Research That Works:

The Networks of Centres of Excellence Year in Review 2007–2008

Government of Canada
Networks of Centres of Excellence

Gouvernement du Canada
Réseaux de centres d'excellence

Canada

The Networks of Centres of Excellence

Mission:

"To mobilize Canada's research talent in the academic, private and public sectors, and apply it to the task of developing the economy and improving the quality of life of Canadians."

Table of Contents

Research That Works:

The Networks of Centres of Excellence
Year in Review 2007–2008

Message from the Chair

Welcome to *Research That Works:* The Networks of Centres of Excellence Year In Review 2007–2008.

This has been one of the most transformative years since the NCE program began in 1989.

Budget 2007 praised the NCE for successfully guiding the application of scientific research over about two decades. Confident in our remarkable track record, the Government of Canada entrusted the NCE with the creation of 11 new Centres of Excellence for Commercialization of Research. We met that challenge and these inaugural CECRs are now hard at work, leading the way toward the commercialization of academic discovery and innovation.

To further sharpen Canada's competitive edge, the Government also asked us to establish new Business-Led Networks, which apply the proven NCE model to industry-led, industry-driven organizations. The NCE Secretariat conducted a national competition and will administer these new networks.

The NCE was also placed in charge of the Industrial Research and Development Internship program. The IRDI gives graduate students and postdoctoral fellows the chance to apply their talent and know-how in a business setting; their work in turn is keeping Canadian companies competitive. ACCELERATE Canada, a consortium of several networks and other groups led by the Mathematics of Information Technology and Complex Systems (MITACS) NCE, is successfully running the program.

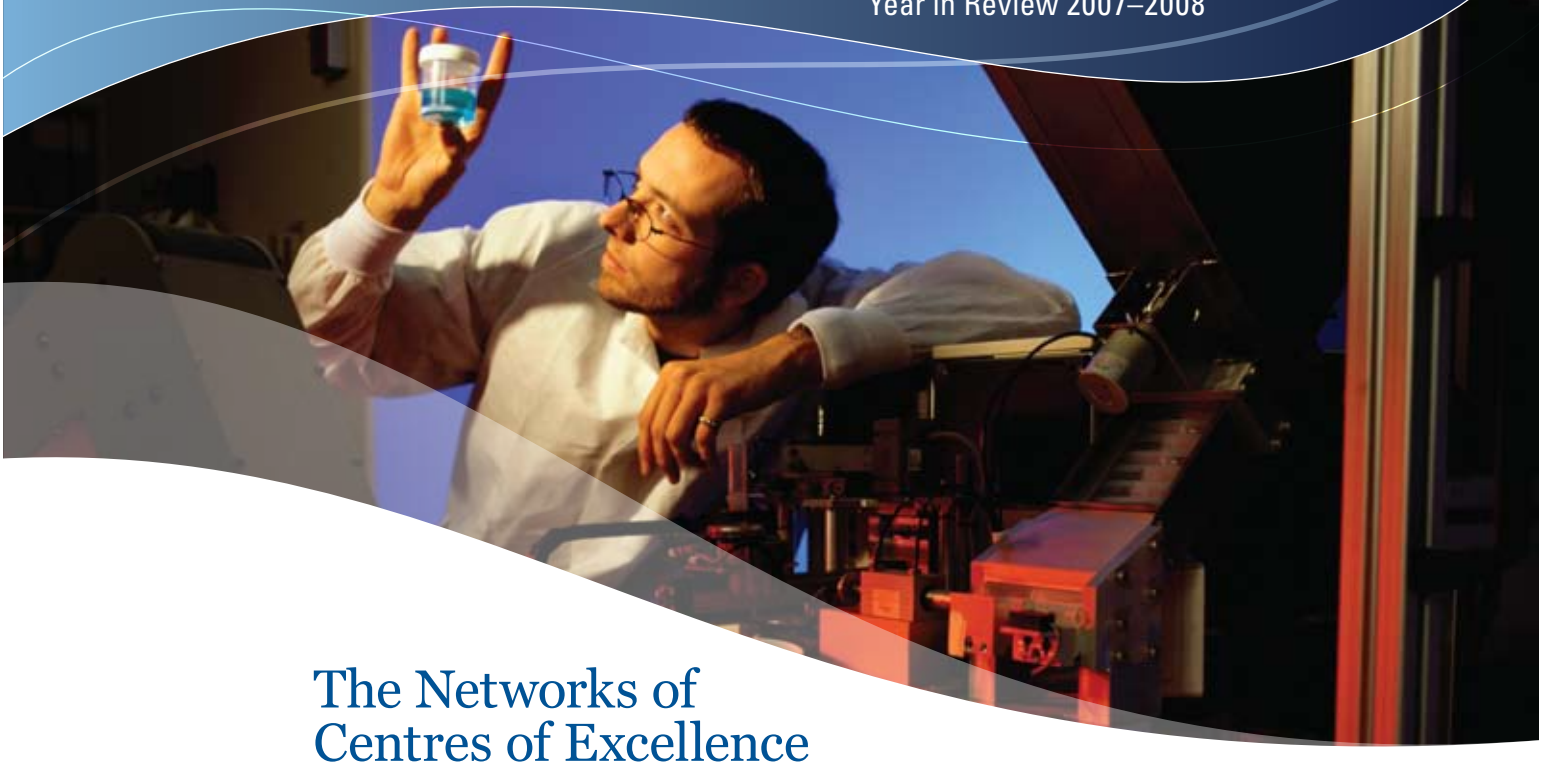
Of course, these are just the newest additions to the NCE family. We continue to fund 15 full-fledged networks and five NCE New Initiatives. Over the past 12 months, all have enhanced Canada's stature on the world research and innovation stage.

While our responsibilities have grown, our priorities have not changed. More than ever, we are committed to excellent research that gets results, improves our lives and allows our economy to weather global storms. In short, research that works.

Dr. Suzanne Fortier
Chair, NCE Steering Committee

Research That Works:

The Networks of Centres of Excellence
Year in Review 2007–2008



The Networks of Centres of Excellence

The Networks of Centres of Excellence is a joint program of the Natural Sciences and Engineering Research Council of Canada, the Social Sciences and Humanities Research Council of Canada, the Canadian Institutes of Health Research and Industry Canada. Launched in 1989 to manage the original Network of Centres of Excellence, today the NCE Secretariat runs four national initiatives:

- Networks of Centres of Excellence;
- Centres of Excellence for Commercialization and Research;
- Business-Led Networks of Centres of Excellence; and
- Industrial Research and Development Internship Program (IRDI).

We bring together partners from the academic, industrial, public and non-profit sectors to conduct leading-edge research and knowledge transfer activities in areas of strategic growth and opportunity for Canada.

Did You Know?

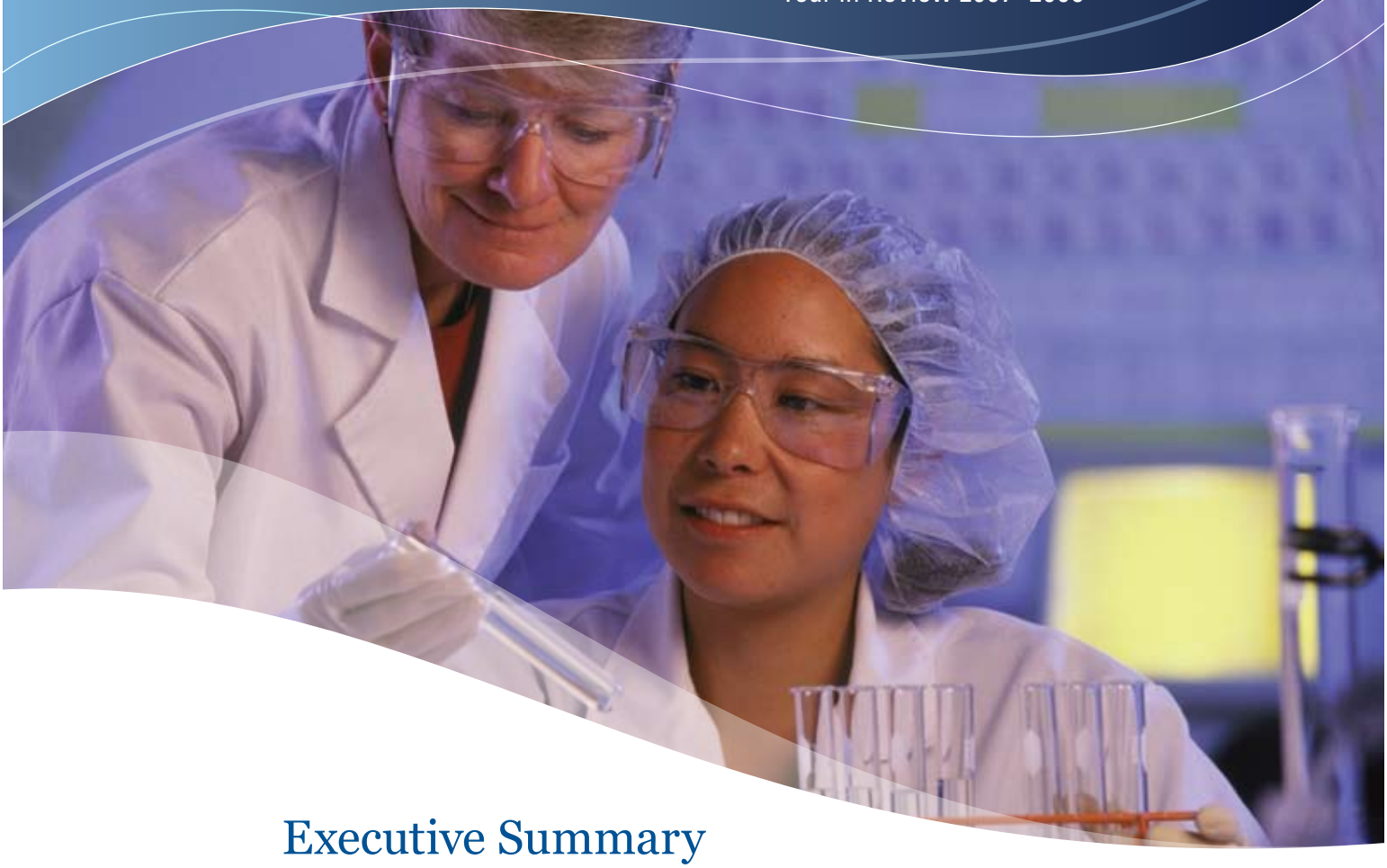
In Budget 2007, the Government of Canada not only renewed the NCE's annual funding, it:

- Dedicated **$11 million** in **2008–09** to accelerate the creation of up to **five** new Business-Led NCEs; and
- Committed **$4.5 million** over **two** years to establish a new Industrial Research and Development (R&D) Internship program.
- The NCE program's annual budget of **$82.4 million** is leveraged by funds received from outside sources, including from private-sector companies. The NCE-International Partnership Initiative (NCE-IPI) has a budget of **$7 million** over **two** years to provide the NCEs with additional support to develop and enhance linkages with equivalent organizations in the rest of the world.

