

DT EconWin Economic Impact and Industrial Analysis Model

doyletechcorp.com

ECONOMIC IMPACTS AND INSIGHTS ON YOUR INDUSTRY / CLUSTER

Doyletech's industrial analysis specialists can develop much deeper insights into your industry, or sub components thereof. **DT EconWin Economic Impact and Industrial Modeling System** utilizes advanced economic impact and regional science methodologies that can be used to gain deep insights at various levels: for a procurement, for a company, for an industry, or for the entire cluster or region.

Most industries (and groups of industries) do not fall into a single statistical grouping such as that employed by Statistics Canada's NAICS Code System. Hence, we have developed a methodology for defining industries that do not neatly fall into a single industrial classification such as a NAICS Code. Examples of such industries include Quantum, Semiconductors, Artificial Intelligence, Big Data, the Cultural Industries, Cyber Security, Safety and Security, Nanotechnology, the Environment, Alternative Energy, Virtual Reality, Photonics, Software, Broadcasting, Urban Logistics, Remote and Hybrid Work, Aerospace and Defence, Fin-Tech, Mining Supply and Services, among others.

Several trade and business associations as well as public and private sector clients have called upon Doyletech to develop such definitions for the explicit purpose of determining the total Canadian economic impact of said industry, or cluster. For example, for National Research Council Canada we developed an explicit definition of the Quantum industry and utilized this to identify current and forecasted economic impacts of the industry. For the Kanata North Business Association, we used their existing database of firms to develop the total economic impact that these firms were contributing to the Canadian economy in terms of GDP, jobs, taxes generated, and more.

For trade associations/organizations that have already defined their industry, we can utilize your existing definition to develop the total Canadian economic impact thereof, include the following impacts:

- **Gross Output** (Direct / Indirect / Induced / Total).
- **Contribution to GDP** as Measured by Value-Add (Direct / Indirect / Induced / Total).
- **Labour Income** (Direct / Indirect / Induced / Total).
- **Jobs Maintained** or Created as Measured by Full-Time Equivalents (Direct / Indirect / Induced / Total).
- **Gross Operating Surplus** (Direct / Indirect / Induced / Total).
- **Federal Government Tax Receipts** (Direct / Indirect / Induced / Total).
- **Provincial Government Tax Receipts** (Direct / Indirect / Induced / Total).
- **Municipal Government Tax Receipts** (Direct / Indirect / Induced / Total).

1.

Define the **Industry or Business Cluster** of Interest.

2.

Develop **Standard Economic Impact Measures** (Gross Output, GDP, Income, Jobs, and Taxes Generated).

3.

Develop **Advanced Industrial / Cluster Measures** (Value-Chain Analysis, Gap Analysis, Productivity & Profitability Measures, Linkages & Leakages).



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Economic Impacts and Insights on a Specific Company or Procurement



CMMA Evaluation and Boeing Economic Impacts 2018-2022

May 30, 2023

Prepared For:
The Boeing Company

Prepared By:
Doyletech Corporation

Presenter:
Neil Knudsen
Doyletech Corporation

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Boeing validates economic impact in Canada

BY CHRIS THATCHER | JUNE 26, 2020
Estimated reading time 7 minutes, 43 seconds.

If there were lingering doubts about Boeing's contribution to the Canadian economy, company executives attempted to lay them to rest as the Chicago-based aircraft manufacturer prepares to [submit its proposal](#) for Canada's future fighter jet next month.

The F/A-18 Block III Super Hornet is Boeing's contestant to replace the RCAF's fleet of legacy CF-188 Hornets. Boeing Image

Boeing directly invested \$2.3 billion in Canada in 2019, primarily through its aerospace composite manufacturing operation in Winnipeg, and generated about 11,000 jobs, according to an economic impact assessment conducted by Ottawa-based consulting firm Doyletech Corporation. Those figures climbed to around \$5.3 billion and 20,000 jobs once indirect spending was factored in.

"That is an extremely good result," Rick Clayton, a partner with Doyletech, told a media briefing on June 25. A more than two-for-one return on every dollar spent is "one of the best [results] we have had."

Moreover, 95 per cent of what Boeing generates is exported. "That's about as high as we have ever seen," he said.

