

WINNIPEG
INFORMATION AND
COMMUNICATION
TECHNOLOGIES

GROW SMARTER | WITH INNOVATION

WINNIPEG

Get connected to a dynamic cluster of information and communication technologies (ICT) firms that include telecommunications, computer systems designers, electronic component manufacturers and computer equipment providers as well as wire and cable suppliers. Winnipeg's advanced fibre optic networking and digital switching platforms support geographic information systems, health informatics, consulting services and software development.

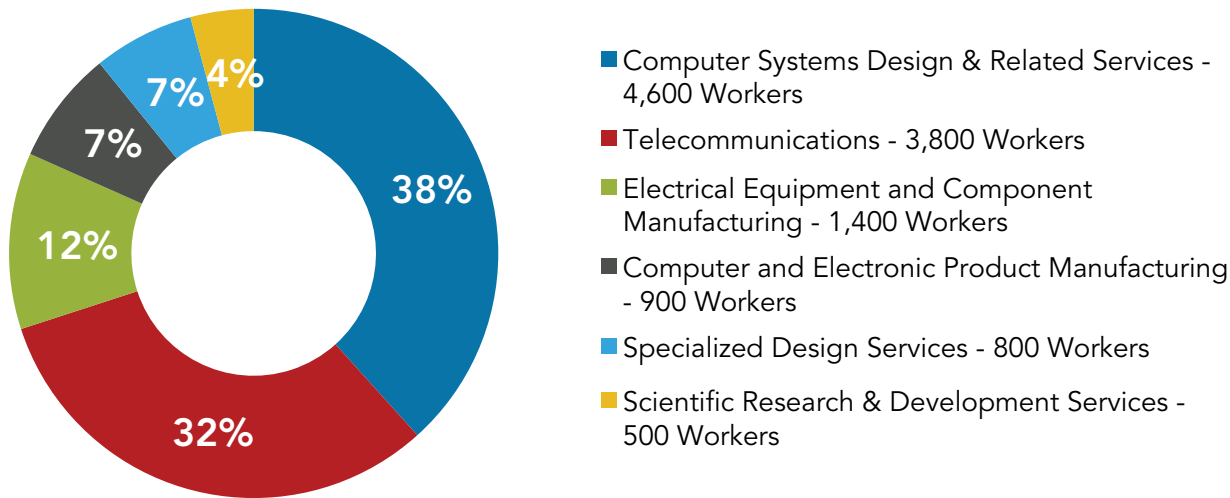
Innovation and creativity are plugged into every area of business and industry, supported by Winnipeg's economic advantages, talented professionals and telecommunications infrastructure.

Winnipeg's information and communication technologies companies are competitive in global markets. The competitively low cost of doing business in Winnipeg help ICT companies to achieve better profit margins and reinvest more of their earning toward the development of new intellectual property assets or other growth strategies. **The city's highly-skilled labour force, well-connected and innovative developer community, and world-class education infrastructure strengthen the advantages that ICT firms experience in Winnipeg.** Major ICT firms including IBM and HP Enterprise Services have centres of operation in Winnipeg and the city is the headquarters of one of Canada's largest telecommunications network providers – MTS Allstream. The ecosystem of large and small ICT firms in Winnipeg contributes to a vibrant, entrepreneurial, and diverse ICT sector that serves growth markets throughout the world.



A GROWING SECTOR

Winnipeg is the centre of Manitoba's ICT Sector. Companies in the industry earn more than \$800 million in annual revenues. Winnipeg's ICT industry is largely export-focused with firms exporting about \$200 million in ICT goods per year, in addition to service exports, which are not measured. There were about 1,100 ICT companies in Winnipeg which employed 12,000 people in 2010.



The ICT sector has experienced steady growth with **total employment increasing by 10 per cent between 2005 and 2010**. Most of the growth in Winnipeg's ICT sector is occurring in the computer systems design sub-sector, which experienced employment growth of 84 per cent between 2005 and 2010. Revenues in the computer systems design industry in Manitoba were \$438 million in 2009. Ninety-eight per cent of Manitoba's computer system design industry is located in Winnipeg, where it employed 4,600 people in 2010.

The size and growth of revenues of Winnipeg's ICT industry are difficult to estimate due to limitations in the statistical data available. In 2009, revenues of the sector exceeded \$821 million. This figure includes revenues for software publishers, computer system design, and electrical component manufacturers, but excludes revenues earned by computer and electronic product manufacturers, data processing and hosting services, specialized design, and research and development services.

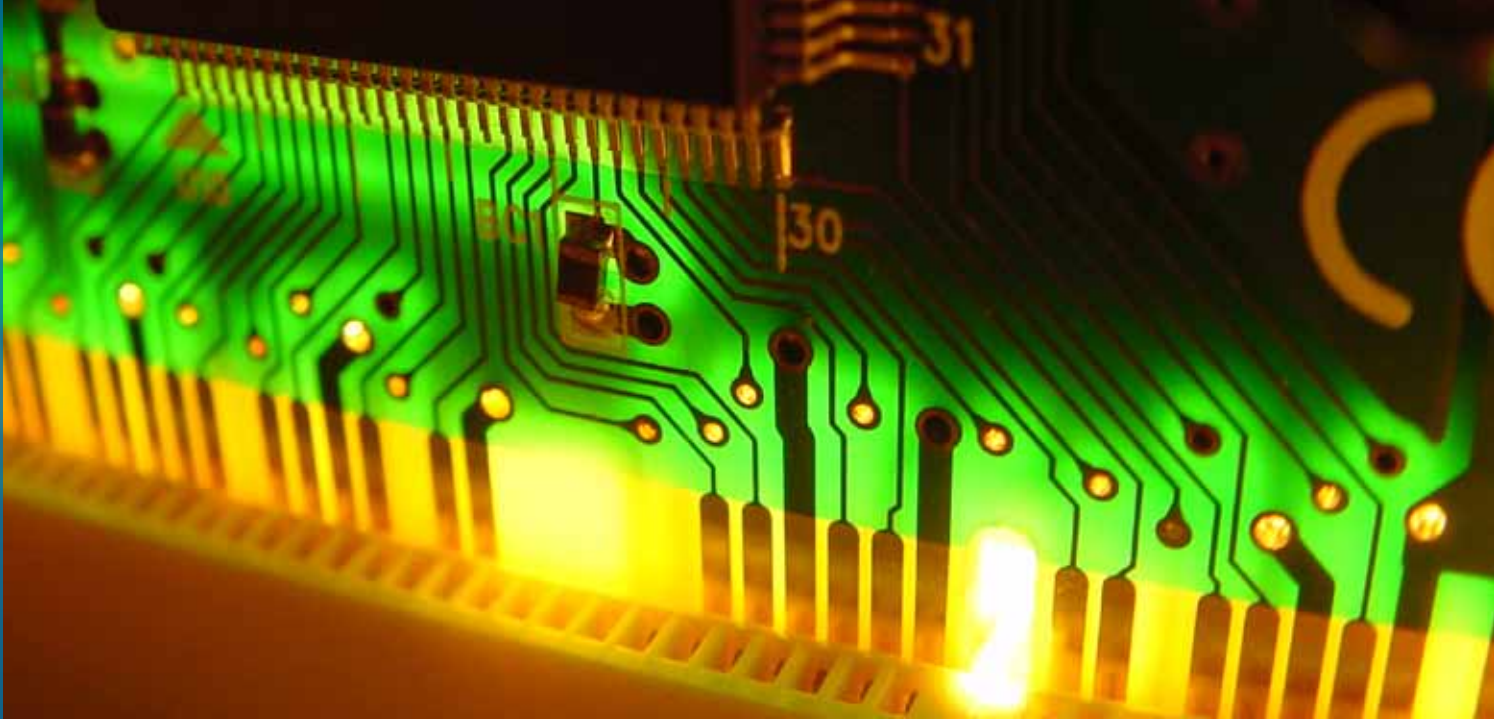
Winnipeg's ICT community also includes a highly-innovative and rapidly growing interactive digital media sector with firms active in the development of web apps, motion graphics, mobile apps and other forms of interactive digital media. Many of the firms in this industry have historical roots in advertising or motion picture production and post-production. Manitoba's advertising and film industries earned revenues in excess of \$115 million in 2009, of which a growing portion was for the provision of goods and services in interactive digital media.



WHY WINNIPEG?

“Overall, Winnipeg is a great place to be. Manitoba is a growing and fairly recession-proof economy. It has a steady economy and reasonably high number of head offices which allows us to work at a high level. We are fortunate to have high quality education in Winnipeg and if you service the world as we do, you have to have access to highly-skilled resources.”

- Loren Cisyk, IBM General Manager,
Manitoba, Saskatchewan and Northwest Ontario



IBM TOTAL WORKFORCE IN MANITOBA

400

IBM YEARS IN WINNIPEG

80+

IBM OPERATIONS IN WINNIPEG INCLUDE A FOCUS ON

- » Cloud computing and data centre operations
 - » Business analytics
 - » A smarter planet that instruments the world's systems, connects them, and makes them intelligent
-

Winnipeg is the headquarters of several major national and international firms, as well as major institutions for post-secondary education, health care and government; all with information management needs.