Source: The NCE-IAC *Recommendations on the Future Directions of the NCE Program*.

Research That Works:

The Networks of Centres of Excellence
Year in Review 2007–2008



Executive Summary

Introduction

When it was founded nearly 20 years ago, the Networks of Centres of Excellence (NCE) program represented a radical change to spur the transformation of research into real-life policies, products and services.

Back then, Canada's researchers competed for grant money and infrastructure in a system that did not appear to encourage information sharing, let alone knowledge translation. The "publish or perish" imperative for academic success seemed to place more importance on the presence of research findings in prestigious journals than in turning those findings into something marketable and life-enhancing.

The NCE program has done much to change that mindset and encourage the commercialization of science and technology (S&T) in Canada. In this regard, the NCE program has been the leading proponent for research that gets positive results for the Canadian economy and Canadians' quality of life. Research that works.

In 2007, two separate and independent evaluations praised the NCE program's efforts in this regard.

A report called *Evaluation of the NCE Program*, prepared for the Interagency Evaluation Steering Committee, said the NCE stands out for its efforts in "the creation of structured networks, the establishment of intersectoral partnerships, and knowledge utilization — in particular, the commercialization of research findings."

Additionally, the NCE International Advisory Committee, a group of internationally respected authorities on S&T development, offered this praise in its *Recommendations on the Future Direction of the NCE Program*: "The NCE program has profoundly transformed the way research is done in universities and has pioneered innovative ways to translate research into economic growth and social progress."

As the new programs that the NCE has taken on indicate, the Government of Canada has recognized that creating networks between researchers and industry is crucial in meeting the big challenges of the 21st century.

Fiscal Year 2007-08

NETWORK LIFECYCLES 2007-08

NETWORKS	FUNDING PERIOD	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
ISIS	1995-2009		MF												
SFM	1995-2009		MF												
CAN	1998-2012		MT			MF									
GEOIDE	1998-2012		MT			MF									
MITACS	1998-2012		MT			MF									
CSN	1999-2013			MT			MF								
CIPI	1999-2012		MT			MF									
AUTO21	2000-2008	RC				MT			MF						
CLLRNet	2000-2008	RC	***												
CWN	2000-2008	RC				MT			MF						
SCN	2000-2008	RC				MT			MF						
AFMNet	2003-2010	MT			RC				MT			MF			
ArcticNet	2003-2010	MT			RC				MT			MF			
AllerGen	2004-2011		MT			RC				MT			MF		
CDRN	2005-2009	MT													
CON	2005-2009	MT													
EDGE	2005-2009	MT													
NICE	2005-2009	MT													
PREVNet	2005-2009	MT													
PrioNet	2005-2012		MT			RC				MT			MF		

RC Competition for renewal of last funding cycle

MT Mid-term Review

1st Funding Cycle

2nd Funding Cycle

MF Funding

*** Winding down funding

Remaining years of eligible funding based on successful mid-term review and/or competition for renewal of last funding cycle and/or MF

The Centres of Excellence for Commercialization and Research

The introduction of 11 new Centres of Excellence for Commercialization and Research (CECRs) in February of 2008 marked the successful completion of a $165 million NCE-supervised competition.

It also fulfilled a Government of Canada commitment, made in Budget 2007, to promote more and stronger partnerships between researchers and industry.

These are exciting endeavours. Areas of expertise range from the development of immunologically-based cancer therapies to taking new technologies in subatomic physics to the commercially viable stage. They will strengthen the global competitiveness of Canada's vaccine industry and ensure that efforts to create the next generation of disease-targeting probes are translated into market-ready products.

While their centres' individual focuses are varied, all the CECRs have the same goal — to put research to work. Each will help to create, grow and maintain Canadian companies in order to capture new markets here in Canada and across the world.

The Business-Led Networks of Centres of Excellence

In Budget 2007, the Government also announced plans to commit $46 million to fund large-scale, collaborative networks that support private sector innovation.

The Government designated the NCE as secretariat for the new Business-Led Networks of Centres of Excellence. These new networks will be led by private sector consortia to generate new technologies and products that produce "knowledge economy" jobs and opportunities for Canadians.

The NCE solicited Letters of Intent from which ten applicants have been invited to submit full proposals. Competition winners will be announced in 2009, when the five new networks will receive four years of funding.

The Networks of Centres of Excellence

Throughout 2007–2008, the 15 fully funded Networks of Centres of Excellence and five New Initiative NCEs intensified their countrywide efforts to build multi-disciplinary and multi-sectoral partnerships that connect research, industry and strategic investment.

The NCEs continue to focus on four strategic areas: advanced technologies; engineering and manufacturing; health, human development and biotechnology; and environment and natural resources. Their recent accomplishments range from improving automated auto parts inspection systems to launching a national consortium to protect groundwater supplies from pathogens.

The IRDI Program

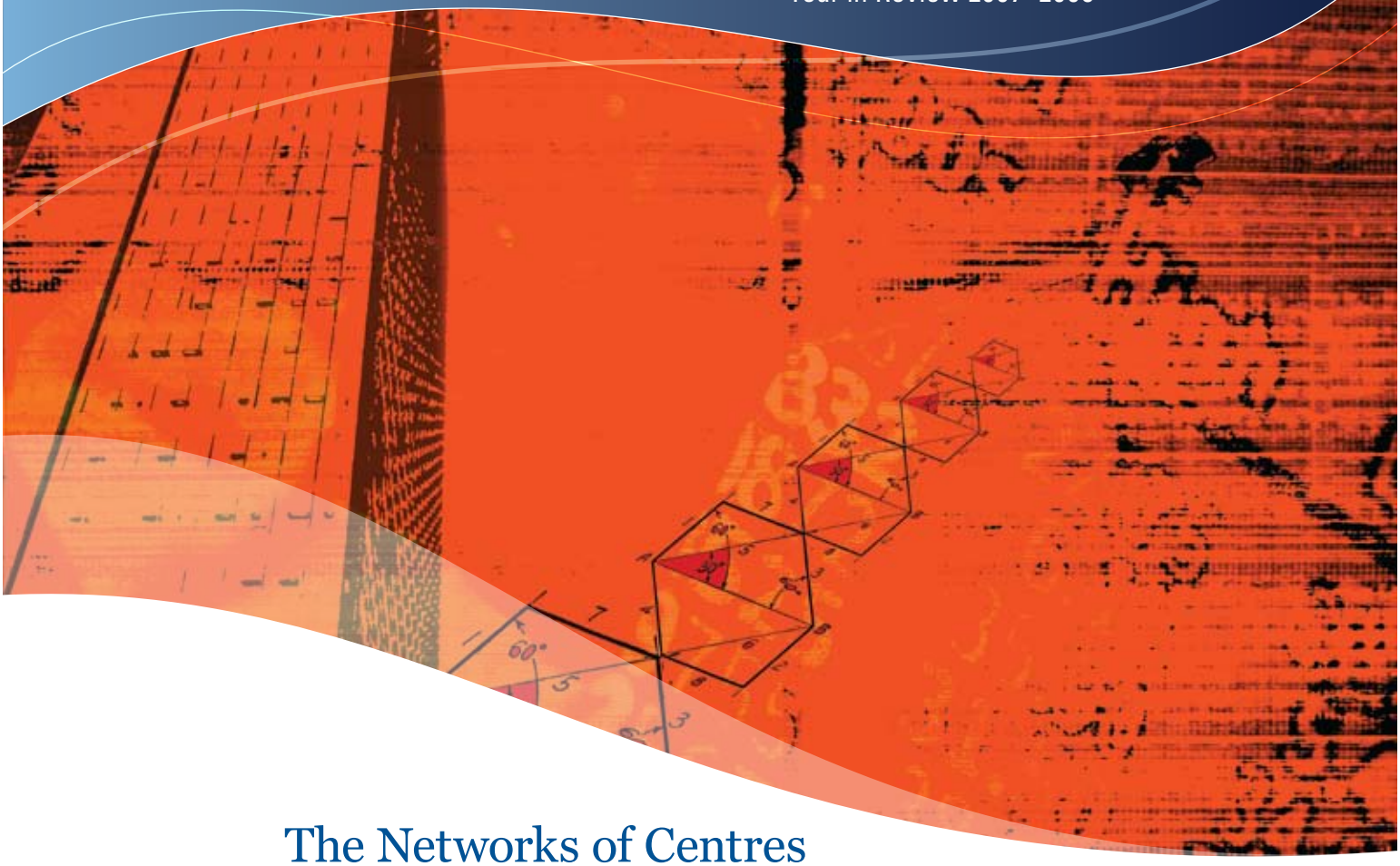
The NCE program in 2007 took on the challenge of setting up a national intern program for graduate students and postdoctoral fellows.

Begun in December of 2007 with an investment of $8.64 million over two years, the Industrial Research and Development Initiative's (IRDI's) goal is to place 1,200 graduate students and post-docs with businesses all over Canada by 2010.

The program is based on the highly successful ACCELERATE Canada model developed by the Mathematics of Information Technology and Complex Systems (MITACS). After a peer-review process, ACCELERATE Canada, led by MITACS and including a group of several networks, was selected to operate the IRDI.

Research That Works:

The Networks of Centres of Excellence
Year in Review 2007–2008



The Networks of Centres of Excellence Program

An overview

The NCE program has built a reputation both within Canada and across the globe for generating research that works. But how does this research work? How does it come together? What does it do?

Every year, the NCE program connects researchers from a variety of disciplines to work in a mutually beneficial, multidisciplinary way. The networks connect these researchers with industry to turn the power of effective research into products and processes that not only improve the Canadian economy, they improve peoples' lives.

The following examples show how the NCE program enables research that works — the positive practices that allow the networks to run efficiently and effectively, and the results generated. In 2007–2008:

- The NCE program leveraged partnership investments of **$57 million**, including **$18 million** in private sector contributions. When the NCE program's own funding is included, almost **$137 million** was used to stimulate research, training, knowledge translation and commercialization.
- Overall, **697** companies, **432** provincial and federal government departments and agencies, **100** hospitals, **694** universities, and **650** organizations from Canada and around the world partnered in NCE activities.
- More than **6,400** researchers and HQP took part in NCE projects.
- NCE scientists filed **87** patents and published **3950** papers in refereed scientific journals.
- In total, **30** licenses were granted or were under negotiation.
- **Three** spin-off companies were born from NCE program research efforts.