The assessment also captured Boeing's investments in Canadian supplier and technology development, making the company what he called an "agile producer" able to capitalize on both Canadian resources and "smarts." Technology developed by many suppliers often involves systems integration, an added value over aircraft components.

Investments and direct participation in industry-university networks, centres of excellences, and even a learning factory incorporating big data, machine learning and artificial intelligence — "sort of like a teaching hospital, only for manufacturing," according to Clayton — are influencing the next cadre of advanced manufacturing workers.

Economic Benefits of Choosing P-8A for CMMA (On An Annual Average Basis)*

- Contribution to GDP (value-add) of **\$357.8 million**
- Jobs (person-years / FTEs) of **2,923**
- Labour Income (earnings) of **\$230 million**
- Federal government taxes of **\$48.7 million**
- Provincial government taxes of **\$44.7 million**
- Municipal government taxes of **\$5.6 million**

CMMA Jobs Impact (Annual Average Basis)	
	Jobs (Direct + Indirect + Induced)
Atlantic	341
Québec	704
Ontario	1,215
West	663
Canada	2,923

* Economic impacts reflect adjustment for inflation.

All values herein in C\$.



Economic Benefits of a Digital Film Studio in Barrhaven, Ontario

Construction Phase: Fixed-Term Benefits (estimated 2 years)

- There would be \$41 million in new spending in Barrhaven and the region, including visitor/tourism revenue (\$16.2 M local/\$24.8 M region).
- There would be 144 new FTE jobs created.
- Municipal tax returns would be \$1 million.
- Provincial government returns would be \$5.2 million.
- Federal government returns would be \$4.8 million.

Operations Phase: Annual Benefits (ongoing)

- There would be \$124.6 million in new spending annually in Barrhaven and the region, including visitor/tourism revenue (\$58.7 M local/\$65.9 M region).
- There would be 433 new FTE jobs created (382 local/51 region).
- Municipal tax returns would be \$2 million.
- Provincial government returns would be \$17 million.
- Federal government returns would be \$15.9 million.



IGPC's Ethanol Plant Has Significant Economic Benefits for Region



VANCOUVER, BRITISH COLUMBIA -- 12/01/09 -- A new independent study confirms that Canadian built renewable fuels plants will create new jobs and economic growth for many years to come. The study by Doyletech of Ottawa examined the economic impact of the newly built Integrated Grain Processors Co-operative Inc. (IGPC) ethanol plant in Aylmer, Ontario.

Author : Canadian Renewable Fuels Association (CRFA)

Doyletech found construction of the new farmer-owned plant contributed to a net spending increase within the region of approximately \$275 million. It also found an annual increase of at least \$50 million in new economic spending in the region as a direct consequence of the plant's operations.

"Renewable fuels are delivering on their economic promise," says Gordon Quaiattini, President of the Canadian Renewable Fuels Association, at the opening of the 6th Annual Renewable Fuels Summit in Vancouver. "These are real numbers coming from real plants, employing real people, in real towns. And we can see similar results in ethanol and biodiesel all across the country."

The IGPC plant is located in rural Southwestern Ontario, just outside of London, on the outskirts of St. Thomas. It concluded the plant construction delivered:

1. Net job creation of 1,152 person-years.
2. Total spending increase within the region and locality was \$276,089,000.
3. The net municipal government benefit was \$7,835,550.
4. The net Provincial government benefit was \$44,172,000.
5. The net Federal government benefit was \$70,088,000; this reflects increased tax collections and lower EI costs.

The cost of closing schools in South Glengarry

January 19, 2017 -- Changed at 10 h 30 min on January 14, 2019

Reading time: 3 min 30 s



Neil Knudsen of Doyletech presents to a meeting in South Glengarry on the cost of closing rural schools in the area (Nick Seeburgh/Seaway News).

CORNWALL, Ontario – Residents of South Glengarry braved the freezing rain and icy roads to meet at Irvine Hall in Williamstown. There Doyletech representative Neil Knudsen explained the results of his company's study. "With out a doubt," he said. "Closing the schools in this area will cost the Township almost \$7 million annually."

In terms of jobs, Doyletech's report predicts that the area would lose 20 jobs if the Upper Canada District School Board (UCDSB) follows through with the plan it has laid out in its Pupil Accommodation Review (PAR).