Because of the size of the city, it is easier to gain access to CEOs in Winnipeg than in larger metro areas.

Winnipeg offers a very high quality of education and access to a skilled workforce that helps IBM's operations in Winnipeg to serve the world.

The longevity of workers in Manitoba is much longer than other locations. Low turn-over helps IBM to reduce costs.

Lower costs of electricity in Manitoba help IBM to run a more efficient co-location data centre.



COMPUTER SYSTEM DESIGN AND RELATED SERVICES

By 2010, Winnipeg was home to 706 computer system design establishments that employed a total of 4,600 workers. Major global software and services firms with a presence in Winnipeg include HP Enterprise Services, IBM, and Oracle. The city is also home to a large community of software and systems developers with diverse capabilities including specialization in health informatics, eHealth, master data management, geomatics, security, financial software and other areas.

Some of Winnipeg's growing small and medium systems design firms include:

EISI

Epic Information Solutions

Protegra Business Technology Solutions

INTERACTIVE DIGITAL MEDIA

Manitoba is home to about 125 digital media and gaming companies that together employ a workforce of 600 developers and workers. Revenues in Winnipeg's gaming industry grew by more than 850% between 2007 and 2010.

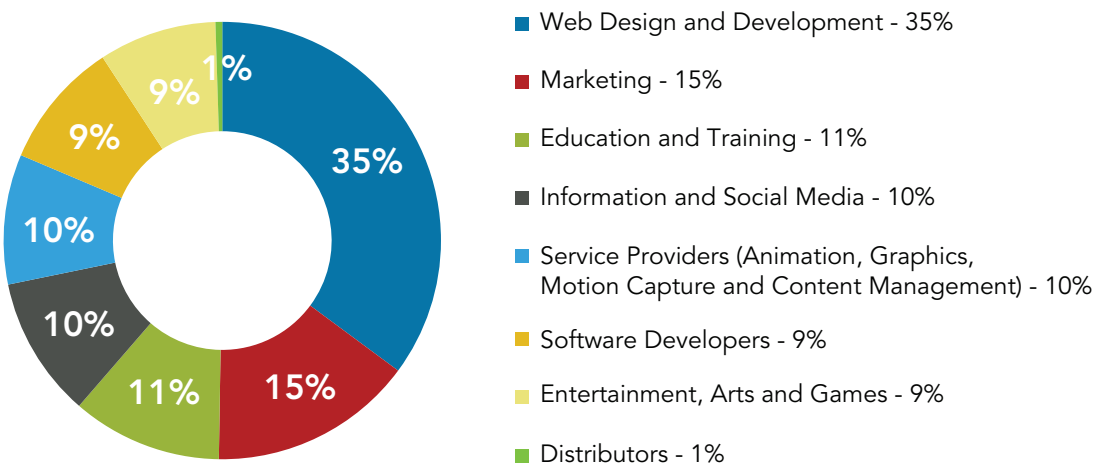
AMONG THE DIGITAL MEDIA FIRMS:

62 companies identify their primary function as new media

17 identify as gaming companies

106 companies have self-identified new media as some aspect of their business (computer-aided design/animation)

Web design and development is an important component of the interactive digital media industry in the Canadian Prairies, representing about a third of all revenues. Beyond web development and design, the sector derives revenue from a diverse set of activities ranging from marketing to education, to software development, to game development.



WINNIPEG'S GAME DEVELOPMENT CLUSTER

Winnipeg is home to a growing group of game development companies and a thriving game developer community. Many of the city's promising gaming firms are early stage companies and many are led by experienced developers. These successful small companies are actively developing their intellectual property and offer good opportunities for investment.

Interactive digital media firms in Alberta, Saskatchewan and Manitoba produce, on average, almost 10 more projects per year than the national mean with companies in the region actively involved in R&D and other innovative work.

Winnipeg is home to a cutting-edge and highly creative interactive digital media sector. The sector is highly convergent, with most firms participating in multiple interactive media market segments ranging from visual effects, motion graphics, mobile apps, web apps, games development and other areas. While many firms are service providers, working under contract for their clients, several of Winnipeg's interactive digital media firms are developing their own intellectual property and assets.

Many of Winnipeg's interactive digital media firms have traditionally offered advertising, marketing, and promotion services, while others have historical offerings in corporate information technology development. Some developers have a background in film post-production. Others still are game developers. Collaboration among and within this multi-disciplinary and converging sector has resulted in award-winning advertising, gaming, and online application products that reflect the level of expertise and the knowledge base resident in Winnipeg.





WEB APPS

There are 40 to 50 firms in Winnipeg active in the development of web applications. Leading firms include iC Group (icgrouplp.com), Protegra (protegra.com) Modern Earth (modernearth.net), Visual Lizard (visuallizard.com), ManLab (manlab.com), and Velocity Branding (velocitybranding.com). Several of these firms offer creative services, branding, design, marketing, promotions, and other related services, and serve media clients and clients across a spectrum of industry verticals.

WINNIPEG'S LEADING WEB APPS DEVELOPERS INCLUDE:

IC GROUP LP iC Group LP is a leading provider of interactive promotions, games, contests, sweeps administration, promotion risk management and insurance solutions. iC Group LP is a promotional marketing services provider operating since 1989 with offices in Chicago, Los Angeles, Toronto, Winnipeg (headquarters) and London, England. They are a trusted partner in the design and implementation of secure, high-impact promotion solutions for more than 30% of the world's top brands and leading promotion agencies. They deliver incentive solutions that create immediate impact and drive measurable results for their clients. www.icgroupinc.com

MANLAB Manlab Resources Inc. is a full service multimedia production facility. The company provides complete solutions for web design, interactive kiosk development, broadcast video, animation, and interactive CD-ROM authoring services. The firm provides full service animation production and output to film or broadcast video formats, and has a complete rendering farm and utilize Kinetix 3D Studio Max for animation development. www.manlab.com



MOBILE APPS

The global and North American markets for mobile applications have grown tremendously over the past few years and continue to do so. In-Stat, one of the world's leading market analyst firms for the mobile application market, estimates that the size of the market for mobile applications will reach \$29 billion by 2015, with more than 48 billion downloads of mobile apps in that year. Shipments of smartphones that run mobile apps are expected to increase from 23 per cent of phone shipments in 2010 to more than 45 per cent in 2015.

Winnipeg firms are active in addressing this growing global market. In December 2011, New Media Manitoba estimated that there were about 18 firms in Winnipeg that are active in development of mobile applications, with strong interest among many new media developers to expand in this well-developed but growing market. Winnipeg leaders in development of mobile applications include Tactica (tactica.ca) and Fresh Code (madefresh.ca) among others.

VISUAL EFFECTS AND MOTION GRAPHICS

Winnipeg is home to a few world-class firms with some of the world's leading expertise in visual effects and motion graphics. Opus Visual Effects, Elemental Motion Media and Systematic Design are among Winnipeg's premier players, all with experience in developing motion graphics and visual effects for major clients and major feature films throughout the world.

WINNIPEG'S WORLD-CLASS VISUAL EFFECTS AND MOTION GRAPHICS FIRMS INCLUDE:

OPUS VISUAL EFFECTS

Opus is a leading visual effects company based in Winnipeg. With over a decade of experience, the Opus team has been instrumental in the realization of numerous CG effects in projects ranging from large Hollywood productions (Avatar, Superman Returns, X-Men, Swordfish) to independent films and TV miniseries (Storm of the Century, The Big Empty). Specializing in 3D animation, digital compositing, green screen integration, SFX animation/particle work, pre-visualization and stereoscopic, the Opus team brings a vision to life on time and on budget. Skilled artists at Opus are leaders in the VFX industry with cutting-edge software to suit all needs.

www.opusvfx.com

ELEMENTAL MOTION MEDIA

Elemental provides expertise in branded content and experiences, focusing on video, interactive and emerging platforms, and motion design. Major clients have included McDonalds, United Healthcare, Manitoba Hydro, and many others across North America.

www.elementalmotionmedia.com

SYSTEMATIC DESIGN

Systematic Design is a multiple award winning studio specializing in broadcast design. From concept development to final on-air implementation, Systematic Design creates a spectrum of broadcast design productions such as network branding, station IDs, show openings, promos and commercials. Major clients have included Super Bowl 2003 and 2006, ABC News, CBC, CTV, KTSE, NBA on ABC, NBC Sports, Global TV and MBC in United Arab Emirates.

www.systematicdesign.net



HEALTH INFORMATICS

Winnipeg is home to a cluster of firms that develop products and solutions for eHealth and health informatics. Health informatics includes information technology products or services that capture, transport, convert, analyze and deliver health care related information. Manitoba is home to companies producing high quality, robust and technically sophisticated health informatics products and support services.

IMRIS, Intelligent Hospital Systems, Monteris Medical, Momentum Healthware, Maxim Software Systems, and IMT are among some Winnipeg's most successful health informatics firms.



WHY WINNIPEG?