Fiscal Year 2007-08

SUMMARY OF THE 24 NETWORKS – 2007-08

NETWORKS	NCE AWARD	FUNDING PERIOD	NETWORK RESEARCHERS*	HQP**	UNIVERSITIES***	INDUSTRIES***	GOVERNMENT DEPARTMENTS/ AGENCIES AND OTHERS***	TOTAL ORGANIZATIONS
AFMNet	$ 5,559,000.00	2003-2008	19	44	41	33	41	**115**
AllerGen	$ 6,092,000.00	2004-2009	116	181	41	40	147	**228**
ArcticNet	$ 6,776,000.00	2003-2008	36	307	58	14	133	**205**
AUTO21	$ 5,800,000.00	2000-2008	267	437	51	67	61	**179**
CAN	$ 4,673,001.00	1998-2009	51	885	60	103	114	**277**
CDRN	$ 200,000.00	2005-2007	0	0	3	2	4	**9**
CIPI	$ 4,243,000.00	1999-2009	115	201	25	49	20	**94**
CLLRNet	$ 3,550,000.00	2000-2008	92	58	41	15	43	**99**
CON	$ 400,000.00	2005-2007	0	0	19	14	41	**74**
CSN	$ 6,400,000.00	1999-2010	72	163	24	30	67	**121**
CWN	$ 5,155,510.00	2000-2008	23	141	40	20	44	**104**
EDGE	$ 200,000.00	2005-2007	0	0	6	6	10	**22**
GEOIDE	$ 3,520,000.00	1998-2009	185	437	70	48	86	**204**
ISIS	$ 3,200,000.00	1995-2009	89	184	15	39	17	**71**
MITACS	$ 5,856,000.00	1998-2009	198	1024	66	130	117	**313**
NICE	$ 472,488.00	2005-2008	0	0	20	1	20	**41**
PREVNet	$ 400,000.00	2005-2007	0	0	26	7	46	**79**
PrioNet	$ 5,362,000.00	2005-2009	72	92	24	11	33	**68**
SCN	$ 7,541,001.00	2000-2008	75	434	38	35	74	**147**
SFM	$ 4,100,000.00	1995-2009	184	310	32	29	62	**123**
Totals	**$ 79,500,000**		**1594**	**4898**	**700**	**693**	**1180**	**2573**

Health, Human Development and Biotechnology | Natural Resources and Environment | Engineering and Manufacturing | Advanced Technologies | NCE – New Initiatives

* Network researchers includes Canadians and foreigners

** HQP: refers to Highly Qualified Personnel including research staff (research associates and technicians) and research trainees (postdoctoral fellows, graduate and undergraduate students)

*** Includes Canadian and foreign organizations

*** Organizations are counted for each appearance, ie. If an organization participates in multiple networks, they will be counted more than once

Young innovators

Each year at its Annual General Meeting, the NCE program honours outstanding young science entrepreneurs who have turned knowledge into innovation and commercial success. In December of 2007, the honorees were:

- Dr. Jean-Philippe Côté, Mathematics of Information Technology and Complex Systems (MITACS), for developing highly sophisticated mathematical models to help the airline and rail industries optimize revenue by maximizing inventory to meet customer demand;
- Dr. James Ford, ArcticNet, for finding ways to more accurately predict climate vulnerability in Nunavut and the Arctic; and
- Dr. Michel Poulin, Canadian Institute for Photonics Innovation (CIPI), for developing a critical laser component for the Atacama Large Millimeter Array (ALMA) project, currently under construction in Chile, that will be a breakthrough on the scale of the Hubble telescope.

Want to know more about the NCE program?
Visit **http://www.nce.gc.ca**

100 WORDS ABOUT: Advanced Foods and Materials Network (AFMNet)

FOCUS: To identify strategic foods and bio-materials opportunities and network outstanding researchers to capture and facilitate them.

FUNDING: **$5,559,000** in 2007–2008.

STRENGTH: **19** researchers and **44** highly qualified people.

PARTNERSHIP POWER: **115** industry, public sector and academic partners.

KEY 2007–2008 ACCOMPLISHMENTS:

- Established a research partnership with **General Mills**.
- Created a software package called **Fluidix** that redefines how fluid dynamics and coarse-grained physics simulations are performed.
- Showed that people with a common variant of the **GLUT2 gene** are more likely to crave sugar.
- Began **developing a rapid DNA-based system** to detect rot in harvested apples.

www.afmnet.ca

"AFMNet connects General Mills to cutting edge advances in technology through a wide network of researchers to help General Mills enhance, complement, and accelerate the innovations that are already underway internally."

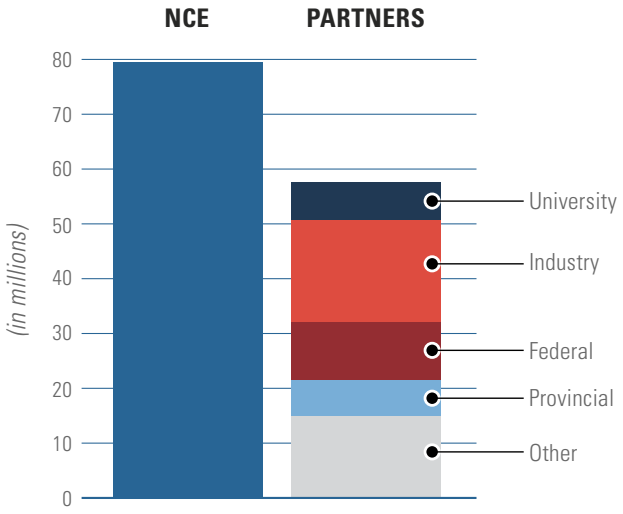
*— **Kurt Waananen,** Director of R&D for General Mills Canada*

Fiscal Year 2007-08

CONTRIBUTIONS TO THE NETWORKS OF CENTRES OF EXCELLENCE

SOURCE	CASH	IN-KIND	TOTAL
NCE	$79,500,000	$–	$79,500,000
PARTNERS			
University	$2,613,606	$4,217,144	$6,830,750
Industry	$10,975,287	$7,657,316	$18,632,603
Federal	$4,977,408	$5,389,727	$10,367,135
Provincial	$6,000,457	$850,011	$6,850,468
Other	$8,424,435	$6,343,351	$14,767,786
Partners' Total	$32,991,194	$24,457,549	$57,448,743
Grand Total	**$112,491,194**	**$24,457,549**	**$136,948,743**

Sources: NCE Database: Cash – Org. Statement Table
In-Kind – Org. In-Kind Support Contribution Table.



100 WORDS ABOUT: AllerGen The Allergy, Genes and Environment Network

FOCUS: To catalyze and support discovery, development, networking, capacity building, commercialization and knowledge translation to reduce the burden of allergic and related immune diseases.

FUNDING: **$6,092,000** in 2007–2008.

STRENGTH: **116** researchers and **181** highly qualified people.

PARTNERSHIP POWER: **228** industry, public sector and academic partners.

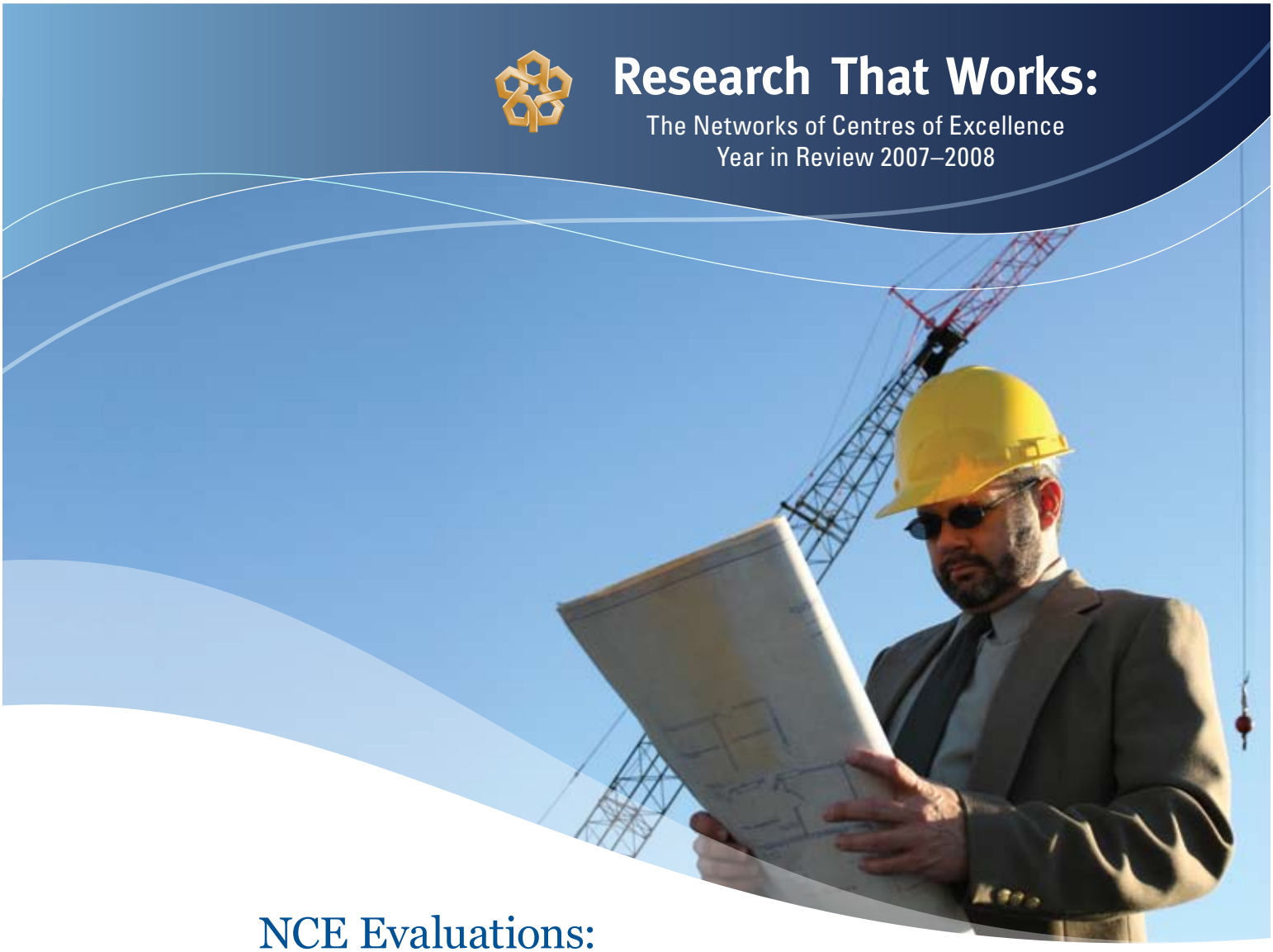
KEY 2007–2008 ACCOMPLISHMENTS:

- Partnered with the **Global European Allergy and Asthma Network**, the **Karolinska Institute**, the **World Health Organization**, the **International Union Against Tuberculosis and Lung Disease** and the **Institute of Population Health and Clinical Research at St. John's Research Institute**.
- Partnered with **Topigen Pharmaceuticals** to offer R&D opportunities to doctoral graduates.

www.allergen-nce.ca

" In the pharmaceutical industry, innovation comes from research. Since most of the small- and medium-sized companies in Canada do not have revenues, assistance programs like this (AllerGen-Topigen) Fellowship will help develop new research programs."

*— **Dr Luc Paquet,** VP of Discovery at Topigen Pharmaceuticals Inc.*



NCE Evaluations: Our commitment to research that works is as strong as ever

Leading the way

No man is an island and no organization — regardless of how well it functions — can afford to operate in isolation. To continually improve, the NCE program seeks out objective assessments of its approaches, programs and policies.

"Today, nearly two decades since the program's inception, NCE Networks continue to deliver powerful solutions to Canada's problems; the program remains a key component of the Government of Canada's S&T agenda."