Doyletech Consulting to present school-closure findings January 5 in Morrisburg

TOPICS: Upper Canada District School Board



Seaway District High School has supporters who are rallying to prevent its proposed closure. Zandbergen photo, Nation Valley News

DECEMBER 30, 2016

MORRISBURG — Consultants studying the economic impact of the proposed closures of two schools in South Dundas will present their report in the municipal Council Chambers next Thurs., Jan. 5.

Economic Impacts and Insights on a Specific Industry



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ONTARIO GRAIN FARMER MAGAZINE
 Ontario Grain Farmer Magazine is the flagship publication of Grain Farmers of Ontario and a source of information for our province's grain farmers.

PUBLIC OUTREACH MARKETING AGRONOMY GOVERNMENT RELATIONS MARKET DEVELOPMENT SUSTAINABILITY RESEARCH Grain Farmers of Ontario

FEATURES, GOVERNMENT RELATIONS
 MARCH 2020

- 18 BILLION
- A BIG IMPACT BRM
- BUSINESS RISK MANAGEMENT
- ECONOMY
- INEFFECTIVE BRM
- LOW PRICES

A big impact

A CONTRIBUTION OF \$18 BILLION TO THE ECONOMY



ONTARIO GRAIN AND OILSEED FARMERS FIND THEMSELVES FACING THREE CRITICAL ISSUES: LOW PRICES CREATED BY TRADE DISRUPTION AND UNCERTAINTY; RAPIDLY RISING COSTS; AND INEFFECTIVE BUSINESS RISK MANAGEMENT PROGRAMS AT A TIME WHEN THEY ARE MOST NEEDED.

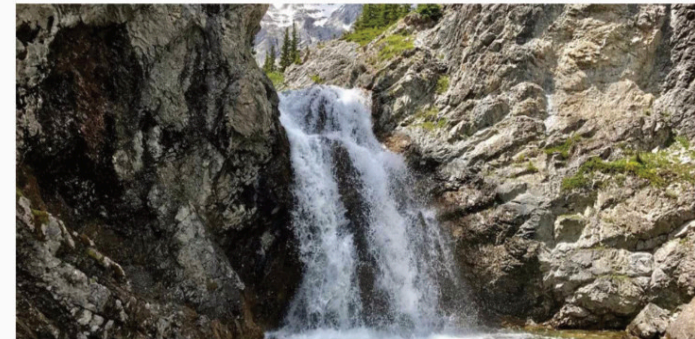


RESOURCES

Doyletech Economic Impact Assessment of an Enhanced Biofuels Mandate in Ontario



Ethanol & Biodiesel Add \$2 Billion To Canadian Economy Annually



OTTAWA – The Canadian Renewable Fuels Association today released the first-ever comprehensive third party economic impact assessment of renewable fuels investments in Canada. The assessment conducted by econometric firm Doyletech Corporation, concluded that, "the grand total of the annual positive economic impact of renewable fuels is \$2.013 billion."

The report studied 28 ethanol and biodiesel plants across Canada and added that there were major benefits from renewable fuels in "rural re-vitalization, increased oil exports from western Canada, industrial development, and valuable options for re-balancing fuel mix".



Total Economic Impact Assessment of Biofuels Plants in Canada



Prepared for:
 The Canadian Renewable Fuels Association (CRFA)

Economic Impacts and Insights on a Specific Cluster or Jurisdiction



ECONOMIC IMPACT

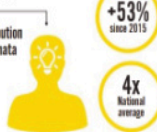
\$13 BILLION
Net value-add of Kanata North to Canada's GDP



PRODUCTIVITY

\$391,000
Average net contribution per employee in Kanata North

Note: \$90,000 is the average contribution per employee in Canada



EMPLOYMENT IMPACT

19,477
Tech/export sector (includes jobs in Kanata North only)

+18% compared with 16,513 in 2015



29,376
Total tech/export sector (includes jobs in Kanata North and across the region)

Note: 10,000+ indirect and induced jobs have been generated in Ottawa/Eastern Ontario region due to the Kanata North success.

+12% compared with 26,225 in 2015



TOTAL JOBS
33,236
+ 29,376 Total Tech/Export Sector
+ 3,860 Total Local Sector

+9% compared with 30,679 in 2015

\$13 BILLION

New study shows Kanata North's growing economic impact, highlights need for investments in talent and transportation

Companies in Kanata North are growing rapidly and scaling up revenues, but traffic congestion and competition for talented staff threaten to hinder that growth if left unchecked, according to a new report.