“With close proximity to our largest market -- the United States, and a reasonable cost structure, Winnipeg continues to be a very good place for IMRIS to do business.”

- Brad Woods, Director Investor Relations, IMRIS Inc.

The low cost of doing business help IMRIS operate at attractive margins. In addition to Winnipeg’s reasonable cost of living, a high quality of life helps IMRIS attract leading global talent. Winnipeg’s diversified manufacturing sector also offers capacity to support the company’s growing assembly, integration and testing facility. Given its location at the geographic centre of North America and its well established transportation and distribution links, **Winnipeg offers a solid platform for IMRIS’s continued growth and expansion.**

Research and Development Capacity: More than a quarter of the IMRIS staff is 100 per cent dedicated to research and development. IMRIS’s historical ties to the National Research Council - Institute for Biodiagnostics (based in Winnipeg) - contributed to the company’s early development. Today IMRIS is home to one of the largest private sector image guided therapy research facilities in Canada.

WINNIPEG'S HEALTH INFORMATICS FIRMS INCLUDE:

MOMENTUM HEALTHWARE

Founded in 1995, Momentum Healthware specializes in the development, delivery, integration and support of seamless information technology software for the health care industry. Its solutions serve the information systems requirements of small to medium-sized hospitals, the continuum of long-term care facilities, and the home care sector in Canada; and the continuum of long-term care organizations in the US. Momentum's industry-compliant applications include: Electronic Health Record, Assessments, Registration, Clinical Systems, Clinical Portals, Dietary, Pharmacy, Real-Time Location, Billing, Financials, Human Resources and Decision Support Systems.

www.momentumhealthware.com

MAXIM SOFTWARE SYSTEMS

Maxim Software System's main product is dental practice management software with exclusive Dental One-Write Design. Maxim sells directly to users and provides on-going annual support contracts. Their product, MaxiDENT, has many attributes highly desired by dental professionals such as Clickable Ledger Card, Exclusive Never-Lose-A-Patient Recall and Appointment System, and MaxiCHART, which is an electronic dental charting program. Other software programs developed by Maxim include eDex, an electronic address book.

www.maximsoftware.com

INTELLIGENT HOSPITAL SYSTEMS

Intelligent Hospital Systems (IH Systems) is a medical device company that designs and develops automated solutions for the hospital environment. IH Systems's first product is RIVA, the Robotic IV Automation system. Developed from research conducted by a team at the St. Boniface Hospital Research Centre in Winnipeg in the mid-1990s, RIVA is used by hospital pharmacies to automatically and accurately prepare IV syringes and IV bags. By automating the admixture preparation, RIVA addresses the issues of safety for the patient and the pharmacy technician, efficiency and effectiveness in the pharmacy and the challenges of a changing regulatory environment.

www.intelligenthospitals.com

MONTERIS MEDICAL INC.

Monteris Medical Inc. is a medical device venture dedicated to developing new technologies for the treatment of cancers. Monteris' proprietary AutoLITT® technology employs MRI-guided, focused laser-induced interstitial thermal therapy ("the AutoLITT System") to coagulate and kill tumours.

www.monteris.com

CYBER SECURITY

Winnipeg offers tremendous research capacity to support firms in the security field. Manitoba has the highest concentration world wide of Certified Information Security System Professionals as reported by International Information Systems Security (ISC2). Manitoba also has a number of world-class research centres involved in research and development (R&D) in the area of cyber security. R&D facilities are operated by agencies at both levels of government and by the universities (particularly the University of Manitoba). All have strong linkages to the private sector at all levels – from board representation to joint ventures and fee-for-service contracts.

WINNIPEG LEADERS

Securis is an information assurance solution provider company. The company offers a variety of services including systems integration, managed security monitoring and infrastructure services, as well as training services. They help enable risk management in IT systems and environments for mid and large enterprises throughout Canada.

Securis helps support and enable businesses by addressing their particular information security needs, and the company has achieved customer successes in vertical markets which include health care, gaming, and government institutions. The company was founded in 1999 and is headquartered in Winnipeg. There are currently 65 employees who work at Securis. www.securis.com

WINNIPEG'S COMPETITIVE ICT SECTOR

ICT firms in Winnipeg are able to address multiple vertical markets because of the rich diversity of experience, expertise, and skills in Winnipeg's ICT workforce. There are a variety of high-tech employers in Winnipeg in the finance, insurance, manufacturing, life-sciences, and health care sectors. Winnipeg is home to a highly-innovative and entrepreneurial developer community, with many high-tech start-up firms that have been recognized for world-class products and quality of service. Winnipeg offers some of the lowest factor costs in North America for human capital, commercial real estate, electricity, and overall cost of living. Savings due to low factor costs help Winnipeg's companies to achieve higher margins than competitors based in other cities.

Winnipeg is one of the most cost-competitive locations for an ICT business in North America.

According to KPMG Competitive Alternatives, the costs of operating in Winnipeg are lower than any location in Western Canada or the Western US. Low factor costs help ICT businesses to invest more in developing new intellectual property, reduce their cash-burn rate, and remain competitive in a dynamic and competitive global ICT industry.

ICT companies in Winnipeg benefit from a concentration of head offices of public and private sector organizations. Winnipeg is the capital of Manitoba and the government, health care, and education industry verticals are all major consumers of ICT services. The Winnipeg Capital Region is home to the corporate headquarters of 34 of Canada's largest public companies, all with revenues in excess of \$100 million per year and combined revenues of nearly \$40 billion per year.

Winnipeg's ICT firms include leaders in many areas including: health informatics, cyber security, e-learning, financial software, wired and wireless communications, mobile applications, web applications, visual and motion graphics, games, and other forms of interactive digital media

OVERALL INDEX OF LOCATION-INTENSIVE COSTS FOR INFORMATION TECHNOLOGY FIRMS 2010, SELECTED CITIES

City	Overall Index of Location-Intensive Costs	Total Employed Labour Force
Cheyenne	86.2	43,700
Winnipeg	86.3	408,500
Halifax	86.4	221,100
Saskatoon	86.4	145,900
Regina	86.5	118,900
Montreal	88.1	1,954,200
Billings	89.0	77,700
Vancouver	89.4	1,219,600
Oklahoma City	89.7	559,800
Cedar Rapids	91.2	137,600
Toronto	92.3	2,919,400
Milwaukee	94.7	810,600
Houston	95.6	2,541,300
Detroit	97.1	1,731,700
Denver	97.3	1,190,800
Seattle	100.4	1,643,800
Los Angeles	103.0	5,150,100
San Francisco	107.0	1,879,000

“There is a parallel between our organization and a city like Winnipeg. We have a tag line: ‘People who care.’ That is a lot of what Winnipeg is about—neighbour helping neighbour.”
- Senior Executive, Investors Group

WHY WINNIPEG?

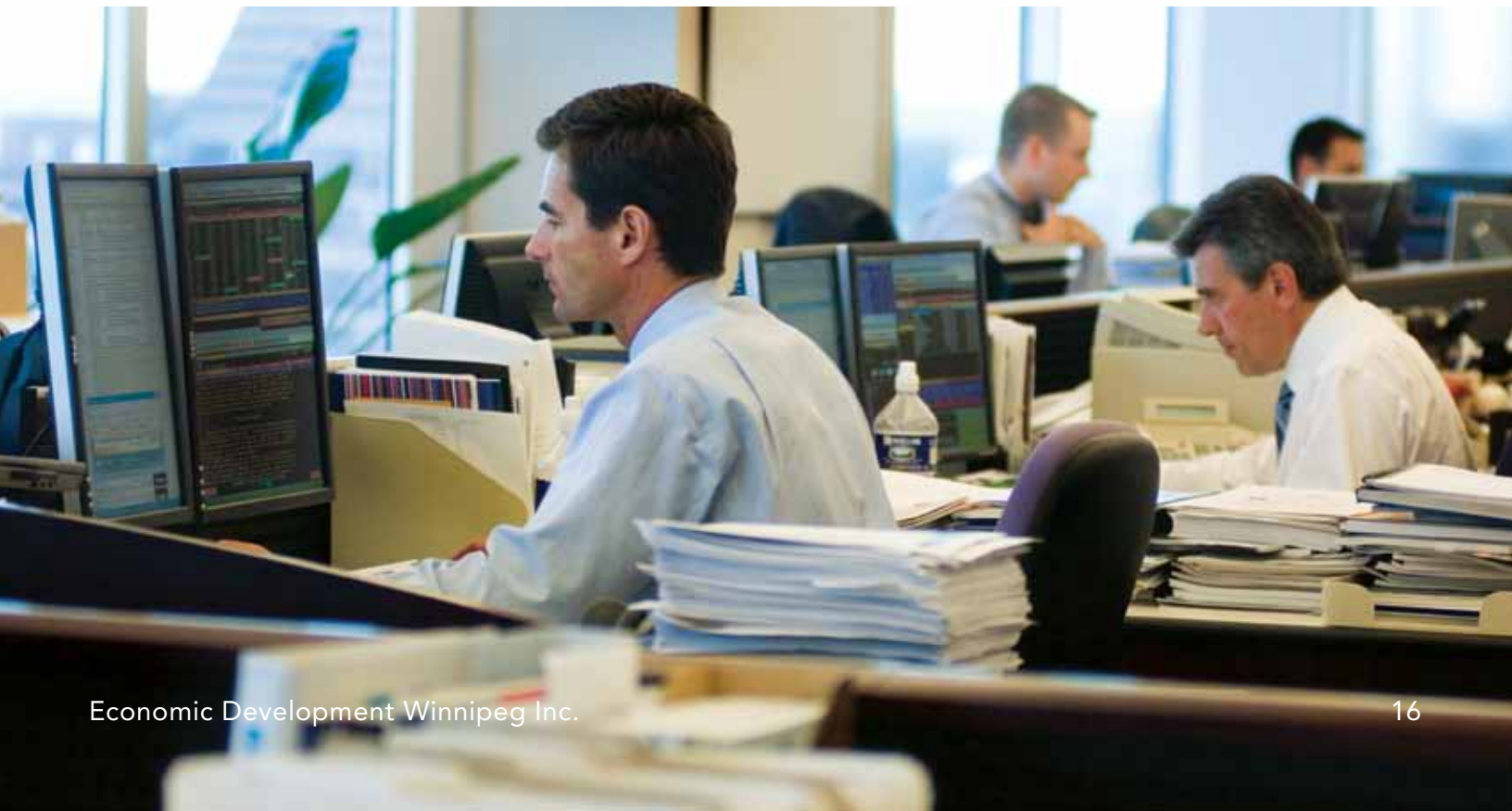
Headquartered in Winnipeg, Investors Group is one of Canada’s premier personal financial services companies, and among the country’s largest managers and distributors of mutual funds and other managed asset products, with \$62 billion in total assets under management. Benefits of locating in Winnipeg include:

Winnipeg’s stable and hard-working labour force with access to professionals in business and finance occupations

Access to state-of-the-art information and communication infrastructure and support

For a national company, Winnipeg’s central location and time zone facilitates connections with our operations from coast-to-coast

Winnipeg’s lower cost of living means that resources can go further



“There is a huge cost difference in Manitoba and that is one reason why we are here. Our production costs are significantly more competitive than pretty much any other major centre in Canada.”
- Noah Decter-Jackson, Co-Founder and President, Complex Games

WHY WINNIPEG?

Lower costs of operations have helped Complex Games to devote more resources to invest in the firm’s intellectual property. Currently about 25% of the studio’s resources are allocated to internal projects that build the company’s products.

Complex Games benefits from the development of talent in Manitoba, hiring graduates from the 3D imaging program at Red River College.

Since 2006, Complex Games has grown from a studio of two developers to a studio of 12.

The firm also benefits from Manitoba’s Digital Media Tax Incentive.

Based in Winnipeg, Complex Games is an independent game development studio and one of the city’s premiere interactive development firms. Since its inception in 2002, it has worked with established brands and companies focusing on providing interactive design in a variety of fields.



WINNIPEG'S ICT LABOUR SUPPLY

Winnipeg offers a diverse supply of more than 22,000 employees in specialized ICT occupations, more than 76,000 workers in business, finance, and administrative occupations, and more than 1,100 technical sales specialists. The city has a labour force of nearly 400,000 workers.

A Productive, Stable and Cost-Effective Labour Force

Winnipeg offers a supply of hard-working and stable professionals, technicians, and other manufacturing employees. Low attrition rates help Winnipeg's ICT firms reduce costs related to workforce turn-over and knowledge loss. On average, Winnipeggers work more weeks than workers in any other major city in Canada.

Because of the lower cost of living, wages in Winnipeg are among the most competitive of any major city in Canada. On average, wages for ICT companies in Winnipeg are 11 per cent lower than the Canadian average.

TELECOMMUNICATIONS

Winnipeg's telecommunications sub-sector is comprised of 81 firms in wired and wireless communication, data processing, hosting, Internet publishing and related activities. There are 3,800 workers employed in the sector. Winnipeg's telecommunications sector is anchored by MTS Allstream, one of Canada's largest telecommunications firms.

Telecommunications companies that are active in Winnipeg include:

MTS ALLSTREAM is one of Canada's largest business telecommunications providers by market share, employing more than 5,500 workers across Canada including 3,000 in Manitoba. The company has invested more than \$200 million over the past 10 years to ensure that Manitoba's broadband networks are second-to-none in North America. The Allstream business unit works exclusively with businesses of all sizes and currently has a customer base of more than 65,000 businesses - large, mid-sized and small – across Canada.

SHAW GROUP TELECOM (GT) – GT Broadband services are available in Manitoba in Winnipeg, Brandon, Selkirk, Steinbach and Portage la Prairie. GT has a large fibre optic infrastructure network in Winnipeg that supports their cable installations.

BELL CANADA – Bell's portfolio of value-added network and business applications offers a full spectrum of information and communications technology solutions for Manitoba businesses.

TELUS – Telus provides flexible bandwidth solutions, from national private line to managed wavelength services through its national fibre Internet Protocol (IP) backbone network.

DirectPC (TELESAT) – DirectPC offers wireless services in many areas of Manitoba, in the range of 400 Kbps for download.

WORLD-CLASS HIGH-SPEED NETWORK CONNECTIVITY 24-7

Winnipeg companies have access to a variety of high-quality, fully redundant high-speed networks. MTS Allstream, headquartered in Winnipeg, is one of Canada's largest high-speed business network providers by market share. In addition to MTS, there are a variety of local high-speed wired and wireless network providers in Winnipeg. For super-high speed requirements, the Canadian Advanced Networks for the Advancement of Research in Industry and Education (CANARIE), through its Manitoba affiliate MRnet, offers members access to a Canada-wide high-speed optical network delivering unrivalled network capability for broadband research.

ALLSTREAM IP NETWORK



ALLSTREAM NETWORK CAPACITY:

DWDM/Sonet backbone spans from coast to coast, offering access services from DSx to 10G with round-the-clock support.

Service-guaranteed Wavelength solutions via pre-built, cross-border intercity routes, including Toronto-Buffalo, Vancouver-Seattle and Toronto-Chicago.

High-performance, secure, and dependable business communications from coast to coast. A 30,000 km fibre-optic backbone combines advanced IP connectivity, digital switching, Ethernet-featured services and the latest security technologies. An end-to-end IP infrastructure ensures exceptional quality of service between metropolitan centres across Canada.

4G wireless network is available throughout 97% of the province of Manitoba.

MANITOBA REGIONAL ADVANCED NETWORK (MRnet)

The Manitoba Regional Advanced Network (www.mrnet.mb.ca) offers a reliable, high-speed communications network to its member institutions with no costs associated to the amount of traffic generated. MRnet was founded in 1995 as an incorporated not-for-profit consortium of private and public sector research and development organizations dedicated to the development and advancement of research and education (R&E) based high-speed networking and network applications. MRnet receives in-kind contributions and annual fees from its members as well as funding provided by the Canadian Network for the Advancement of Research, Industry and Education (CANARIE, also a not-for-profit corporation supported by its members, project partners, and the federal government) and from the Province of Manitoba. MRnet's role and mandate is the advancement of high-speed research and education networking infrastructure and applications in Manitoba.