— Recommendations on the Future Direction of the NCE Program, *August 2007*

In 2007, two independent, arm's-length organizations completed separate reviews of the NCE program. Both praised it for leading the way in translating research knowledge into solutions to improve Canada's economy and quality of life.

In its *Recommendations on the Future Direction of the NCE Program*, the NCE International Advisory Committee (IAC) declared that "not only has the NCE program helped to reshape how collaborative research is carried out in Canada and across the globe, the NCEs have also made contributions to S&T discoveries and commercialization that have improved the quality of life of Canadians."

The IAC, made up of global leaders from a variety of sectors and disciplines, recommended that the NCE program "build on its prior successes and help

secure Canada's place on the world S&T stage." It anticipated a future "in which the research undertaken by the NCE networks will remain critical to helping Canada meet the priorities and answer the problems, new and old, that will challenge the nation."

Authors R.A. Malatest and Associates Ltd. and Circum Network Inc. were equally laudatory in their *Networks of Centres of Excellence Evaluation Report*, prepared for the Interagency Evaluation Steering Committee.

The report singled out the NCE program for assembling three characteristics that other granting council programs do not share or bring together to the same degree:

- The multi-disciplinary nature of networks;
- The strong emphasis placed on the training of highly qualified personnel in a multi-disciplinary, multi-sectoral, networked environment; and
- The objective of solving real-world problems via research and knowledge transfer.

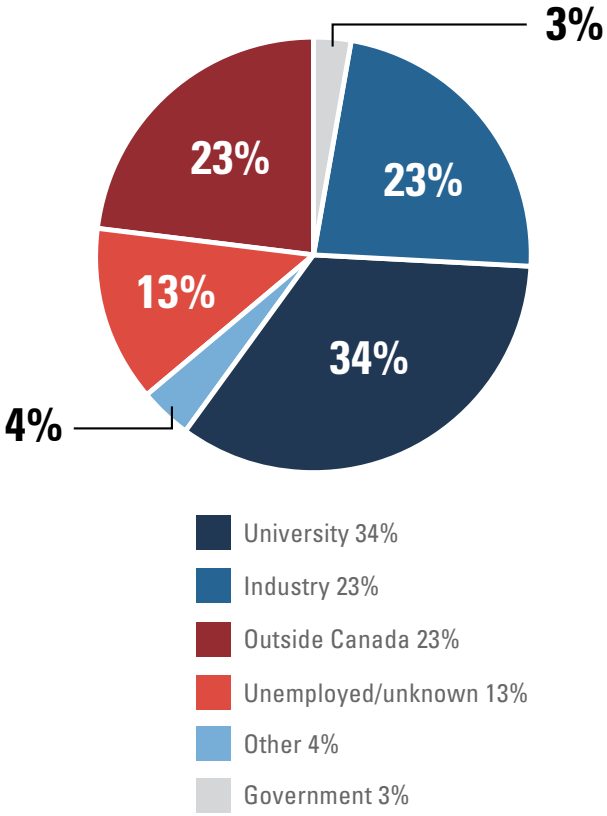
Recommending continued support, the authors noted that "informed stakeholders consider that the NCE program ranks among the top vehicles of S&T commercialization and translation support for Canadian research and technological application."

The report praised the NCE program for distinguishing itself "with a long-term funding commitment, a clearly national scope woven right into its fundamental network requirements and an emphasis on multi-disciplinarity that cuts across the granting councils' mandates." It also recognized the central role the NCE program plays in Government of Canada's S&T strategy and said it "ranks among the top vehicles of S&T commercialization and translation support for Canadian research and technological application."

It is gratifying to be acknowledged for championing S&T commercialization and translation — especially when that praise comes as the NCE program prepares to mark its 20th anniversary. Clearly, two decades in, our commitment to research that works has never been stronger.

Fiscal Year 2007-08

POST-NETWORK EMPLOYMENT BY SECTOR



"(Joint NABOS-ArcticNet activities) represent one of the most active and promising international collaborations in Arctic geography."

— ***Dr. Igor Polyakov,*** *Nansen and Amundsen Basins Observational System (NABOS) Network Scientist*

Research That Works:

The Networks of Centres of Excellence
Year in Review 2007–2008

100 WORDS ABOUT: ArcticNet

FOCUS: To translate our growing understanding of the changing Arctic into impact assessments, national policies and adaptation strategies.

FUNDING: **$6,776,000** in 2007–2008.

STRENGTH: **36** researchers and **307** highly qualified people.

PARTNERSHIP POWER: **205** industry, public sector and academic partners.

KEY 2007–2008 ACCOMPLISHMENTS:

- Forged **strong international partnerships** with Arctic research organizations in Russia, Denmark, Norway, France and the United States.
- Began a 15-month research expedition of the **CCGS Amundsen** across the coastal Canadian Arctic.
- Linked up with students through the **Schools on Board** program that offers teenagers opportunities to participate in research programs onboard the CCGS Amundsen.

www.arcticnet-ulaval.ca

100 WORDS ABOUT: AUTO21 Network of Centres of Excellence

FOCUS: To help build a stronger automotive sector in Canada through excellence in public/private sector collaborative research and the development of human and social capital.

FUNDING: **$5,800,000** in 2007–2008.

STRENGTH: **267** researchers and **437** highly qualified people.

PARTNERSHIP POWER: **179** industry, public sector and academic partners.

KEY 2007–2008 ACCOMPLISHMENTS:

- Developed **QVision** to improve the performance of automated parts inspection systems.
- Met the needs of **Mahle Inc.** by modifying sensor technology to provide real-time feedback on laser vibration welding.
- Produced a **plug-in filtering system** that can allow designers to view images the way an older driver might.

www.auto21.ca

"Through Auto21, we have built up a number of industrial projects. We're working with Ford; we're working with International Trucks. We have daily communications with their engineers."

— ***Dr. Ming Zheng,*** *Associate Professor at the University of Windsor (quoted in the* Globe and Mail*)*

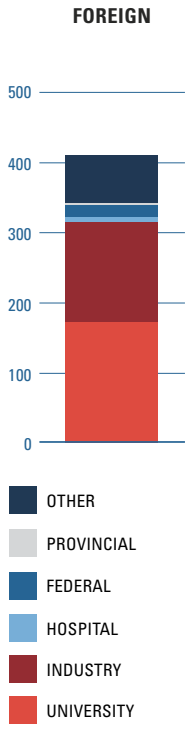
"Informed stakeholders consider that the NCE program ranks among the top vehicles of S&T commercialization and translation support for Canadian research and technological application …In addition, the Government of Canada's newly released S&T strategy has recently given the (NCE) program a central role."

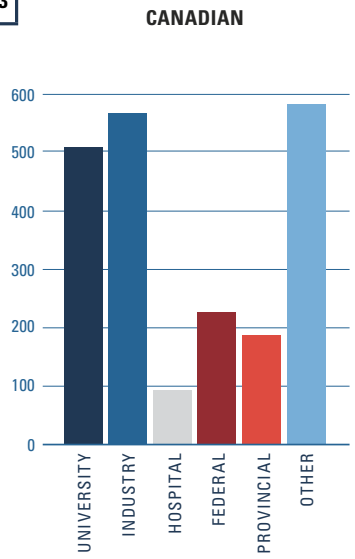
— ***Evaluation of the NCE Program,*** *October 2007*

Fiscal Year 2007-08

NCE PARTICIPATING ORGANIZATIONS

PROVINCE /TERRITORY	UNIVERSITY	INDUSTRY	HOSPITAL	FEDERAL	PROVINCIAL	OTHER	TOTAL
Alberta	46	55	1	8	33	48	**191**
British Columbia	55	77	6	17	29	70	**254**
Manitoba	25	16	1	4	18	23	**87**
New Brunswick	22	10	0	5	7	4	**48**
Newfoundland and Labrador	11	5	0	3	4	9	**32**
NWT, Nunavut & Yukon	0	1	0	6	5	13	**25**
Nova Scotia	27	9	5	6	7	6	**60**
Ontario	178	265	54	154	41	322	**1014**
Prince Edward Island	6	1	0	1	1	1	**10**
Quebec	120	120	26	20	30	80	**396**
Saskatchewan	20	6	0	3	11	6	**46**
Total Canadian	**510**	**565**	**93**	**227**	**186**	**582**	**2163**
Total Foreign	**184**	**132**	**7**	**18**	**1**	**68**	**410**
Grand Total	**694**	**697**	**100**	**245**	**187**	**650**	**2573**





Did You Know?

Approximately 39.5 million people in the world are infected with HIV/AIDS. Over 1 million people die from TB every year. Mathematics of Information Technology and Complex Systems (MITACS) researchers attended a meeting with African scientists in Uganda in November of 2007 to develop solutions for the transmission of infectious disease based on mathematical models. This concept was built on lessons learned after the 2003 SARS crisis in Toronto.

Source: MITACS Press Release: *Canadian mathematicians to meet with African scientists, Public Health officials in Uganda to develop strategies to combat HIV/AIDS and TB* (November 5, 2007).

The Centres of Excellence for the Commercialization of Research

Speeding commercialization

In its Budget 2007, the Government of Canada praised the NCE program's efforts in translating knowledge into products, policies and services. It also announced plans to foster more "partnerships between research institutions, government and industry."

The same year, the Government released *Mobilizing Science and Technology to Canada's Advantage*, which called for the creation of new private-sector-led networks.

Operating as the secretariat for this important national initiative, the NCE launched the first Centres of Excellence for Commercialization and Research (CECR) Competition — worth $165 million — in June of 2007. This competition sought out applications from groups and organizations capable of speeding the progress of commercialization — especially for research underway in health, information and communications technology, the environment, and energy and natural resources.

More than 100 groups submitted letters of intent; the NCE invited 25 of these to make full proposals. A private sector advisory board evaluated each proposal, paying close attention to the applicant's ability to:

- Create, grow and retain Canadian companies that can capture new markets with breakthrough innovations; and
- Accelerate the commercialization of leading-edge technologies, goods, and services.

The full slate of 11 CECRs was unveiled in February of 2008. Each is funded for five years.

CECR	Host site	Funding	Goal
Advanced Applied Physics Solutions Inc. – AAPS	TRIUMF, Canada's National Laboratory for Particle and Nuclear Physics, Vancouver	$14.95 million	To collaborate with academic, government, and industry stakeholders in developing promising technologies emerging from worldwide subatomic physics research to the commercially viable stage.
Bioindustrial Innovation Centre – BIC	University of Western Ontario's Sarnia-Lambton Research Park, Sarnia	$14.95 million	To enable Canada to become a global leader in green energy by taking renewable resources, such as agricultural and forestry by-products, and turning them into energy and chemicals for use in applications ranging from construction to automotive parts.
Centre for the Commercialization of Research – CCR	Ontario Centres of Excellence, Ottawa	$14.95 million	To generate economic benefits for Canada through the successful commercialization of technologies originating in Canadian universities, colleges and research hospitals.
Centre for Drug Research and Development – CDRD	University of British Columbia, Vancouver	$14.95 million	To advance promising medical discoveries from academia to a commercially attractive stage, and to build a collaborative research infrastructure to increase research and development capacity in British Columbia.