The study, performed by Ottawa-based Doyletech Corp., found that the park's total economic impact on Canada's GDP was \$13 billion, a 66 per cent increase over the \$7.8 billion reported in 2015 when Jenna Sudds, then the executive director of the Kanata North Business Association, spearheaded the first review of Kanata North's economic impact.

Doyletech used a database of companies in the park and interviews with 40 companies to complete the study, gathering information such as employment numbers, product offerings and a broadly defined measurement of "revenue."

Kanata North is home to R&D

outposts for many multinational firms. These offices typically do not generate revenues directly, so Doyletech counted the budget allocated to these local operations to account for the value generated by the R&D work done in Kanata North.

"These are big companies, and the research that Kanata North is doing is vital to those companies' interest," said Doyletech partner Rick Clayton.

The report found a nine per cent increase in jobs in Kanata North, as well as 30 per cent revenue growth and 13 per cent more companies, over the past three years. The park's anchor sectors – telecommunications, wireless and photonics – collectively saw revenues jump 95 per cent. Elsewhere, cleantech – a sector comprised of just nine companies, according to Doyletech – saw revenues increase 146 per cent and employee numbers climb 119 per cent.

Veronica Farmer, KNBA's operations manager, attributed this in part to Clearford Water Systems, which boosted revenues and employment numbers in 2018 due to a series of acquisitions.

Business leaders say that growth can be felt in day-to-day life in the park.

"We can feel it. We can see it," said Farmer. "We see more companies announcing themselves."

However, it's also felt in ways that present new challenges. With close to 3,000 new employees in the park since 2015, traffic congestion on streets such as March Road has never been so bad, the KNBA said. Addressing traffic congestion and improving public transit service is an area that Sudds, who was recently sworn in as the area's city councillor, has pledged to tackle.

The report also calculated the amount of taxes generated by Kanata North for all levels of government. Thanks in part to the area's dramatic growth, it's risen 16 per cent municipally, 40 per cent provincially and 47 per cent federally over the past three years.

"We need a little bit of it back," said Amy MacLeod, KNBA's board chair and Mitef's corporate diversity officer and vice-president of strategic communications, at a December presentation. "We need infrastructure. We need investment in our transportation."

As well, the need for tech talent is stronger than ever, Farmer said. She said traffic and talent will be key to continuing the growth highlighted in the study, adding she sees a strong argument for the provincial and federal governments to fund improvements such as traffic infrastructure.

"If we don't do this, we're going to lose ... momentum," said Farmer.

READ THE REPORT
Visit impact2018.kanatanorthbia.ca to see more findings.



DEFENCE, SECURITY AND AEROSPACE



As the third largest by total employment and fifth largest by revenues, the defence, security and aerospace subsector is represented by some of Canada's most well-known firms in the field. It typically provides specialized products and systems, but relatively large ones by the standards of the global market.

Companies in this subsector work in the following areas:

- Solutions: Infrastructure security, custom data security, software security research and development, custom software security, police security software, security management systems integration, encryption and email security
- Systems and subsystems: Defence electronics, sensor systems, military vehicles, surveillance systems, dynamic systems, electronic systems, authentication products, space systems, public safety systems
- Services: Network security, aircraft component overhaul, engineering support, safety evaluation, simulation

PRODUCTIVITY

Based on the research, the total revenues to the sector are \$566.5 million with 1,425 workers. The estimated productivity by sales per employee is \$398,000. This is higher than Kanata North's average, and therefore significantly higher than the Canadian average, reflecting the large size of the companies based here.

EMPLOYMENT

Wages and salaries are equivalent to approximately 60% of total revenues. This reflects the high proportion of software and R&D undertaken in the subsector in Kanata North, which is not capital-intensive. About 80% of the jobs are at the professional level, with 15% at the technical level.

LOCAL/REGIONAL SPENDING

EBITDA is approximately 25%, with 10% general and administrative costs while the cost of materials and other expenses is 5%. The purchased inputs usually come from outside Canada.

