinformatics, life and physical sciences, quantitative finance and electronic design automation. D-Wave was spun-out

of the University of British Columbia in 1999 with the objective of designing a quantum computer processor architecture for commercial use within the following constraints: designs that could be built with limited resources, in the short term, and with significant market opportunity. In an unprecedented collaborative R&D model, D-Wave's partners in the development of its intellectual property include theoretical physicists, chemists, electrical engineers, cryogenics experts, applied physicists, mathematicians and computer scientists. Following the proposal in 2004 of a design which met these constraints privately-held D-Wave is now focusing exclusively on developing and commercializing this processor. Over 150 patents and patent applications cover fundamental areas of quantum computation at multiple levels, from basic devices to processor architectures and end applications.

### **Eastman Kodak Company (NYSE: EK)**

<http://graphics.kodak.com>

*Hardware: Computer Systems*

Creo Inc., a leading British Columbia-based supplier of prepress and workflow systems used by commercial printers around the world was acquired by Kodak in 2005. Creo's extensive solutions portfolio is now part of the Graphic Solutions & Services (GS&S) operating unit within Kodak's Graphic Communications Group (GCG). The acquisition marked an important milestone in Kodak's digitally oriented growth strategy with the addition of a complementary portfolio of leading computer-to-plate equipment, workflow software, prepress, proofing, digital plates, scanning and image capture solutions, in addition to the highly talented Creo team. Since 1994, when Creo introduced the first high-speed commercial computer-to-plate device, the company has been the driving force behind transforming print production from analog to fully digital. With sales of \$13.5 billion in 2004, Kodak is committed to a digitally oriented growth strategy focused on Health; Graphic Communications; Digital & Film Imaging Systems; and Display & Components.

### **Extreme CCTV Inc. (TSX:EXC)**

[www.extremecctv.com](http://www.extremecctv.com)

*Hardware: Peripherals & Storage*

Extreme CCTV specializes in the design, development and manufacture of advanced infrared illuminators and precision-engineered video surveillance products. Headquartered in Burnaby, BC, Extreme manufactures its products in Burnaby and in the United Kingdom through its subsidiary Derwent Systems. In addition to its acclaimed infrared illuminators, Extreme CCTV's award-winning product line includes integrated day/night cameras, dome cameras to withstand high impact, explosion protected CCTV, all-weather/environmental cameras, Reg-ALERT™ license plate capture cameras and Special Ops cameras for use by the highest level of security end-users such as defense organizations. In addition to Homeland Security markets in the US, Extreme sells throughout the world to vertical markets including policing, transit, and intelligent transportation systems. In 2004 Extreme was ranked as the third fastest growing technology company in Canada by Deloitte and its Wireless Solar IDN Camera Kit received a Product Achievement Award at the Security Industry Association's annual International Security Conference. It is the security industry's first surveillance solution to combine the power of solar energy, night vision and wireless functionality into a single package unified through Extreme's innovative MECC™ design.

## **Fincentric Corporation**

[www.fincentric.com](http://www.fincentric.com)

*Software & Services: Industrial & Institutional*

Fincentric Corporation is a leading provider of core retail banking and customer value management software to the global financial services industry. Founded as Prologic in 1984 and renamed Fincentric in 2001, this company developed the world's first PC-platform core banking system, a technological milestone in a financial services technology market dominated by IBM, DEC and Tandem mainframes. Today Fincentric's Wealthview™ suite of integrated, customizable solutions offers banks and credit unions a single 360-degree view of the customer. The Wealthview™ suite consists of two software elements: Wealthview Banking, supporting core banking functions and Wealthview Leadbuilder, supporting customer management and the identification, attraction and retention of profitable customers. Through strategic alliances with Microsoft, HP, Intel, and other international partners, financial institutions in over 25 countries have adopted Fincentric's solutions.

## **IBM Pacific Development Centre (IBM Canada Ltd.)**

[www.ibm.com](http://www.ibm.com)

*Software & Services*

The Pacific Development Centre, an IBM Centre for e-business Innovation is an inbound solution development lab working with IBM Global Services to bring custom software solutions to the world. In fact, only 4% of the solutions produced at the Centre are for companies based in the province of British Columbia. The Centre's cross-functional team of over 300 business analysts, consultants, engineers, strategists, application designers and developers, web designers, architects, QA specialists and project managers deliver solutions for the industrial/mid market/distribution, finance, communications, travel/transportation, education and public sectors. Since opening its doors in 1997, the Pacific Development Centre has accumulated over 300 major projects in its portfolio and holds 29 patents.