SUPPORTING INSTITUTIONS FOR RESEARCH, DEVELOPMENT AND COMMERCIALIZATION

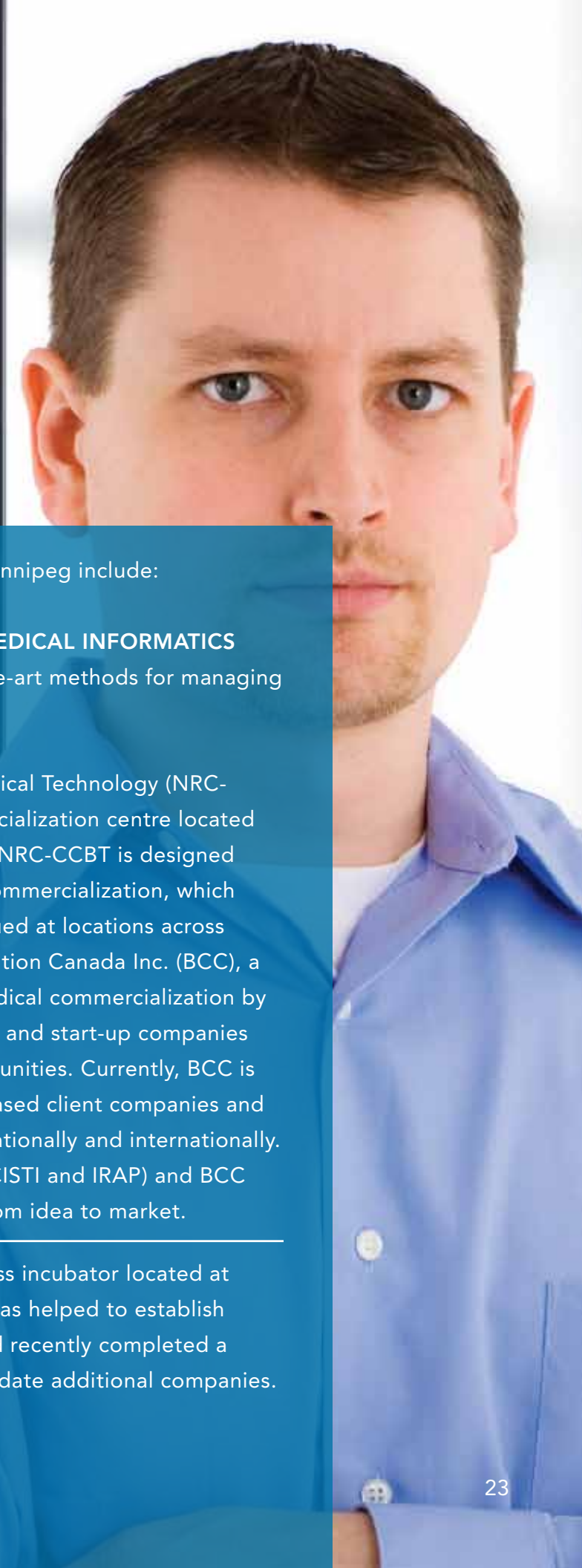
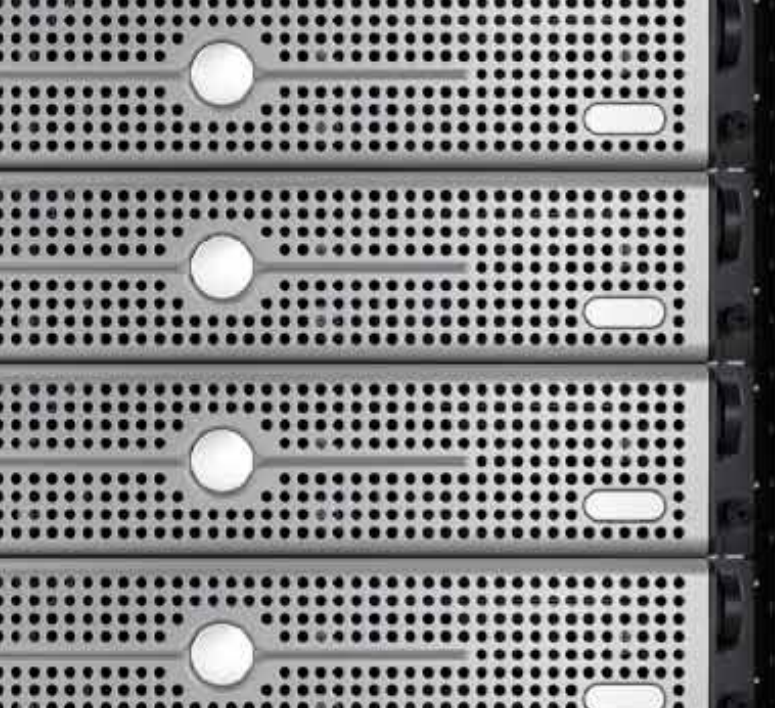
Winnipeg's ICT industry is supported by world-class R&D facilities providing ICT innovation and technology diffusion. Major ICT applied research organizations in Winnipeg include:

TRLabs is Canada's largest not-for-profit information and communications technology research consortium. TRLabs Winnipeg was established in 1994 and employs 58 people in the area of data networking and research aimed at improving the speed, reliability and efficiency of the communications network. TRLabs creates innovative technologies and trains students to enhance ICT expertise and improve Canada's global competitiveness.

THE UNIVERSITY OF MANITOBA regularly undertakes research collaborations with industry, government and other academic institutions. The U of M is at the forefront of R&D in a number of ICT areas. The U of M Internet Innovation Centre actively partners with Winnipeg ICT companies to develop cutting-edge Internet applications and technologies. The centre is actively working with Winnipeg companies on projects for health informatics, tele-robotics, wireless sensor networks, Internet security, and other topics. The U of M Industrial Technology Centre (www.itc.mb.ca) includes a Virtual Reality Centre that provides easy access to the most advanced 3D visualization tools and expertise. The U of M Scanning Probe Microscopy and Nanofabrication Laboratory is a leading facility in Canada with R&D capacity in probe microscopy, micromachining and nanofabrication, semiconductor manufacturing, and high frequency microelectronics and microwave circuit testing.

RED RIVER COLLEGE'S APPLIED RESEARCH AND COMMERCIALIZATION (AR&C) DEPARTMENT supports applied research, knowledge transfer, prototyping, product development, testing, and commercialization. The office helps business and industry access RRC's expertise to arrive at practical, innovative solutions that deliver results. Information/communications technology and digital multimedia are among the applied research focus areas for AR&C.

THE UNIVERSITY OF WINNIPEG has two departments conducting ICT research – the Department of Applied Computer Science and the Department of Geography. Within the Applied Computer Science department, there are several active research groups including the Quantitative Software Engineering Group and the Distributed Computing Systems organization. The GIS Laboratory of the Department of Geography focuses on analyzing the socio-economic impacts of climate change in central Canada.



Organizations supporting ICT commercialization in Winnipeg include:

THE NRC INSTITUTE FOR BIODIAGNOSTICS' BIOMEDICAL INFORMATICS GROUP is focused on the development of state-of-the-art methods for managing complex biomedical data.

The NRC Centre for the Commercialization of Biomedical Technology (NRC-CCBT) is an almost 69,000 sq. ft., \$12 million commercialization centre located adjacent to the NRC Institute for Biodiagnostics. The NRC-CCBT is designed as a model for public-private sector partnerships in commercialization, which is a key element of NRC's cluster strategy being pursued at locations across Canada. The centre houses Biomedical Commercialization Canada Inc. (BCC), a non-profit organization dedicated to nurturing biomedical commercialization by providing resources to help innovators, entrepreneurs and start-up companies create science and technology-based business opportunities. Currently, BCC is mentoring a number of biomedical and technology-based client companies and has forged relationships with the biomedical sector nationally and internationally. The collaboration between NRC partners (NRC-IBD, CISTI and IRAP) and BCC has created a pipeline to take research innovations from idea to market.

THE EUREKA PROJECT is a leading high-tech business incubator located at Smartpark at the University of Manitoba. The centre has helped to establish some of Winnipeg's successful high-tech start-ups and recently completed a \$3.2 million expansion of its office space to accommodate additional companies.



KEY RESEARCH INSTITUTIONS SUPPORTING CYBER SECURITY

THE UNIVERSITY OF MANITOBA (U OF M)

The University has a long tradition of research excellence in the fields of engineering and information technology/sciences. The university operates six research labs that perform research related to security. These labs are part of two departments at the University of Manitoba: computer science and engineering.

- » Advance Network Research Laboratory
- » Autonomous Agents Laboratory
- » Human Computer Interaction Laboratory
- » Advance Radio Frequency Systems Laboratory
- » Applied Electromagnetics Laboratory
- » Robert Allen Kennedy Laboratory for Communications Systems Research

U of M also hosts the Internet Innovation Centre.

THE MANITOBA INFORMATION PROTECTION CENTRE (IPC)

The Manitoba Information Protection Centre (IPC) represents a national model for public sector information protection. Manitoba was the first provincial government to establish an organization dedicated to information protection. Established in 1999, Manitoba's IPC ensures that government networks remain open, secure, accessible and reliable. The IPC provides leadership in the area of information protection both within the government and to the private sector through its supporting role with the Information Protection Association of Manitoba (IPAM), now part of ISACA Winnipeg, an organization whose goal is to foster the sharing of security related information amongst business and government organizations.

The IPC is responsible for providing a number of services as part of the overall security program that includes:

WINNIPEG'S HIGHLY-INNOVATIVE AND ENTREPRENEURIAL ENVIRONMENT

Winnipeg based ICT firms have been recognized for their creativity, quality of technical execution and entrepreneurial success. Developers in Winnipeg are active in fields as diverse as energy management, cyber security, mobile medical imaging, e-learning, and other fields.

Some of Winnipeg's leading innovators include:

INVENIA (www.invenia.ca) has been awarded the prestigious Canadian Youth Business Foundation Award for "Most Innovative Business in Canada." Invenia has created an Energy Intelligence System (EIS) with the potential to make sources of renewable energy more affordable while significantly reducing CO2 emissions worldwide. The unique, self-learning, artificial intelligence software has exceptional capabilities in forecasting, pattern recognition and optimization, particularly for the electric power industry, where it has been applied to wind operations and other renewable energy sources.

The founder of Winnipeg's leading cyber security firm, **SECCURIS** (www.seccuris.com) was awarded Ernst & Young Entrepreneur of the Year® 2010 Prairies. The firm has grown from three employees to 65 employees over its 11+ year history.

Winnipeg-based start-up **IMRIS** (www.imris.com) was awarded the Federal Partners in Technology Transfer Award for "the successful development, transfer and commercialization of a mobile MRI system for neurosurgical operations." The mobile system, a world first, is saving lives while reducing post-surgical complications, patient wait times and overall health costs.