CECR	Host site	Funding	Goal
Centre of Excellence in Personalized Medicine – CEPMed	The Montreal Heart Institute, Montreal	$13.8 million	To lead in the optimization of personalized treatment. The integration of pharmacogenomics and biomarkers into drug development will enable the proper drug to be prescribed to the proper patient, at the proper dosage, right from the start.
Centre for Probe Development and Commercialization – CPDC	McMaster University's Innovation Park, Hamilton	$14.95 million	To ensure that Canadian efforts to create the next generation of probes to target a wide range of diseases are translated into products that will provide more effective diagnosis and treatment options.
Institute for Research in Immunology and Cancer – IRIC/CECR in Therapeutics Discovery – IRICoR	Université de Montréal, Montreal	$14.95 million	To accelerate the development of new targeted cancer therapies by supporting the discovery portfolio and technological platforms developed at the Unit for the Discovery of Medicines at the Université de Montréal and linking them with partners.
MaRS Innovation – MI	The MaRS Centre, Toronto	$14.95 million	To help turn research strengths of the downtown Toronto MaRS Discovery District — anchored by major teaching hospitals, the University of Toronto and several research institutes — into economic opportunities through collaboration on commercialization.

CECR	Host site	Funding	Goal
The Prostate Centre's Translational Research Initiative for Accelerated Discovery and Development – PC-TRIADD	The Prostate Centre at Vancouver General Hospital, Vancouver	$14.95 million	To integrate critical components of translational research under one organization, allowing seamless management of the complex processes involved in discovery, preclinical development and clinical research.
Pan-Provincial Vaccine Enterprise – PREVENT	University of Saskatchewan's Vaccine and Infectious Disease Organization, Saskatoon	$14.95 million	To strengthen the global competitiveness of Canada's vaccine industry by partnering with Canadian stakeholders in early-stage vaccine development and accelerate the rate at which essential vaccines successfully reach the marketplace.
CECR in the Prevention of Epidemic Organ Failure – PROOF	University of British Columbia and the iCAPTURE Centre at St. Paul's Hospital, Vancouver	$14.95 million	To find practical solutions to vital organ failure and its impact on Canadians and our health care system, improving the standard of care and quality of life for patients faced with heart, lung and kidney failure.

100 WORDS ABOUT: Canadian Arthritis Network (CAN)

FOCUS: To improve the quality of life of people with arthritis, decrease the personal, societal and economic burden of the disease and promote the growth of the Canadian economy through arthritis R&D.

FUNDING: **$4,673,000** in 2007–2008.

STRENGTH: **51** researchers and **885** highly qualified people.

PARTNERSHIP POWER: **277** industry, public sector and academic partners.

KEY 2007–2008 ACCOMPLISHMENTS:

- Initiated **16 clinical trials**.
- Strengthened international partnerships with the **United Kingdom**, **Switzerland**, **Japan** and the **United States**.
- Partnered with **Arthritis Consumer Experts (ACE)** to produce a survey to identify the most urgent research needs of people living with arthritis.

www.arthritisnetwork.ca

"[CAN has] brought together just about every significant arthritis researcher in the country and they provide this extraordinary training program for tomorrow's generation of young scientists and researchers."

*— **Dr. David Hawkins,** Interim VP of Medical and Scientific Affairs for The Arthritis Society*

100 WORDS ABOUT: Canadian Institute for Photonic Innovations (CIPI)

FOCUS: To stimulate innovations in photonics and promote their exploitation to generate wealth and enhance the quality of life for Canadians.

FUNDING: **$4,243,000** in 2007–2008.

STRENGTH: **115** researchers and **201** highly qualified people.

PARTNERSHIP POWER: **94** industry, public sector and academic partners.

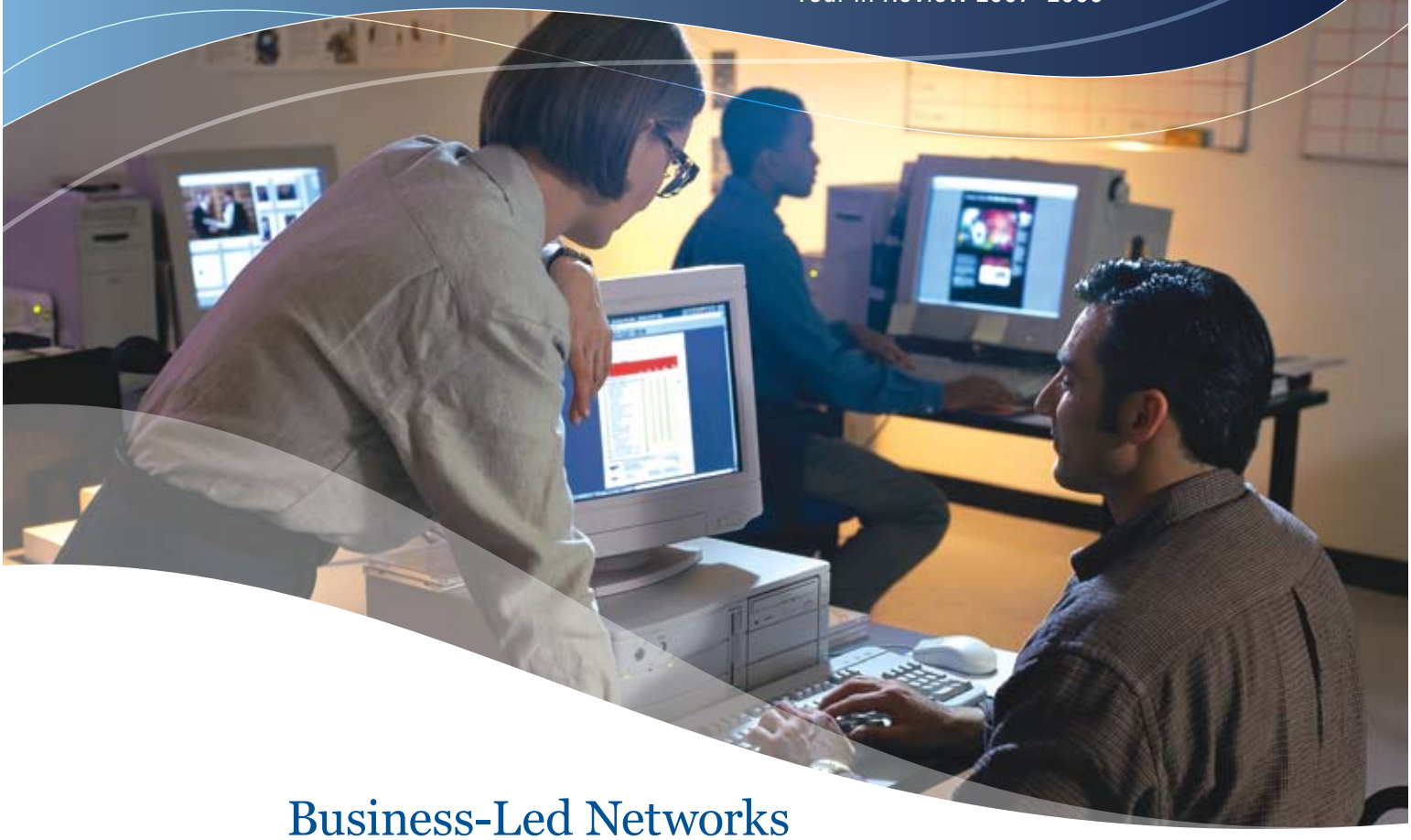
KEY 2007–2008 ACCOMPLISHMENTS:

- Helped affiliate **Teraxion** to win a major contract supplying specialized photonic local oscillator systems for the Atacama Large Millimeter Array project — a breakthrough on the scale of the Hubble telescope.
- Worked with affiliate **Cyrium Technologies** of Ottawa to demonstrate a scale-up manufacturing process to produce highly efficient solar cells using nano-engineered materials.

http://www.cipi.ulaval.ca

"I am proud that what started as a university project has resulted in a technology with such broad commercial appeal."

*— **Dr. Michel Poulin,** former CIPI trainee*



Business-Led Networks of Centres of Excellence

Supporting private sector innovation

If the 11 Centres of Excellence in Commercialization and Research (CECRs) represent the foundation of the NCE program's efforts to build Canada's entrepreneurial advantage, the Business-Led Networks of Centres of Excellence will be the cornerstone.

The $46-million initiative, announced in Budget 2007, will fund large-scale, collaborative networks that support private sector innovation.

Starting in 2009, five new networks — each led by private sector consortia — will commence a four-year funding cycle to help sharpen Canada's competitive edge. It is anticipated that they will generate technologies and products that produce "knowledge economy" jobs and opportunities.

The new networks will focus on research in five priority areas:

- Environmental science and technologies;
- Natural resources and energy;
- Health and related life sciences and technologies;
- Information and communication technologies; and
- Business, management and finance.

From the 36 Letters of Intent received by the January 30, 2008 deadline, ten applicants were invited to submit full proposals. The NCE Secretariat expects to announce the winners in early 2009.

Did You Know?

A research team led by PrioNet researcher Dr. David Westaway discovered the first new prion protein since 1985. The prion protein, called Shadoo, had been theorized in previous research, but had not been proven to exist until 2007.

Source: *PrioNews*, July-September 2007.

"Canada's competitiveness in the future depends on our children being able to communicate, and targeting children in their early years is key to ensure they're successful."

— Donald G. Jamieson,
CLLRNet CEO and Scientific Director

100 WORDS ABOUT: Canadian Language & Literacy Research Network (CLLRNet)

FOCUS: To improve language and literacy skills in Canadian children, enabling them to contribute more effectively to the social and economic life of their communities.

FUNDING: **$3,550,000** in 2007–2008.

STRENGTH: **92** researchers and **58** highly qualified people.

PARTNERSHIP POWER: **99** industry, public sector and academic partners.

KEY 2007–2008 ACCOMPLISHMENTS:

- Launched the **Encyclopedia of Language and Literacy Development**, an innovative web-based resource for families, educators and others.
- Developed the *From Birth… For Life* resource kit in association with the **Canadian Child Care Federation** in order to better enable early childhood educators to encourage language and literacy development.

www.cllrnet.ca

100 WORDS ABOUT: Canadian Stroke Network (CSN)

FOCUS: To reduce the burden of stroke through leadership in research innovation.

FUNDING: **$6,400,000** in 2007–2008.

STRENGTH: **72** researchers and **163** highly qualified people.

PARTNERSHIP POWER: **121** industry, public sector and academic partners.

KEY 2007–2008 ACCOMPLISHMENTS:

- Distributed over 10,000 **Sodium 101** fridge magnets to help people to make healthy food choices.
- Signed an agreement to collaborate with the **U.S. National Institutes of Health** on emerging stroke research.
- Presented evidence at the **International Stroke Conference** that nine out of 10 in-hospital deaths could be prevented within a week after stroke by putting organized care in place.

www.canadianstrokenetwork.ca

"Countries in the European Union have joined forces in a unique effort to structure, integrate and advance stroke research. The European Stroke Network is modeled after the Canadian Stroke Network."