1,425
NUMBER OF WORKERS

\$566.5m
REVENUES

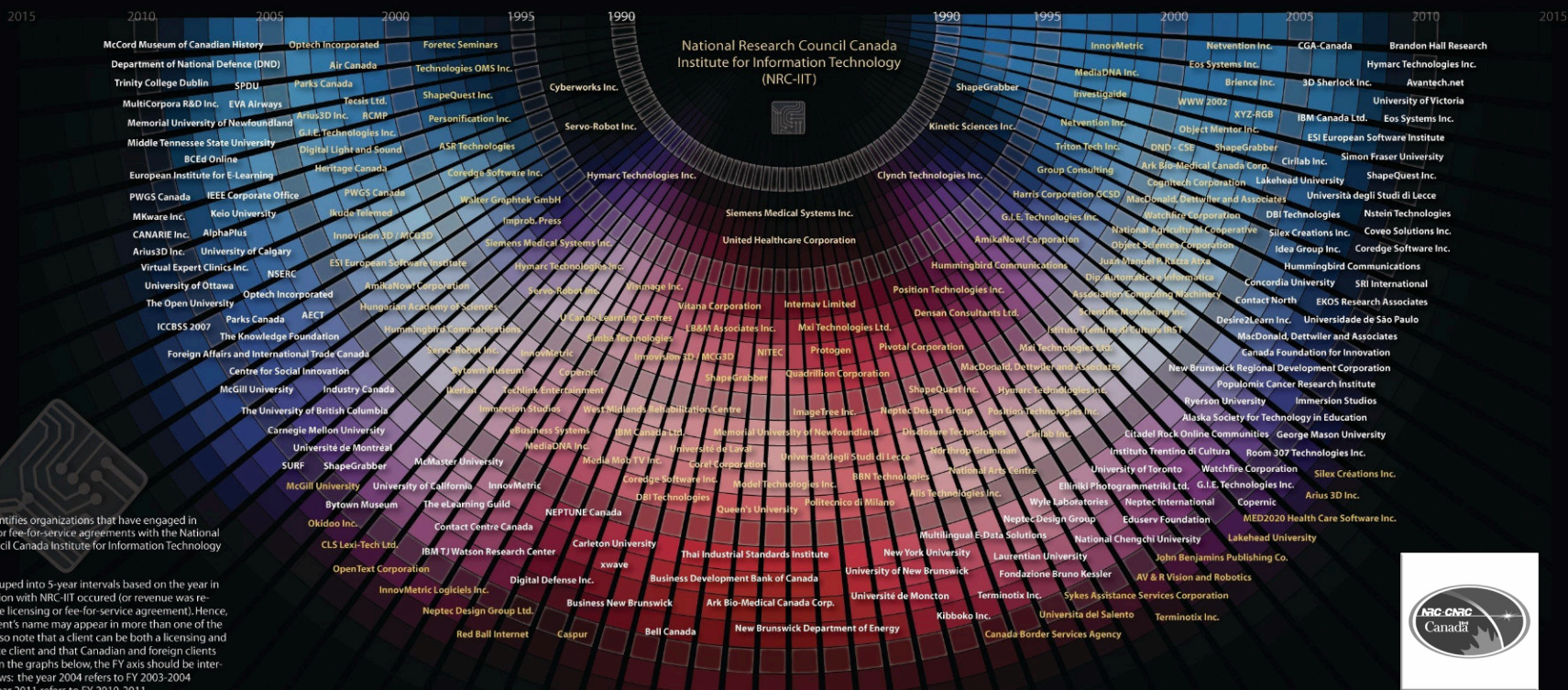
\$398k
PRODUCTIVITY BASED ON SALES-PER-EMPLOYEE

60%
EXPORT RATIO

Economic Impacts and Insights on Spin-off Companies / Technology Transfer

NRC - CNRC

National Research Council Canada Institute for Information Technology: Licensing and Fee-for-Service Economic Impact

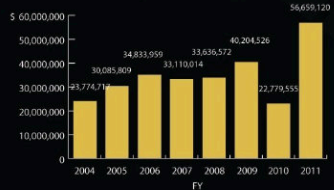


This poster identifies organizations that have engaged in licensing and/or fee-for-service agreements with the National Research Council Canada Institute for Information Technology (NRC-IT).