## **Infosat Communications Inc. (BCE Inc., NYSE:BCE)**

[www.infosat.com](http://www.infosat.com)

*Telecommunications: Satellite & Broadcast*

Since 1986, Vancouver-based Infosat has been designing, integrating, and commissioning remote communications systems for construction, emergency, forestry, marine, mining, oil & gas, trucking, utilities, healthcare, remote communities and government. It was the first private sector provider of satellite-based telephony, fax, and data in Canada and in 1990 it designed and commissioned Canada's first digital audio mobile satellite link. As a leading satellite telecommunications system integrator and service provider Infosat offers over a dozen different satellite services and has a world class satellite network engineering and application development team to support custom solutions. Infosat's Security division specializes in the design, supply and integration of Closed Circuit Monitoring and Access Control Systems. In 2001, Infosat was acquired by Telesat Canada, a wholly owned subsidiary of BCE Inc.

### **Intrinsyc Software Inc. (TSX:ICS)**

www.intrinsyc.com

#### ***Hardware: Handheld & Accessories***

Incorporated in 1992 Intrinsyc is a mobile software and services company offering mobile software products, mobile reference systems and interoperability solutions. Its expertise is in high-end 32- or 64-bit hardware reference designs and development platforms, bridging and device management software, and engineering and design services. Intrinsyc's technology is cross-platform and supports multiple operating systems (Windows CE, .NET, Pocket PC, Smartphone, Desktop, NTE, XPE and Linux) and multiple CPU architectures (ARM, XScale, OMAP, MIPS, SHx, x86). Intrinsyc Software works with Intel at the silicon level, Symbian, Microsoft and Linux on the operating system level; SAP, BEA, JP Morgan and IBM at the Enterprise level; and a host of significant OEMs, such as Motorola, Texas Instruments, Samsung, HHP, and Schindler on the device/vertical market side. With its headquarters in Vancouver and additional R&D offices in the US and England, Intrinsyc serves primarily leading global companies such as GE, Ford, Honda, HP, Siemens, Motorola, Samsung and BEA Systems.

### **MacDonald Dettwiler & Associates Ltd. (TSX:MDA)**

www.mda.ca

#### ***Software & Services: Industrial & Institutional***

MDA is one of Canada's leading information solutions providers with unique capabilities in earth observation and digital mapping. It operates through its Information Products and Information Systems Groups. The former provides property information in the United States, the United Kingdom and Canada to lawyers, lenders and appraisers involved in the property transaction market. It also delivers geospatial services such as infrastructure planning and management, crop planning and monitoring, defence and intelligence. MDA's satellite image and data products and services are delivered around the world through its worldwide distribution rights for RADARSAT-1 and RADARSAT-2 satellite data. MDA's Information Systems Group supports the Information Products Group and provides governments and large businesses with mission-critical information systems to gather, process and distribute information. It develops solutions in three major areas: monitoring the planet, defence, and robotics. A world leader in space robotics, MDA built the famous Canadarm and Canadarm2 for the International Space Station. MDA was founded in 1969 and has over 2500 employees.

### **Maximizer Software Inc. (TSX:MAX)**

www.maximizer.com

#### ***Software & Services: Business Intelligence, CRM & Database***

Headquartered in Vancouver, Maximizer specializes in affordable customer relationship management (CRM) and contact management solutions for small to medium-sized enterprises. Maximizer develops separate products for two market segments. Maximizer Enterprise™ is an enterprise CRM and eCRM solution used by over 7,000 customers while Maximizer™, which has over a million users, is a contact management application targeted at small businesses. In addition, Maximizer provides customers with the option to include an array of 3rd party products offered by partners such as Business Objects, Microsoft, Palm, Pervasive Software and Vineyardsoft Corporation. Maximizer has a worldwide presence with business partners and offices in three regions: Americas, Europe/Middle East/Africa (EMEA), and Asia Pacific. Customers include leading companies such as Siemens, Ipsos-Reid, Nestlé Clinical, Ericsson, HSBC, Singapore Airlines, Cathay Pacific, William Mercer, and Bank of New York.