— Dr. Stephen Meairs,
University of Heidelberg, European Stroke Network

The Industrial Research and Development Internship Program

Finding fresh approaches

Canada counts on its young, talented researchers to contribute to the country's health, well-being and prosperity by moving science forward.

Training the next generation of Canadian scientists is more than an important part of the NCE program. It is encoded in our DNA. The development of highly qualified personnel (HQP) is one of the key criteria used to evaluate groups who apply for network status and to review existing networks when they seek to extend their funding cycles. Tens of thousands of HQP have been trained since the NCE program began in 1989. They are now hard at work in hospitals, universities, companies, and government agencies and departments across Canada.

In the new global economy, however, there is an ever-increasing need — especially in the private sector — for graduates whose ingenuity and innovation can keep Canada in the vanguard of competitiveness. In response to the Government's goal of developing the most educated, skilled and flexible workforce in the world, the NCE in 2007–2008 began administering the Industrial Research and Development Initiative (IRDI).

IRDI was launched in December of 2007 with an investment of $8.64 million over two years to support collaborative projects involving graduate students and postdoctoral fellows, their supervising professors and industry partners. Companies will share the cost of hosting the interns, with additional funding from provincial, university and other partners. The program will target all academic disciplines.

ACCELERATE

The program — designed to introduce interns to real-life business research needs of Canada's private sector — is based on the ACCELERATE model developed by the Mathematics of Information Technology and Complex Systems (MITACS) NCE. That program has matched mathematically skilled personnel with companies seeking innovative solutions to create a system of research that works.

For example, it helped Azure Dynamics of Burnaby, British Columbia create technologies to improve fuel efficiency in hybrid vehicles. A MITACS intern helped Vidir Machine Inc. of Arborg, Manitoba to develop a 3-D model of a biomass gasifier, while a University of Alberta grad student at the Calgary-based Computer Modelling Group collaborated on the creation of a "virtual liver" to help doctors and drug manufacturers better understand how the organ responds to medications.

In February of 2008, ACCELERATE Canada was selected through an independent peer review process to run the IRDI program. The goal is to place 1,200 graduate students and post-docs with businesses all over Canada by 2010.

Did You Know?

The Canadian Stroke Network, the Canadian Obesity Network and the Advanced Foods and Materials Network established a "Salt Lick" award to raise awareness of sodium levels in foods. The first recipient of this dubious honor was A&W's "Chubby Junior" Kids' Meal. This meal contains 1,910 mg of sodium, or 710 mg more than the recommended daily intake for children ages four to eight.

Source: *Canadian Obesity Network News*, Jan. 29, 2007

100 WORDS ABOUT: Canadian Water Network (CWN)

FOCUS: To establish and nurture partnerships and communities of practice that bring together multi-disciplinary research excellence and water managers providing innovation and highly qualified people to address water resource management.

FUNDING: **$5,155,510** in 2007–2008.

STRENGTH: **23** researchers and **141** highly qualified people.

PARTNERSHIP POWER: **104** industry, public sector and academic partners.

KEY 2007–2008 ACCOMPLISHMENTS:

- Launched a **national consortium** to address the challenge of protecting groundwater supplies from pathogens. Secured $1 million of partner funding.
- Kickstarted two national teams (members including **GE Water & Process Technologies**, **ZENON Membrane Solutions**) to research membrane technologies for drinking water and wastewater.

www.cwn-rce.ca

"Upgrading Canada's water and wastewater infrastructure is of paramount importance to maintain the sustainability of Canada's water supplies and ensure the country's economic prosperity."

— Dr. Mark Servos,
CWN Scientific Director

100 WORDS ABOUT: Geomatics for Informed Decisions Network (GEOIDE)

FOCUS: To consolidate and strengthen the domestic geomatics industry while making optimum use of R&D resources, and to create a sustainable network that integrates all sectors of the geomatics community.

FUNDING: **$3,520,000** in 2007–2008.

STRENGTH: **185** researchers and **437** highly qualified people.

PARTNERSHIP POWER: **204** industry, public sector and academic partners.

KEY 2007–2008 ACCOMPLISHMENTS:

- **SimActive Inc.**, a GEOIDE-supported leader in 3D mapping, introduced its Correlator3D™ solution for producing digital surface models and digital terrain models.
- GEOIDE spin-off **NSim Technologies** joined a consortium led by **DMR** that won a $10-million contract from Defence Research and Development Canada, Valcartier.

www.geoide.ulaval.ca

"Thanks to GEOIDE, I created strong relationships with key people across the country. These included collaboration with different universities and industrial organizations. Not only did I hear different perspectives on a given problem from a technical point of view, but these contacts facilitated the establishment of SimActive."

— Dr. Philippe Simard,
co-founder of SimActive Inc.

Working in Partnership with Canada's Universities

Linking up with academia

The NCE program simply could not exist without the significant support it receives from Canada's universities and other post-secondary institutions.

These schools of higher learning — along with their affiliated hospitals and research institutes — provide the infrastructure and research personnel required to build networks of knowledge across the country.

All of the networks are hosted by universities and all of the new Centres of Excellence for Commercialization of Research (CECRs) are either hosted by or have direct links to the centres of academia.

It is a mutually beneficial bond. NCE investments help universities to become centres of world-class research, attract top-flight faculty and train brilliant young graduate students. There is also the prestige factor: Dr. John Hepburn, Vice-President of Research at the University of British Columbia (UBC), which is a partner in five of the 11 CECRs, says NCE investments recognize his university's "international reputation for excellence, innovation and leadership."

These partnerships underscore Canadian universities' commitment to working with the NCE program to accelerate the development of applied research to the benefit of all — research that works.

A province-by-province breakdown of Participating Universities is available at the NCE website (www.nce-rce.gc.ca/Annual_Report_07-08_Rapport_Annuel/Network_Univers_Reseaux-eng.asp)

Did You Know?

PREVNet collaborated with the Family Channel in February 2008 to produce a lesson plan for teachers that included tips for dealing with bullying, and statistics on peer intervention, including:

- Over 1,100,000 children are bullied each week;
- Peers are present during 88% of bullying episodes; and
- When peers intervene, bullying stops in less than ten seconds, 57% of the time.

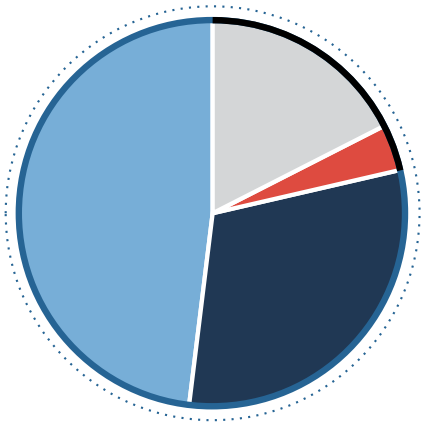
Source: Family Channel and PREVNet's *Stand up! Lesson plan for teachers*

Fiscal Year 2007-08

REGIONAL DISTRIBUTION OF NCE UNIVERSITY AND NON-UNIVERSITY RESEARCHERS AND HQP* SUPPORTED BY NCE AND NON-NCE FUNDS

PROVINCES / TERRITOIRES	NCE RESEARCHERS		TOTAL RESEARCHERS	HQP SUPPORTED BY NCE FUNDS	HQP SUPPORTED BY NON-NCE FUNDS	TOTAL HQP	TOTAL PERSONNEL
	UNIVERSITY	NON-UNIVERSITY					
NWT, Nunavut & Yukon	0	2	2	3	1	4	**6**
British Columbia	178	23	201	226	434	660	**861**
Alberta	197	22	219	258	372	630	**849**
Saskatchewan	28	1	29	23	35	58	**87**
Manitoba	39	21	60	91	66	157	**217**
Ontario	487	171	658	719	1,288	2,007	**2,665**
Quebec	255	33	288	455	652	1,107	**1,395**
New Brunswick	41	1	42	41	43	84	**126**
Nova Scotia	40	6	46	48	68	116	**162**
Prince Edward Island	1	1	2	10	4	14	**16**
Newfoundland and Labrador	10	2	12	26	15	41	**53**
Total Canadian	**1,276**	**283**	**1,559**	**1,900**	**2,978**	**4,878**	**6,437**
Total Foreign	17	18	35	5	15	20	**55**
Grand Total	**1,293**	**301**	**1,594**	**1,905**	**2,993**	**4,898**	**6,492**

* Highly Qualified Personnel refers to research staff such as research associates and technicians, and research trainees such as postdoctoral fellows, graduate students and summer students



University 1,293
Non-university 301
HQP supported by NCE funds 1,905
HQP supported by non-NCE funds 2,993
Total researchers 1,594
Total HQP 4,898
Total personnel 6,492

Fiscal Year 2007-08

UNIVERSITIES BY NETWORK

BRITISH COLUMBIA

	AFMNet	Allergen	ArcticNet	AUTO21	CAN	CDRN	CIPI	CLLRNet	CON	CSN	CWN	EDGE	GEOIDE	ISIS	MITACS	NICE	PREVNet	PrioNet	SCN	SFM
Royal Roads University																				•
Simon Fraser University	•	•	•	•		•	•	•	•		•		•		•		•			•
Thompson Rivers University															•					•
Trinity Western University					•															
University of British Columbia	•	•	•	•	•		•	•		•	•	•	•	•	•	•	•	•	•	•
University of Northern British Columbia			•	•									•		•					•
University of the Fraser Valley																	•			
University of Victoria	•		•	•			•	•	•		•		•		•	•	•			•
Vancouver Island University (formerly Malaspina University College)															•					

ALBERTA

	AFMNet	Allergen	ArcticNet	AUTO21	CAN	CDRN	CIPI	CLLRNet	CON	CSN	CWN	EDGE	GEOIDE	ISIS	MITACS	NICE	PREVNet	PrioNet	SCN	SFM
Athabasca University		•																		
University of Alberta	•	•	•	•	•		•	•	•	•	•	•	•	•	•		•	•	•	•
University of Calgary		•	•	•	•		•	•	•	•	•		•	•	•	•	•	•	•	•
University of Lethbridge	•							•		•	•				•				•	

SASKATCHEWAN

	AFMNet	Allergen	ArcticNet	AUTO21	CAN	CDRN	CIPI	CLLRNet	CON	CSN	CWN	EDGE	GEOIDE	ISIS	MITACS	NICE	PREVNet	PrioNet	SCN	SFM
University of Regina				•							•				•	•				•
University of Saskatchewan	•	•		•	•		•	•	•	•	•			•	•		•	•	•	•

MANITOBA

	AFMNet	Allergen	ArcticNet	AUTO21	CAN	CDRN	CIPI	CLLRNet	CON	CSN	CWN	EDGE	GEOIDE	ISIS	MITACS	NICE	PREVNet	PrioNet	SCN	SFM
Brandon University	•	•											•					•		
University of Manitoba	•	•	•	•	•				•	•	•		•	•	•	•	•	•		•
University of Winnipeg			•					•					•		•		•			•