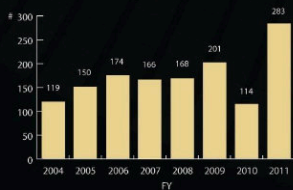
Clients are grouped into 5-year intervals based on the year in which interaction with NRC-IT occurred (or revenue was received from the licensing or fee-for-service agreement). Hence, a particular client's name may appear in more than one of the rings above. Also note that a client can be both a licensing and a fee-for-service client and that Canadian and foreign clients are included. In the graphs below, the FY axis should be interpreted as follows: the year 2004 refers to FY 2003-2004 whereas the year 2011 refers to FY 2010-2011.



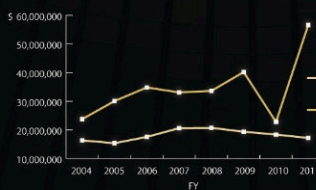
Canadian Sales (in \$) Generated (FY2004 - FY2011)



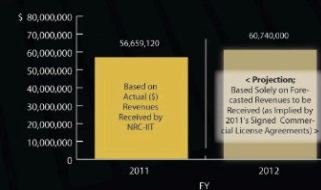
Canadian Employment (in Person-Years) Generated (FY2004 - FY2011)



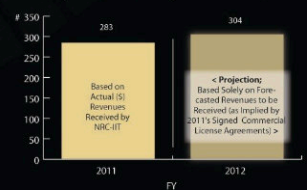
NRC-IT Operating Budget vs. Canadian Sales Generated (FY2004 - FY2011)



Canadian Sales (\$) Generated By Year (2011 vs. Projection for 2012)



Canadian Person-Years of Employment Generated By Year (2011 vs. Projection for 2012)



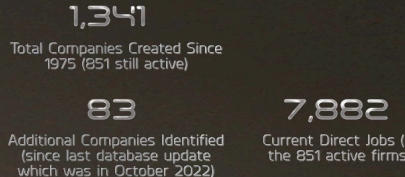
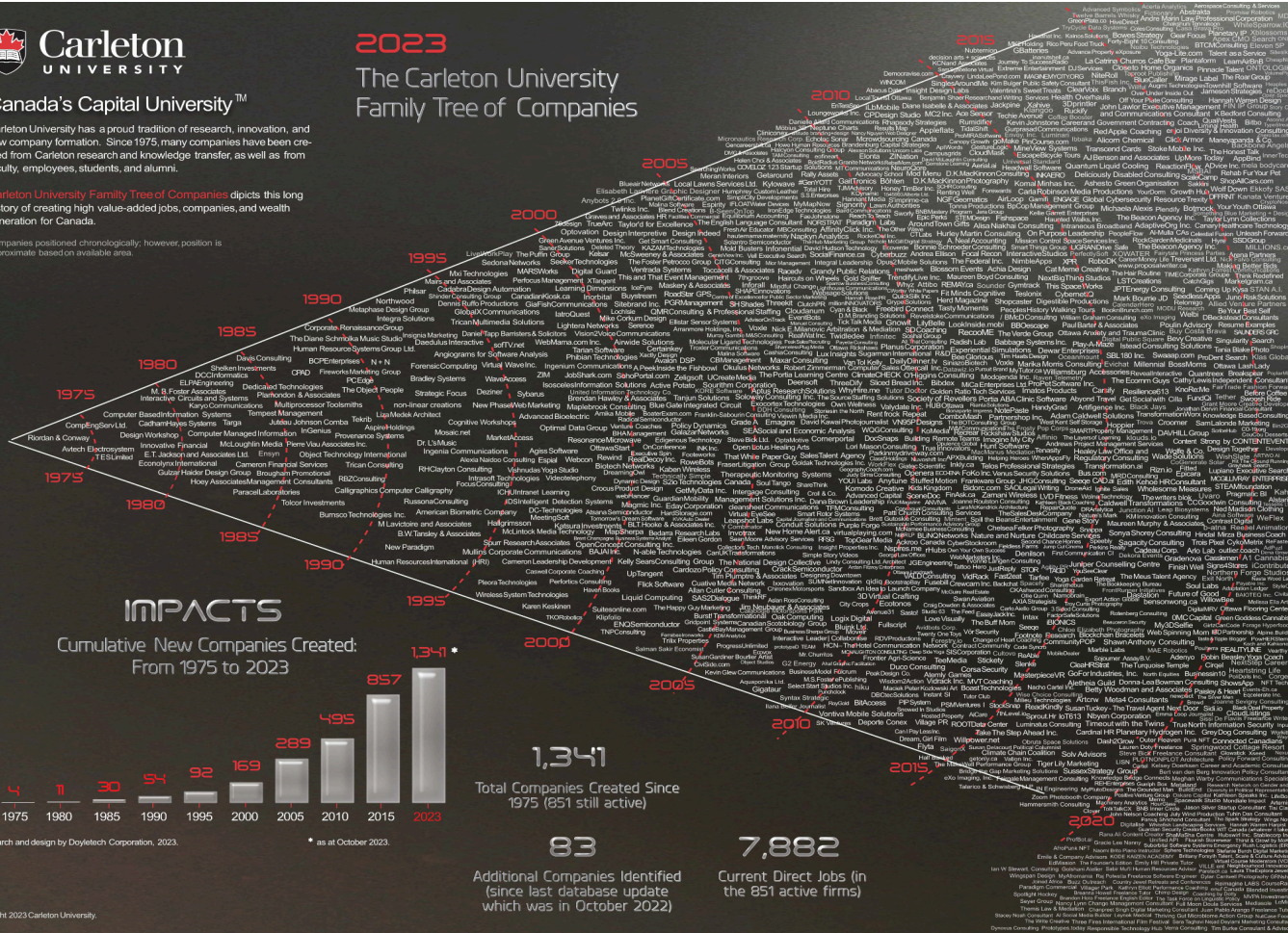
Canada's Capital University™