TECHNOLOGIES FOR LEARNING GROUP (TLG) (www.tlg.ca) is an innovative full service e-Learning company providing learning management software, content development solutions and technology and systems design and integration. Products and services are geared specifically for certification organizations and corporate training initiatives. TLG integrates technologies and traditional learning principles to create learner-centred systems and applications that facilitate learning in a digital environment. TLG's e-Learning system is built on a systematic process driven approach to organizational development and workforce effectiveness.

DIVERSIFIED ECONOMIC GROWTH SUPPORTS ICT

Winnipeg's diverse economic base and stable growth make the city an ideal place for growing ICT companies. Winnipeg has one of the most diversified economies in the world. The well-balanced economy has experienced stable growth over the past several decades and Winnipeg's location in the Central Time Zone, bilingual workforce, and access to the Mid-Continent Trade Corridor, have long made the city an attractive place for investment.



The diversity of the local economy is a benefit for smaller and mid-sized ICT companies. It offers a wide range of customers with opportunities to serve a variety of industry verticals. In Winnipeg, employers have access to an IT workforce with a depth of experience within a large number of industry verticals.

LOWEST ELECTRICITY RATES IN NORTH AMERICA

Companies that are large and medium-sized consumers of electricity can experience significant savings by establishing their operations in Winnipeg. Winnipeg offers the lowest published electricity rates in North America.

According to the 2010 annual *Comparison of Electricity Prices in Major North American Cities*, published by Hydro Quebec, Winnipeg offers the lowest cost of electricity of major metro areas in the US and Canada. Compared to Winnipeg, the cost of electricity for a mid-sized electricity user (2,500 kW of power demand, 1,170,000 kWh consumption and 65% load factor) is 9 per cent higher in Calgary (AB), 27 per cent higher in Vancouver (BC), 34 per cent higher in Montreal (QC), 80 per cent higher in Edmonton (AB), and more than twice as expensive in Toronto (ON), Halifax (NS), Moncton (NB), and Charlottetown (PE). Compared to cities in the US, the cost of electricity is 6 per cent higher in Houston (TX), 11 per cent higher in Seattle (WA), 68 per cent higher in Detroit (MI), 76 per cent higher in Nashville (TN), and more in other cities. For companies that are very large consumers of electricity, the savings are even greater.

A FRIENDLY AND WELL-NETWORKED COMMUNITY

Winnipeg's size is an advantage. The city is large enough to offer a critical mass of world-class talent and small enough to support a highly-networked community. Winnipeg is known for its friendly and helpful people. The city's small-town charm is a benefit to ICT companies in Winnipeg where they can easily gain access to top decision makers and network with clients, partners, and suppliers.





WORLD-CLASS EDUCATION AND TRAINING

Winnipeg is home to two world-class universities, the University of Manitoba and the University of Winnipeg as well as the province's leading applied sciences college, Red River College. Over 42,000 students are currently enrolled at the city's post-secondary learning institutions, giving Winnipeg a diverse supply of young, highly educated and highly skilled workers. In addition to formal post-secondary education, ongoing training is offered through ICTAM and New Media Manitoba.




UNIVERSITY OF MANITOBA

THE UNIVERSITY OF MANITOBA is the province's largest university with over 20 faculties which educate students in the areas of business, science, engineering, applied mathematics, and other ICT-related programs of study. The university is comprised of a faculty and staff of 8,000 and offers educational programs to more than 26,000 students.

COMPREHENSIVE ICT EDUCATION PROGRAMS

The Faculty of Science offers degree programs in areas such as computer science, computer science with an emphasis on mathematics, applied mathematics, and actuarial mathematics. Computer science degrees at the university are accredited by the Canadian Information Processing Society's (CIPS) Computer Science Accreditation Council (CSAC).



The Faculty of Engineering's Department of Electrical and Computer Engineering is responsible for two undergraduate programs in computer engineering and electrical engineering, with more than 250 students. The department is also very active in graduate-level education and research with more than 50 Ph.D. candidates and more than 120 students pursuing the M.Sc. degree. Co-op options allow students to gain work experience prior to graduation. Enhanced by partnerships with entities such as TRILabs, and guided by world-renowned researchers, there are many research opportunities for University of Manitoba graduate students.

The Asper School of Business is a full service business school educating undergraduate students in the fields of management information systems (MIS), accounting, management, finance, statistics, economics, actuarial mathematics, human resources, and many other areas critical to functioning in today's business environment. Students completing undergraduate studies at The Asper School of Business receive a bachelor of commerce degree in their chosen field of study. The school also offers post-graduate master's of business administration, master's of science in management, and a Ph.D. program.

University of Manitoba offers the ICT industry creative talent through the School of Art, Western Canada's oldest art institution. Founded in 1913 as the Winnipeg School of Art, plans are underway to develop a 70,000 sq. ft. stand alone facility that will give students and faculty access to digital technologies and upgraded space for collaboration, experimentation and research, including animation and advanced computer-aided expression.

To learn more, visit: www.umanitoba.ca

Economic Development Winnipeg Inc.

UNIVERSITY OF WINNIPEG

Consistently ranked in the **top 10 in the country** by both Maclean's magazine and The Globe and Mail newspaper, the **UNIVERSITY OF WINNIPEG** is a leader in academic excellence. More than 10,000 undergraduate and graduate students attend courses at the University of Winnipeg, which employs a faculty and staff of more than 700.

APPLIED COMPUTER SCIENCE

The University of Winnipeg's Faculty of Science offers programs in applied computer science, engineering and other physical and life sciences fields. The applied computer science degree is available with emphasis in two streams: information systems and health informatics. The information systems (IS) stream is aimed at students interested in focusing on the information and business needs of the IT industry, while the health informatics (HI) stream provides students with more focused courses in health information needs, infrastructure, standards, and jurisdiction. The university also offers undergraduate business programs through the Faculty of Business and Economics, and additionally offers several master's degree programs that lead to a master's of science in applied computer science and society and a master's of science in technology.

The Faculty of Business and Economics has recently moved to a new state-of-the-art, eco-friendly, four-storey building at one of downtown's most important corners, the new Buhler Centre on Portage Avenue. This 50,000 sq. ft. modern facility was a \$15 million joint venture between the University of Winnipeg and the Plug In Institute of Contemporary Art. The building includes sky-lit lounges and terrace space, restaurants, 12 SMART classrooms and four additional computer labs, two additional seminar rooms, art exhibition spaces, and many other amenities which appeal to a wide audience of students.

For more information, visit: www.uwinnipeg.ca





RED RIVER COLLEGE

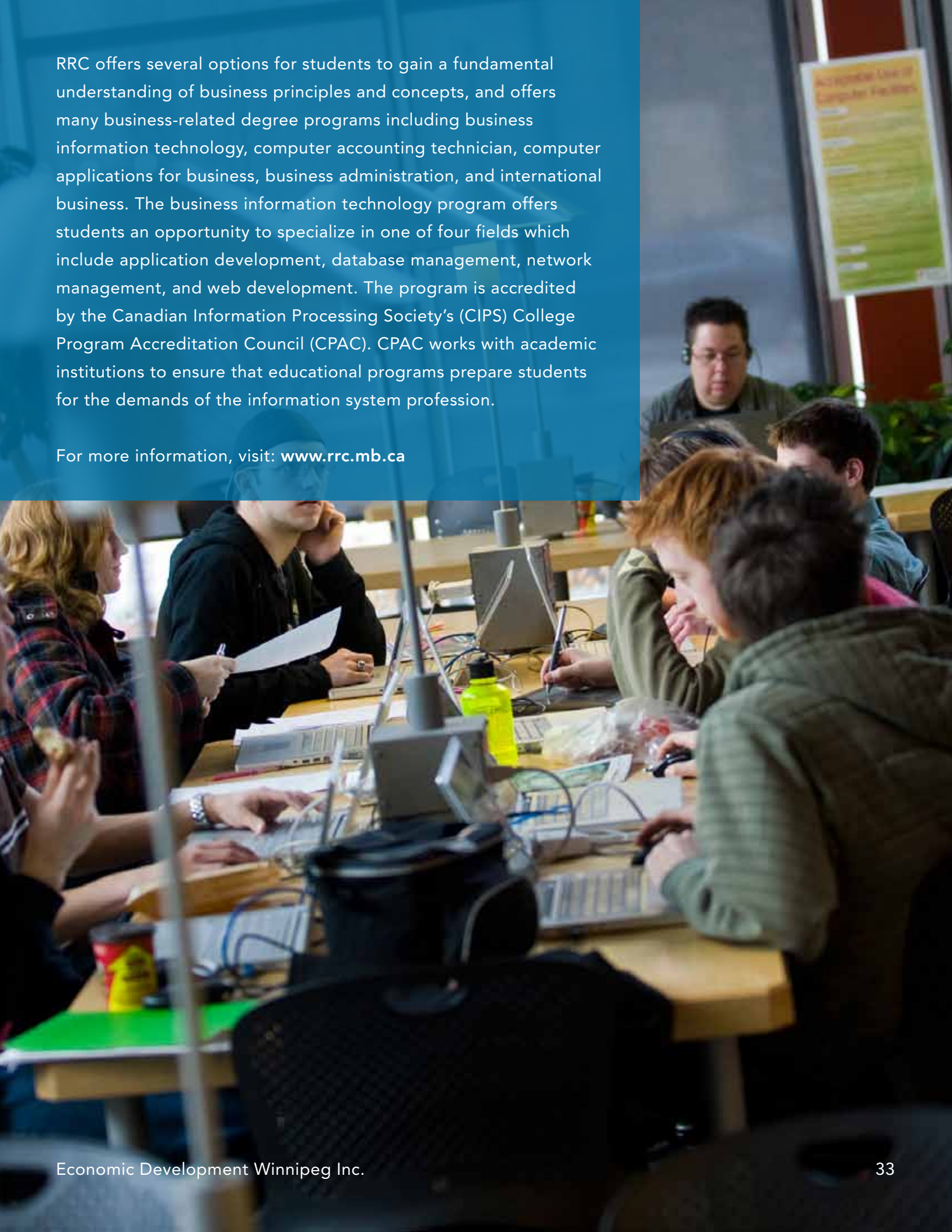
RED RIVER COLLEGE (RRC) is Manitoba's largest institute of applied learning with 32,000 enrollments across more than 110 programs. RRC works closely with industry and employers to ensure that graduates have the right skills and knowledge to contribute successfully in the workplace. Successful partnerships have helped graduates to achieve a 97% graduate employment rate.