ONTARIO

	AFMNet	Allergen	ArcticNet	AUTO21	CAN	CDRN	CIPI	CLLRNet	CON	CSN	CWN	EDGE	GEOIDE	ISIS	MITACS	NICE	PREVNet	PrioNet	SCN	SFM
Brock University	•							•			•					•	•			
Carleton University			•	•			•	•					•	•	•		•			
Huron University College								•												
Lakehead University	•	•	•	•																•
Laurentian University		•											•							
McMaster University	•	•		•	•		•	•	•	•	•		•		•	•	•		•	
Nipissing University		•		•																
Queen's University	•	•	•	•	•		•	•	•	•	•		•	•	•	•	•	•	•	
Royal Military College of Canada			•	•							•		•	•	•					
Ryerson Polytechnic University	•		•	•			•		•		•		•		•					
Trent University			•	•				•			•									•
University College London					•														•	
University of Guelph	•	•	•	•	•			•	•	•	•				•		•	•		•
University of Ontario Institute of Technology	•			•											•					
University of Ottawa	•	•	•	•	•		•	•		•	•	•	•	•	•		•	•	•	•
University of Toronto	•	•	•	•	•		•	•		•	•		•	•	•	•	•	•	•	•
University of Waterloo	•		•	•	•		•	•			•		•	•	•	•			•	
University of Western Ontario	•	•	•	•	•		•	•		•			•		•		•	•	•	•
University of Windsor				•							•		•		•					
Wilfrid Laurier University		•		•				•			•		•		•		•			•
York University			•	•				•			•	•	•		•		•			

QUEBEC

	AFMNet	Allergen	ArcticNet	AUTO21	CAN	CDRN	CIPI	CLLRNet	CON	CSN	CWN	EDGE	GEOIDE	ISIS	MITACS	NICE	PREVNet	PrioNet	SCN	SFM
Bishop's University																	•			
Concordia University			•	•			•	•						•	•		•	•		•
École de technologie supérieure						•	•						•		•					
École des Hautes Études Commerciales				•											•					
École Polytechnique de Montréal			•	•	•		•			•	•			•	•					
Institut National de la recherche scientifique			•		•		•				•		•		•					
McGill University	•	•	•	•	•	•	•	•	•	•	•		•		•	•	•	•	•	•
Université de Montréal	•	•	•	•	•			•		•			•		•		•		•	
Université de Sherbrooke	•	•	•	•	•		•		•	•	•		•	•	•	•		•		
Université du Québec à Chicoutimi		•																		•
Université du Québec à Montréal			•				•	•							•		•			•
Université du Québec à Rimouski	•		•					•					•		•					
Université du Québec à Trois-Rivières			•	•									•		•					
Université du Québec en Abitibi-Témiscamingue													•							•
Université du Québec en Outaouais															•					
Université Laval	•	•	•	•	•		•	•	•	•	•		•		•		•		•	•

NEW BRUNSWICK

	AFMNet	Allergen	ArcticNet	AUTO21	CAN	CDRN	CIPI	CLLRNet	CON	CSN	CWN	EDGE	GEOIDE	ISIS	MITACS	NICE	PREVNet	PrioNet	SCN	SFM
Mount Allison University											•				•					
St. Thomas University				•											•	•				
Université de Moncton	•							•							•					•
University of New Brunswick	•	•	•	•				•		•	•		•		•	•				•

PRINCE EDWARD ISLAND

	AFMNet	Allergen	ArcticNet	AUTO21	CAN	CDRN	CIPI	CLLRNet	CON	CSN	CWN	EDGE	GEOIDE	ISIS	MITACS	NICE	PREVNet	PrioNet	SCN	SFM
University of Prince Edward Island					•			•	•	•	•									

NOVA SCOTIA

	AFMNet	Allergen	ArcticNet	AUTO21	CAN	CDRN	CIPI	CLLRNet	CON	CSN	CWN	EDGE	GEOIDE	ISIS	MITACS	NICE	PREVNet	PrioNet	SCN	SFM
Acadia University								•			•				•					
Dalhousie University	•	•	•	•	•			•	•	•	•	•	•	•	•	•	•	•	•	•
Nova Scotia Agricultural College											•							•		
Saint Mary's University		•													•					
St. Francis Xavier University	•				•															

NEWFOUNDLAND AND LABRADOR

	AFMNet	Allergen	ArcticNet	AUTO21	CAN	CDRN	CIPI	CLLRNet	CON	CSN	CWN	EDGE	GEOIDE	ISIS	MITACS	NICE	PREVNet	PrioNet	SCN	SFM
Memorial University of Newfoundland	•	•	•		•			•		•			•		•				•	•

100 WORDS ABOUT: Intelligent Sensing for Innovative Structures (ISIS Canada)

FOCUS: To advance Canadian civil engineering to a world leadership position through the development and application of fibre reinforced polymers (FRPs) and fibre optic sensors (FOSs) technologies.

FUNDING: **$3,200,000** in 2007–2008.

STRENGTH: **89** researchers and **184** highly qualified people.

PARTNERSHIP POWER: **71** industry, public sector and academic partners.

KEY 2007–2008 ACCOMPLISHMENTS:

- Began a partnership in a major study that could keep the historic buildings on **Parliament Hill** intact in the event of a major earthquake.
- Advanced the cause of strengthening international collaborations by hosting the **Third International Conference on Structural Health Monitoring of Intelligent Infrastructure** in Vancouver.

http://www.isiscanada.com

"We believe that systems that monitor the ongoing health of structures will inevitably change our whole approach to structural design and maintenance."

— ***Dr. Aftab Mufti,*** *Scientific Director of ISIS Canada (quoted in the* Globe and Mail*)*

100 WORDS ABOUT: Mathematics of Information Technology and Complex Systems (MITACS)

FOCUS: To lead the generation, application and commercialization of mathematical tools and methodologies within a world-class research program.

FUNDING: **$5,856,000** in 2007–2008.

STRENGTH: **198** researchers and **1024** highly qualified people.

PARTNERSHIP POWER: **313** industry, public sector and academic partners.

KEY 2007–2008 ACCOMPLISHMENTS:

- Partnered with **Mobile Knowledge** — a company offering advanced GPS, wireless, and mobile data communications technology for fleet management applications — to develop a scheduling algorithm for ambulances and courier vehicles.
- Developed three software packages for modeling protein folding that were licensed to **Bioinformatics Solutions Inc.** (Improper protein folding can lead to diseases like Alzheimer's and Parkinson's.)

www.mitacs.ca

"Research is a long-term process. The better we develop ties to universities, the better they will know what we need in five years time. If we capture that synergy, the knowledge and the technology will come closer to Bombardier. That's the edge."

— ***Eric Laurendeau,*** *Co-ordinator, University Relations, Bombardier Aerospace (re: collaborating with MITACS)*

Research That Works:

The Networks of Centres of Excellence
Year in Review 2007–2008

Working in Partnership with the World's Best Researchers

Reaching out to the world

To flourish in the 21st century global economy, Canada needs to be both a contributor to and recipient of the worldwide flow of ideas, talent and technologies. Realizing this, the Government's 2007 S&T Strategy challenged researchers, industry leaders and entrepreneurs to look beyond Canada's borders for inspiration and opportunities.

Here again, the NCE was ahead of the curve.

In 2006, the networks had been asked to submit their ideas for innovative initiatives to extend their research reach beyond Canada's borders. In the spring of 2007, the NCE was in position to respond to the Government's challenge by launching the International Program Initiative (IPI). This represents an investment of almost $6 million over two years, with grants awarded to seven networks, including:

- **AllerGen The Allergy, Genes and Environment Network** – to work with international partners to identify new treatments and potential cures;
- **ArcticNet** – to partner with circumpolar colleagues to provide the most comprehensive picture yet of the impact of climate change on the Arctic;
- **The Canadian Arthritis Network (CAN)** – to strengthen linkages with world-leading arthritis institutes;

- **Mathematics of Information Technology and Complex Systems (MITACS)** – to link with international counterparts on key economic and social issues;
- **The National Initiative for the Care of the Elderly (NICE)** – to establish an international network of scientists and practitioners specializing in geriatrics and gerontology;
- **PrioNet** – to work closely with NeuroPrion in Europe and the National Prion Disease Pathology Surveillance Center in the U.S; and
- **The Stem Cell Network (SCN)** – to continue leading the International Consortium of Stem Cell Networks (ICSCN) and promote professional development of trainees.

Fiscal Year 2007-08

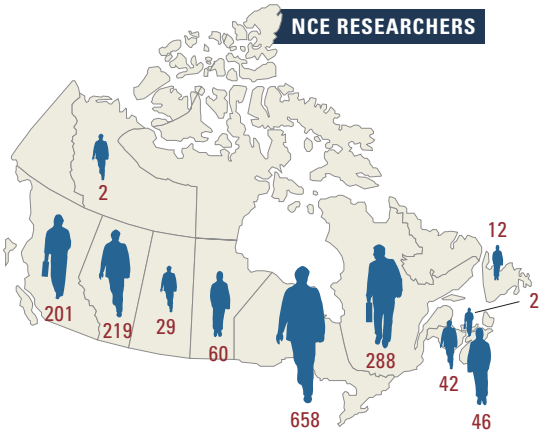
REGIONAL DISTRIBUTION OF NCE PERSONNEL AND FUNDS

PROVINCE / TERRITORY	NCE RESEARCHERS		HIGHLY QUALIFIED PERSONNEL*		NCE EXPENDITURES	
	# TOTAL	PERCENTAGE	# TOTAL	PERCENTAGE	$ TOTAL	PERCENTAGE
NWT, Nunavut & Yukon	2	0%	4	0%	$0	0.0%
British Columbia	201	13%	660	13%	$9,459,141	13.1%
Alberta	219	14%	630	13%	$7,849,477	10.8%
Saskatchewan	29	2%	58	1%	$1,109,161	1.5%
Manitoba	60	4%	157	3%	$3,450,449	4.8%
Ontario	658	41%	2007	41%	$34,495,668	47.6%
Quebec	288	18%	1107	23%	$13,368,346	18.5%
New Brunswick	42	3%	84	2%	$1,038,317	1.4%
Nova Scotia	46	3%	116	2%	$1,120,311	1.5%
Prince Edward Island	2	0%	14	0%	$153,551	0.2%
Newfoundland and Labrador	12	1%	41	1%	$375,425	0.5%
Total	**1559**	**98%**	**4878**	**100%**	**$72,419,847**	**100%**
Total Foreign	**35**	**2%**	**20**	**0%**	**$0**	**0.0%**
Grand Total	**1,594**	**100%**	**4,898**	**100%**	**$72,419,847**	**100%**

* Highly Qualified Personnel refers to research staff such as research associates and technicians, and research trainees such as postdoctoral fellows, graduate students and summer students.
Source: NCE, Database: Organizations In-Kind Support Contribution Table.

Research That Works:

The Networks of Centres of Excellence
Year in Review 2007–2008



NCE EXPENDITURES

Ontario	47.6%
Quebec	18.5%
British Columbia	13.1%
Alberta	10.8%
Manitoba	4.8%
Nova Scotia	1.5%
Saskatchewan	1.5%
New Brunswick	1.4%
Newfoundland & Labrador	0.5%
Prince Edward Island	0.2%
NWT, Nunavut & Yukon	0%

100 WORDS ABOUT: PrioNet Canada

FOCUS: To lead the generation, application and commercialization of mathematical tools and methodologies within a world-class research program.