## **Navigata Communications Ltd. (SaskTel Group)**

[www.navigata.ca](http://www.navigata.ca)

**Telecommunications: Broadband Carriers & Service Providers**

With origins dating back to 1957 Navigata provides long distance, local access, data, Internet hosting, web development and phone card services (pre and post-paid) to business and residential customers in Canada as well as wholesale voice, data, and prepaid card services to wholesale customers. Navigata's distinguishing feature is its commitment to delivering superior customer service by providing 24/7 customer care (with multilingual support during regular office hours) in real time by real people. A benchmark survey by Purdue University ranked Navigata as one of the best North American-based telecom providers for the efficiency and effectiveness of its Call Centre. Navigata is strongly committed to community projects. In partnership with VCom Inc., a world-leading designer and manufacturer of wireless telecom products it will provide the primary equipment required for the city of Kamloops in British Columbia to be the first location in Canada to receive the benefits of new WiMAX technology (designed to extend local Wi-Fi networks across greater distances). Navigata is also involved in projects to bring broadband services to rural, remote regions in Northern British Columbia. Navigata is headquartered in Vancouver and has regional offices in Ontario, Alberta, and British Columbia.

## **Pivotal Corporation (CDC Corporation, NASDAQ: CHINA)**

[www.pivotal.com](http://www.pivotal.com)

**Software & Services: Business Intelligence, CRM & Database**

Vancouver-based Pivotal Corporation is the largest customer relationship management (CRM) vendor focused exclusively on the mid-enterprise market. It delivers software and services that facilitate increases in revenues, margins and customer loyalty for companies and business units in the revenue range of \$100 million to \$3 billion. Pivotal's complete CRM software suite includes a powerful application platform and capabilities in landline and mobile marketing, sales, service, contact centers, partner management and interactive selling. In addition, Pivotal is tailoring its CRM technology to include out-of-the-box capabilities for specific industry segments, such as financial services, real estate, healthcare and life sciences. More than 1,800 companies around the world have licensed Pivotal including: CIBC, Centex Homes, Farm Credit Services of America, HarperCollins Publishers, Hitachi Telecom Inc., Palm, Inc., Pharmacia Corporation, Premera Blue Cross, Royal Bank of Canada, Sharp Electronics Corporation, Southern Company, Vivendi and WebEx Communications. In 2003, Pivotal Corporation was acquired and is now the CRM division of CDC Corporation's software group, CDC Software.

## **PMC-Sierra Inc. (NASDAQ:PMCS)**

[www.pmc-sierra.com](http://www.pmc-sierra.com)

**Electronics: Semiconductors**

PMC-Sierra™ is a global provider of high speed broadband communications semiconductors and MIPS-based™ processors for service provider, enterprise, storage, and wireless networking equipment. Its MIPS Processor Division is the world's leading provider of networking processors with its pioneering 64-bit MIPS-based RISC processors claiming the strongest market share of network router control planes, network printers and network set-top boxes. PMC-Sierra is currently combining its open architecture MIPS-Powered™ processors with the Linux® operating system to create a thin client under the Open Source Network Computing initiative. The company has released PMC Xiao Hu™ Development Kits to facilitate rapid commercialization of this new open

architecture technology. A fabless semiconductor company included in the S&P 500 Index, PMC-Sierra designs and tests its products but outsources wafer fabrication and assembly functions. The company offers worldwide technical and sales support through a network of offices throughout North America, Europe and Asia. Its corporate and operations offices are located in Santa Clara, California, and Burnaby, BC, respectively.

### **QA Labs Inc.**

[www.qalabs.com](http://www.qalabs.com)

*Software & Services: Development Tools, Operating Systems & Utilities*

Founded in 1999, Vancouver-based QA Labs has become the largest independent software testing and quality assurance (QA) provider in Canada. QA Labs provides contract testing, test automation, and test planning services as well as QA process consulting and training. QA Labs tests software for high-profile organizations including Best Buy, Business Objects, Telus and the Canadian Broadcasting Corporation. Based on its five year revenue growth of 892%, QA Labs was named as one of Canada's fastest growing companies on the 2005 Profit 100 list published by PROFIT Magazine.