Carleton University has a proud tradition of research, innovation, and new company formation. Since 1975, many companies have been created from Carleton research and knowledge transfer, as well as from faculty, employees, students, and alumni.

Carleton University Family Tree of Companies depicts this long history of creating high value-added jobs, companies, and wealth generation for Canada.

Companies positioned chronologically; however, position is approximate based on available area.

2023
The Carleton University Family Tree of Companies



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Eye Technology

Issue No. 5 | www.crc.ca

In This Issue...

Cover Story
A new study illustrates CRC's strong economic impact

CBC Radio-Canada Tunes in to CRC Software Tool
A national news outlet selects CRC-COVLAB to ensure quality broadcasts

CRC Radio Project to Improve Military Communications
An experimental system aims to optimize the flow of data & voice information within bandwidth-constrained wireless networks

A New Trend in Software Development: How it Affects You
An emerging development approach could mean better products at lower prices

Broadband Visual Tools to Connect 600 Students across Canada
Teens to discuss body image issues in first national youth town hall session

Doyletech study: Multi-million dollar annual economic impact from CRC

Sales from companies that can be traced from the Communications Research Centre Canada (CRC) amounted to \$1.61 billion dollars in 2023 according to a comprehensive study conducted by Doyletech Corporation.

The recent study examined two major areas of CRC's economic impact – company formation and the effect of technology licensing and sponsored research and development (R&D) activities in generating corporate sales and employment.

Using the extensive Doyletech database augmented by new research, the Ottawa-based consulting firm tracked the creation and growth of 62 start-up companies that are still in existence. In over 40 years, these companies were either formed around CRC technology or by CRC employees leaving the laboratory to establish a start-up firm. In 2025, these spin-off companies had collective annual sales calculated at \$1.61 billion and 6,378 employees. The estimated tax revenues returned to the federal

Cumulative CRC Revenue (Millions of Dollars): 1975 (~\$0.1M), 1980 (~\$0.2M), 1985 (~\$0.5M), 1990 (~\$1.0M), 1995 (~\$2.0M), 2000 (~\$4.0M), 2005 (~\$8.0M), 2010 (~\$15.0M), 2015 (~\$30.0M), 2020 (~\$60.0M), 2023 (~\$100.0M)

Cumulative CRC Revenue Return to Government (Millions of Dollars): 1975 (~\$0.05M), 1980 (~\$0.1M), 1985 (~\$0.2M), 1990 (~\$0.4M), 1995 (~\$0.8M), 2000 (~\$1.5M), 2005 (~\$3.0M), 2010 (~\$6.0M), 2015 (~\$12.0M), 2020 (~\$24.0M), 2023 (~\$40.0M)

Commercialization of Technology Transferred from CRC to Canadian Companies Resulted in the Creation of 2802 Cumulative Person-Years

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Canada