FUNDING: **$5,362,000** in 2007–2008.

STRENGTH: **72** researchers and **92** highly qualified people.

PARTNERSHIP POWER: **68** industry, public sector and academic partners.

KEY 2007–2008 ACCOMPLISHMENTS:

- **Defined a second prion protein** called Shadoo — the first discovery of a new prion protein since 1985.
- Advanced research work on a **prototype vaccine** that triggers immune responses in healthy sheep to prevent prion-related infections.
- Organized funding of **19 Canadian projects** to research diseases such as bovine spongiform encephalopathy (BSE) and Creutzfeldt-Jakob in humans.

www.prionetcanada.ca

"PrioNet Canada provides funding, scientific platforms, networking and training opportunities. I am benefiting from all of these."

— Dr. Xavier Roucou,
the University of Sherbrooke

100 WORDS ABOUT: Stem Cell Network (SCN)

FOCUS: To be a catalyst for enabling translation of stem cell research into clinical applications, commercial products or public policy.

FUNDING: **$7,541,000** in 2007–2008.

STRENGTH: **75** researchers and **434** highly qualified people.

PARTNERSHIP POWER: **147** industry, public sector and academic partners.

KEY 2007–2008 ACCOMPLISHMENTS:

- Supported the behind-the-scenes work that led to the creation of the $100-million **Cancer Stem Cell Consortium** in partnership with the California Institute for Regenerative Medicine.
- Helped transform a training program in regenerative medicine into a nationally accredited graduate-level course.
- Supported research to enable **groundbreaking clinical trial** for patients with pulmonary hypertension disease.

www.stemcellnetwork.ca

"The whole Cancer Stem Cell Consortium initiative emanated from the SCN's cancer stem cell project. Without the support of the Network from the outset, none of this would have been possible."

— Dr. John Hassell,
McMaster University

Did You Know?

Fifty percent of the world's population lives along coastlines. If greenhouse gas emissions cause the sea level to rise over the next century, it may affect a great number of the world's population. Dr. Stephen Sheppard has been working on a GEOIDE project to create realistic images of what everyday residential and urban areas will look like under different predicted environmental conditions.

Source: *Hot in my backyard — Using visualizations to bring the science of climate change into our everyday lives*, brochure on GEOIDE website; Delta Optimist article on Stephen Sheppard's project, also available on GEOIDE website.

Continual improvement: renewal process ensures excellence

Renewing excellence

Networks in the NCE program can secure funding for a total of two seven-year cycles — with a review at four-year mark of each cycle. At the completion of their first seven-year cycle, networks go through a comprehensive evaluation with close attention paid to their scientific accomplishments, future research goals, training and knowledge transfer activities.

In November of 2007, three networks succeeded in winning second-cycle renewals and secured a total funding commitment of almost $70 million over four years. They are:

- AUTO21 Network of Centres of Excellence, the University of Windsor;
- Canadian Water Network, the University of Waterloo; and
- Stem Cell Network, the University of Ottawa.

Fiscal Year 2007-08

PATENTS, LICENCES AND SPIN-OFF COMPANIES

PATENTS	TOTAL
Filed	87
Issued	27
LICENCES	**TOTAL**
Granted	15
Under negotiation	15
PUBLICATIONS	**TOTAL**
Refereed publications	3950
Non-refereed publications	2267
SPIN-OFF COMPANIES	**TOTAL**
	3

NAMES OF SPIN-OFF COMPANIES FOR 2007-08

NAME	NETWORK	CITY	PROVINCE
InoMetrics Inc	CIPI	Toronto	Ontario
ExOptx	CIPI	Quebec	Quebec
MiOPT	MITACS	Coquitlam/Burnaby	British Columbia

Patents - NCE by Fiscal Year
Licences - NCE by Fiscal Year
Publications - NCE by Fiscal Year

The New Initiatives

The NCE New Initiative program supports networking among already established researchers or research teams, encouraging them to build new partnerships with industries, government departments and agencies, as well as not-for-profit organizations. There are currently five New Initiatives Networks.

The Canadian Obesity Network (CON), which has its administrative offices at the Royal Alexandra Hospital in Edmonton, works to prevent and reduce the health threat of obesity through multidisciplinary initiatives that include nutrition, physical activity, education and health care.

The National Initiative for the Care of the Elderly (NICE), hosted by the University of Toronto, addresses the emerging challenges faced by doctors, nurses and social workers in caring for the increasing number of senior citizens.

Promoting Relationships and Eliminating Violence Network (PREVNet), based at Queen's University and York University, brings together researchers, nongovernmental organizations, and governments as partners to reduce aggression and promote healthy relationships of Canadian children and youth.

Emerging Dynamic Global Economies Network (EDGE) The rapid growth of the new economic powerhouses of China, India and Brazil is transforming the global economy and presenting both challenges and opportunities for Canada. EDGE, the Emerging Dynamic Global Economies Network, links more than 50 research institutions and think tanks from across Canada and internationally. They identifying the key economic and social impacts of this change, and helping develop public policies and business strategies.

Leading companies and key business associations are also part of EDGE. Plans include a communications campaign to encourage public debate on the issues, and creation of new training and exchange programs for students, business professionals and government officials.

Canadian Design Research Network (CDRN) Research can improve the design of everything from a small handheld device to an urban community. Good design also yields social, economic and environmental benefits, as in the case of a "green" building. The Canadian Design Research Network (CDRN) brings together more than 100 researchers along with government and industry partners, to improve Canadian design through research, outreach and collaboration.

CDRN links experts from such areas as architecture, engineering, urban design, industrial design and computer science. Together, they're working to strengthen the Canada's industrial-design base and speed the transfer of the latest design research to the construction of buildings and the manufacturing of products.

100 WORDS ABOUT: Sustainable Forestry Management Network (SFM)

FOCUS: To enable industry and government partners to develop strategies and tools to sustain Canada's forests.

FUNDING: **$4,100,000** in 2007–2008.

STRENGTH: **184** researchers and **310** highly qualified people.

PARTNERSHIP POWER: **123** industry, public sector and academic partners.

KEY 2007–2008 ACCOMPLISHMENTS:

- Began work on major **Forest Futures** project to consolidate and focus expertise in determining plausible futures for Canada's forests, and to consider the implications of these futures on our society, the economy and the environment.
- Contributed to the **changing views on fighting forest fires** in uninhabited areas of the northern forests where fires are not ecologically damaging.

http://www.sfmnetwork.ca

"The SFMN has been a leader in Canada's university forest research community, showing that it can deliver excellent science on a national scale in a way that speaks to a broad spectrum of forest practitioners."

— Fraser Dunn,
Chairman of the SFMN Board

The Networks of Centres of Excellence in the News

Getting the message out

When research works, people notice.

In 2007–2008, thousands of publications — both within Canada and across the globe — featured NCE accomplishments.

From new ways to test for arthritis, to international collaborations for stem cell research, the accomplishments of NCE researchers made news in newspapers and magazines, on websites, television and radio broadcasts and websites. The following is a very small sampling of the NCE program's presence in the media.

March, 2008

A new study, led by **Canadian Water Network (CWN)** Scientific Director **Dr. Mark Servos**, shows evidence of drugs getting into drinking water, the *Toronto Sun* reports.

Geomatics for Informed Decisions Network (GEOIDE) researcher **Dr. Stephen Sheppard** is interviewed by *Global BC News* about the effects of climate change on the British Columbia coastline.

The *Toronto Star* and *Globe and Mail* report on a study on bullying patterns from late elementary to the end of high school. It was led by **Dr. Debra Pepler** of **Promoting Relationships and Eliminating Violence Network (PREVNet)**.

The *Montreal Gazette* and other Canadian papers report that **Canadian Institute for Photonic Innovations (CIPI)** researcher **Dr. John C. Polanyi** is the winner of the Gerhard Herzberg Canada Gold Medal for Science and Engineering, Canada's most prestigious science prize.

February, 2008
The *Windsor Star* interviews **AUTO21 Network of Centres of Excellence Scientific Director Dr. Peter Frise** about the state of hydrogen-powered vehicles.

The *Ottawa Citizen* quotes **National Initiative for the Care of the Elderly (NICE)** member **Dr. Sandra Hirst** on ways to help vulnerable seniors remain in their homes.

January, 2008
United Press International reports on a study led by **Dr. Leigh Callahan** of the **Canadian Arthritis Network (CAN)**, which found that arthritis sufferers who exercise showed significant improvements in pain, fatigue and managing arthritis.

December, 2007
The *Globe and Mail* publishes an article on the way in which **Mathematics of Information Technology and Complex Systems (MITACS)** links Canadian scientists and businesses.

November, 2007
The *Victoria Times Colonist* and *CTV News*, feature **Stem Cell Network (SCN)** investigators discussing an innovation that turns skin cells into stem cells.

October, 2007
Radio Networks worldwide interview **ArcticNet** Network Investigator **Dr. Scott Lamoureux** on his work with water quality in the Canadian Arctic.

Many print media, including the *Calgary Sun*, cover the **Canadian Language and Literacy Research Network (CLLRN)** study on classroom listening conditions.

September, 2007
ArcticNet's Dr. Dermot Antoniades is featured in a number of print and television outlets, including the *Discovery Channel's Daily Planet*. His work concludes that North America's northernmost lake ecosystem is being affected by climate change.

The **Sustainable Forest Management Network's (SFMN's) Dr. Sylvie Gauthier** tells the *Montreal Gazette* that alternative forest practices, including reduced harvesting of adult trees and a different stance on forest fires, would decrease losses in the boreal forest.

August, 2007
The *Kingston Whig-Standard* interviews **Dr. Amir Fam** of **Intelligent Sensing for Innovative Structures – ISIS Canada** on the use of polymers used in bridge construction.

The discovery of a new prion by **PrioNet's Dr. David Westaway** is featured in many print and online publications in Canada and around the world

July, 2007
AUTO21 researcher **Dr. Anne Snowdon's** study, reported on in the *Montreal Gazette*, finds that not nearly enough Canadian children are using automobile booster seats.

June, 2007
Regina's *Leader Post* and other Canadian newspapers report on a study by **Dr. Ahmed El-Sohemy** of the **Advanced Foods and Materials Network (AFMNet)** that shows a genetic basis for caffeine-seeking behaviour.

Many Canadian print media, including the *National Post*, quote **Canadian Obesity Network (CON)** Scientific Director **Dr. Arya Sharma** in articles about Canadians' attitudes about their weight and its effects.

May, 2007
The *Hamilton Spectator* interviews **AllerGen The Allergy, Genes and Environment Network** Board Chair **Mr. Lynton Wilson** about the network's International Partnership Initiative.

The *Toronto Star* covers a newly-announced joint project between the University of California at Berkeley and the International Regulome Consortium, led by **SCN** Scientific Director **Dr. Michael Rudnicki**.

April, 2007
The **Canadian Stroke Network (CSN)** is featured in *Canadian Nurse* for its work in establishing the National Stroke Nursing Council.