### **Sophos Plc (FKA Active State Corporation)**

[www.sophos.com](http://www.sophos.com)

*Software & Services: Security*

Founded in 1985, Sophos provides software to protect businesses against viruses spyware, spam and policy abuse. Over 25 million users from organizations of all sizes use Sophos solutions, which include high-performance, multi-platform protection for complex networks and 'set it and forget it' protection for small businesses. Sophos is a privately owned company with its headquarters in Abingdon (close to Oxford, in the UK) and subsidiaries and branch offices in the USA, Australia, Canada, France, Germany, Italy, Japan and Singapore. In 2003 Sophos acquired Active State Corporation, a Vancouver-based company with world class anti-spam software serving more than two million customers, including HP, Intel and Microsoft. Following the acquisition, the former Active State facility in Vancouver was expanded to become an additional North American R&D centre for Sophos, to provide local market support in Canada, and to expand Sophos' North American west coast support. The former Active State's highly regarded open source scripting language and development tools are now a separate Sophos division and continue to be sold under the ActiveState brand. Sophos' Enterprise solutions include Anti-Virus (a total multi-platform anti-virus product for servers, desktops and laptops); PureMessage (a comprehensive secure messaging solution for email gateways); and MailMonitor (software to protect email servers and gateways against mass-mailing worms and viruses).

### **Teligence Communications Inc.**

[www.teligencecom.com](http://www.teligencecom.com)

*Software & Services: Messaging, Conferencing & Communications*

Vancouver-based Teligence Communications develops interactive voice technology that enables customers across North America to converse confidentially. Established in 1990, Teligence is one of the largest privately held technology companies in British Columbia. The company has developed core capabilities in interactive-voice-response (IVR) technology, customer relationship management (CRM), real-time risk management and transactional billing systems, 24/7-network management, and direct response advertising. It focuses on niche service sectors for applications of its technology, which at present include teleconferencing/web conferencing, voice/web personals, entertainment, credit card risk management, and billing services. In September 2004, Teligence CEO Robert Madigan was named Ernst & Young Entrepreneur Of The Year® 2004 for the Pacific region.

**TELUS Corporation** (TSX:T, T.NV; NYSE: TU)

www.telus.com

*Telecommunications: Broadband Carriers and Service Providers*

TELUS is the largest telecommunications company in Western Canada and the second largest in the country with 4.8 million network access lines, 4 million wireless subscribers, earning \$7.8 billion in annual revenue. The company provides subscribers with a full range of telecommunications products and services including data, voice and TELUS Mobility wireless services across Canada, utilizing next generation Internet-based technologies. TELUS Mobility is a national provider of digital wireless voice, push-to-talk, data and Internet services. TELUS Mobility operates via two networks with a combined digital coverage of 93% of the Canadian population: nationwide PCS (CDMA) service with next generation 1X capability and Mike™, the only iDEN network in Canada that combines digital PCS phone, push-to-talk Mike's Direct Connect®, text messaging and internet access in one compact handset. TELUS Mobility services include PCS and Mike, wireless web, text and picture messaging, downloads and Wi-Fi hotspots, as well as wireless packet data services, such as next generation 1X and Mike.

**Triant Technologies Inc** (TSX:TNT)

www.triant.com

*Software & Services: Industrial & Institutional*

Founded in 1983, Vancouver-based Triant Technologies develops and sells software for equipment health monitoring and advanced fault detection. Currently, Triant is focused on the semiconductor industry, having successfully installed its flagship product ModelWare at 5 of the world's 10 largest semiconductor manufacturers (i.e. Motorola, Samsung, Hitachi, Philips, LSI Logic, Honeywell, and AMD). The software allows Triant's customers to lower manufacturing costs by improving the overall effectiveness of their wafer fabrication equipment. With established distribution partnerships in Asia, more recently Triant has partnered with Applied Materials, the world's largest manufacturer of semiconductor equipment, which has become a non-exclusive value-added reseller for Triant software in the semiconductor industry.

These are some of British Columbia's leaders. We invite you to contact Leading Edge British Columbia or visit our website at [www.leadingedgebc.ca](http://www.leadingedgebc.ca) and further explore the strategic location of British Columbia as a place open for business. Leverage our competitive cost position in North America and join us in serving world markets as a member of British Columbia's leading ICT cluster.

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