RED RIVER COLLEGE NEW MEDIA DESIGN PROGRAM

Winnipeg's Red River College offers both a two-year diploma and a one-year post-graduate diploma in new media design. The program offers three majors: web design, 3D animation, and video and motion graphics. The program provides up-to-date training in web design and development, digital video, 3D animation, motion graphics, and graphic design. It teaches both design fundamentals and technical skills, and encourages creativity, imagination, professionalism, and a strong work ethic. Graduates from the program are able to design and build websites, shoot and edit digital video, create professional motion graphics, and construct complex 3D models and animation. To learn more about this program visit the digital media design department website at dmt.rrc.mb.ca.

RRC offers several options for students to gain a fundamental understanding of business principles and concepts, and offers many business-related degree programs including business information technology, computer accounting technician, computer applications for business, business administration, and international business. The business information technology program offers students an opportunity to specialize in one of four fields which include application development, database management, network management, and web development. The program is accredited by the Canadian Information Processing Society's (CIPS) College Program Accreditation Council (CPAC). CPAC works with academic institutions to ensure that educational programs prepare students for the demands of the information system profession.

For more information, visit: www.rrc.mb.ca



SUPPORTING PROFESSIONAL AND INDUSTRY ASSOCIATIONS

Winnipeg is home to a number of professional associations and industry groups which have an interest in growing the ICT sector in Manitoba. As the capital of Manitoba, Winnipeg is also home to several government organizations that play an integral role in developing the ICT sector.

The **INFORMATION AND COMMUNICATION TECHNOLOGIES ASSOCIATION OF MANITOBA** (ICTAM) is an industry-focused association representing Manitoba's ICT sector. ICTAM's constituency is broad-based encompassing vendors, consumers, government, education, chambers of commerce and sector councils. Their goal is to accelerate the growth, prosperity and sustainability of the industry through relevant programming, advocacy and collaboration. www.ictam.ca

NEW MEDIA MANITOBA (NMM) is a professional association providing training, advocacy, and networking opportunities for the Manitoba new media industry. Comprised of more than 400 members, NMM is a common ground for people seeking to make connections, learn, and collaborate on new media projects. Training events have included Internet application development, convergence media workshops, new media workflow, visual effects, new media business training, and video game design. newmediamanitoba.com

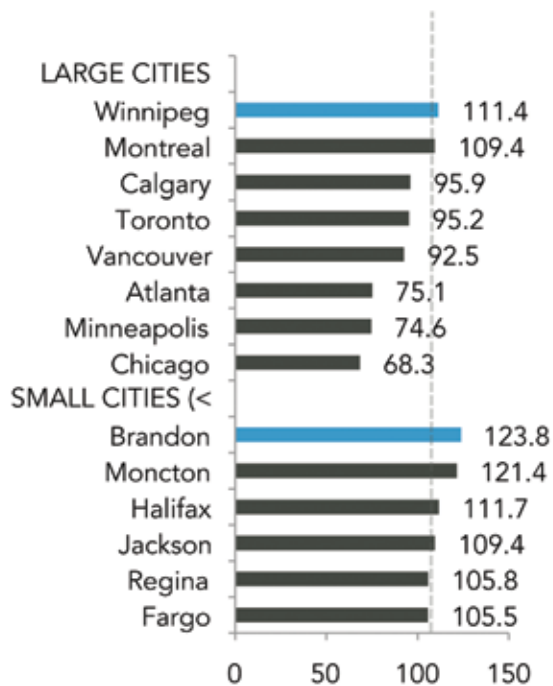
THE MANITOBA CUSTOMER CONTACT ASSOCIATION (MCCA) is an association consisting of companies, organizations and agencies engaged in the operation of a customer contact centre or interested in this type of business. MCCA offers benefits such as information and knowledge about industry trends and challenges, best practices, industry certification and training to agents, supervisors and management in the contact centre industry. www.mcca.mb.ca

THE ADVERTISING ASSOCIATION OF WINNIPEG is a not-for-profit association that proudly supports Manitoba's advertising, marketing and graphic design communities. The association encourages discussion and idea exchange, promotes best practices and supports the community through social functions and educational programs. www.adwinnipeg.com

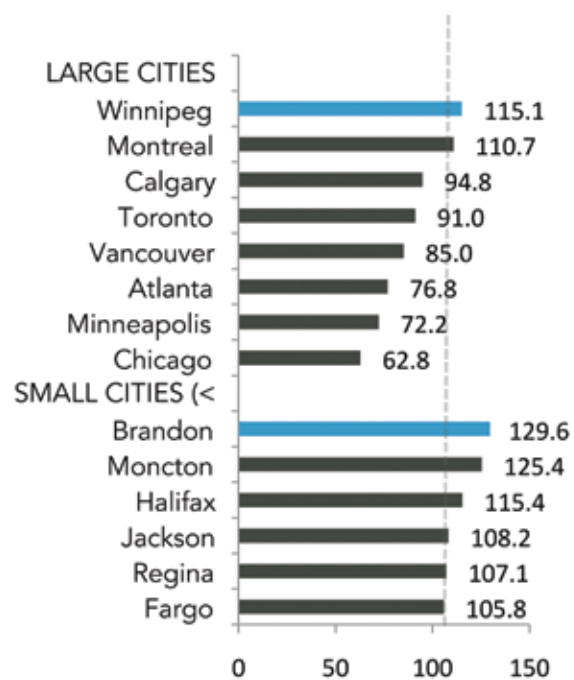
OVERALL COMPETITIVENESS

Overall competitiveness is compared by calculating internal rates of return, which are commonly used by business in making investment and location decisions. A higher internal rate of return indicates a city is more competitive than others. Internal rates of return for each city are calculated using start-up costs and cash flow over a 20-year period, specific to a smaller and a larger manufacturing firm, then discounted using applicable Canadian and US commercial interest rates. The following charts illustrate the combined impact of taxes and costs on the internal rates of return for the representative smaller and larger manufacturing corporations in the selected jurisdictions.

**Internal Rate of Return
Small Manufacturing Firm**



**Internal Rate of Return
Large Manufacturing Firm**



Source: Manitoba Finance 2011

Manitoba maintains a **highly competitive overall business cost and tax environment** for both smaller and larger firms engaged in manufacturing and processing. The internal rates of return for both Winnipeg and Brandon are above the overall average of the cities included in the study. Among cities with populations over 500,000, **Winnipeg has the highest internal rate of return** for both smaller and larger manufacturing firms. Brandon has the highest internal rate of return, overall, for all cities compared.

R&D TAX INCENTIVES AND FINANCIAL SUPPORT

The Province of Manitoba offers a variety of financial support products to businesses. More information on the Manitoba's many programs is available at: www.manitoba.ca/business

In addition, the Province has a history of helping businesses in Manitoba to gain access to capital through grants, loans, loan guarantees, refundable tax credits, equity investments and other similar forms of support. Contact Economic Development Winnipeg Inc. to learn more about the opportunities that may be applicable to your business. www.economicdevelopmentwinnipeg.com

The tax environment in Manitoba encourages industry to continuously develop new and innovative products and processes. The Manitoba Research and Development Tax Credit and the federal Scientific Research and Experimental Development Tax Credit (SR&ED) provide Manitoba companies with considerable leverage for their R&D investments. Studies by the Conference Board of Canada comparing the R&D tax incentives among the world's industrialized countries have repeatedly found that combined federal and provincial R&D tax incentives in Canada are the "most generous and stable offerings in the industrialized world."

THE MANITOBA RESEARCH AND DEVELOPMENT TAX CREDIT

To encourage research and development in Manitoba, the Research and Development Tax Credit provides a 20% partially refundable tax credit. Eligible corporations must incur qualifying scientific research and development expenditures (as defined for federal income tax purposes) in Manitoba. The credit is fully refundable for eligible R&D expenditures incurred in Manitoba after 2009 under an eligible contract with a qualifying research institute, which includes post-secondary institutions and persons approved for this purpose by the Minister of Innovation, Energy and Mines. The credit is partially **refundable up to 50 per cent** on R&D expenditures incurred after 2011.

The amount deductible against Manitoba income tax will be lesser of the Manitoba R&D Tax Credit and the Manitoba Corporate Income Tax otherwise payable. Any unused credit will be available for carry-forward for up to 10 years and carry-back for up to three years. For more information on the Manitoba Research and Development Tax Credit, please visit the Manitoba Department of Finance at: www.gov.mb.ca/finance/ccredits.html

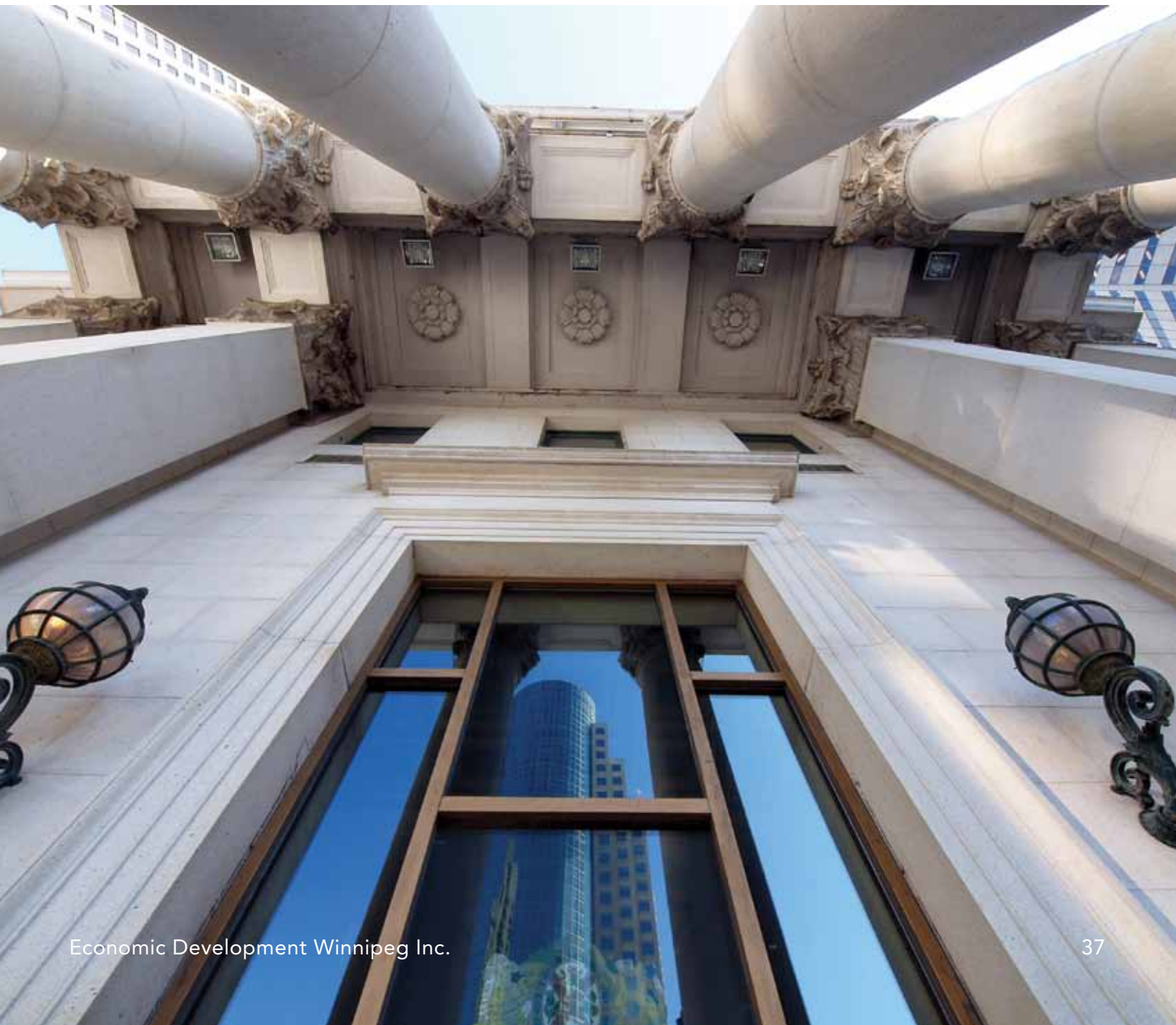
NATIONAL RESEARCH COUNCIL'S (NRC) INDUSTRIAL RESEARCH ASSISTANCE PROGRAM (IRAP)

IRAP provides cost-shared financial support to qualified small and medium-sized enterprises in Canada to help them develop technologies for competitive advantage. NRC total expenses through IRAP in 2009-10 were in excess of \$1 billion, of which more than \$280 million was in direct grants. Contact: www.nrc-cnrc.gc.ca/eng/index.html or publicinquiries.irap-pari@nrc-cnrc.gc.ca

SCIENTIFIC RESEARCH & EXPERIMENTAL DEVELOPMENT TAX AND FINANCE CENTRE

Canada offers some of the world's richest R&D tax incentives, but many businesses are not taking advantage of them as a valuable source of capital. The finance centre offers the expertise needed to identify and manage R&D tax claims.

Contact: <http://www.cra-arc.gc.ca/txcrdt/sred-rsde/menu-eng.html>



COMMERCIALIZATION SUPPORT FOR BUSINESS PROGRAM

The program supports entrepreneurship, commercialization, and business development by offering a comprehensive suite of financial assistance and services across the business lifecycle. The program targets entrepreneurs and businesses seeking to start-up, expand, or modernize a business in Manitoba.

The program provides financial assistance to cost share arm's length third-party expenses up to a maximum of 50 per cent. The Government of Manitoba's total contribution to funded projects will not exceed 50 per cent of eligible/approved costs. Total government support from all levels of government (federal, provincial, municipal), including tax rebates, cannot exceed 75 per cent of total project costs.

Funding streams include:

Concept Development (up to \$25,000) – Assists business entities or individuals in developing their product or process idea to the stage where it can be determined if there is sufficient commercial potential to pursue additional investment of time and money.

Product Development (up to \$40,000) – Assists business entities with pre-commercialization activities needed to prove that the concept is technically and financially feasible.

Product Commercialization (up to \$200,000, software development up to \$20,000) – Assists business entities with moving their product from the pre-commercialization stage to full scale commercial production or implementing a new process into new full scale use or integration with existing systems.

Market Development (up to \$30,000) – Assists business entities in preparing materials and engage in activities that will enable them to enter new markets outside of Manitoba.

Certification Assistance (up to \$15,000) – Assists business entities to obtain plant or product certification. Certification will be limited to new product and process developments.

Intellectual Property (up to \$25,000) – Assists business entities or individuals with legal fees associated with securing intellectual property rights relating to their product or process. Applicants may seek assistance under this funding stream at any time in the development process.

INTERACTIVE DIGITAL MEDIA TAX CREDIT

This refundable corporation income tax credit is for companies that develop and produce interactive digital media projects in Manitoba. The tax credit will be equal to 40 per cent of the remuneration paid to Manitobans on eligible projects approved by Manitoba Innovation, Energy and Mines (www.manitoba.ca/iem). The maximum tax credit on an eligible project is \$500,000.

THE MANITOBA MANUFACTURING INVESTMENT TAX CREDIT (MITC) provides a 10 per cent tax credit applicable against Manitoba corporate income tax payable. This credit is for new and used manufacturing buildings, machinery and equipment used directly in the manufacturing process. Qualified investments must be made prior to December 31, 2014.

The amount deductible against Manitoba income tax will be the lesser of the 10 per cent investment tax credit or the Manitoba Corporate Income Tax otherwise payable. Unused investment credits can be carried forward up to 10 years, or carried back up to three years. This credit was made partially refundable in the 2005 Budget. The 2008 Manitoba Budget increased the refundable portion to 70% of earned credits for qualified property acquired on or after January 1, 2008. This allows firms without taxable income to take immediate advantage of the MITC.

Beyond these incentives there are a variety of incentives available to manufacturers in Manitoba including grants, loan guarantees, wage subsidies, and equity investments.

TELECOMMUNICATIONS RESEARCH LABORATORIES (TRLABS)

TRLabs is a not-for-profit, tri-partite (industry, academia, government) supported, applied R&D consortium with a mission to foster information and communication technology innovations for the benefit of industry. TRLabs, particularly the Winnipeg-based lab, has an active research group in network security leveraging six key professors at the University of Manitoba's Electrical and Computer Engineering and Computer Science departments.





WINNIPEG INFORMATION AND COMMUNICATION TECHNOLOGIES

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300-259 Portage Avenue
Winnipeg, MB R3B 2A9
Canada

204.954.1997
wpginfo@economicdevelopmentwinnipeg.com
www.economicdevelopmentwinnipeg.com