



NCE RCE

An initiative of Canada's research granting agencies

# TURNING PUBLIC INVESTMENTS INTO PRACTICAL SOLUTIONS

2015



Government of Canada    Gouvernement du Canada  
Networks of Centres  
of Excellence    Réseaux de centres  
d'excellence

Canada

# NCE INVESTMENTS MATTER TO CANADIANS

**Making new discoveries and transforming them into products, services and processes help ensure Canada's global competitiveness.** These activities also make a real difference in the lives of Canadians.

It is equally important to ensure that public funding supports cutting-edge R&D with an appropriate balance between blue-sky ideas and real-world applications. The networks and centres funded through the NCE meet today's challenges head on. They mobilize Canada's best research, development and entrepreneurial expertise and focus it on specific problems and strategic areas.

Harnessing the best talent in the natural sciences, engineering, social sciences and health sciences, and putting it to work using a proven and internationally recognized network approach, contributes to building a more advanced, healthy, competitive and prosperous country. NCE funding supports the right mix of people and organizations to address important issues for Canadians.

## THE RESULTS ARE REAL:

MORE JOBS AND HIGHER LEVELS OF TRAINING  
NEW COMPANIES AND PRODUCTS  
BETTER POLICIES AND PRACTICES  
A BROADER KNOWLEDGE BASE

The NCE is an initiative of:



SSHRC  CRSH

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### ACRONYMS

<b>NCE</b>	<b>Network of Centres of Excellence</b>
<b>BL-NCE</b>	<b>Business-Led Network of Centres of Excellence</b>
<b>NCE-KM</b>	<b>Knowledge Mobilization Network of Centres of Excellence</b>
<b>CECR</b>	<b>Centre of Excellence for Commercialization and Research</b>
<b>IRDI</b>	<b>Industrial Research and Development Internship</b>

# Jobs and training—Learning through doing

The large majority of those who complete post-graduate studies will find work outside academia. NCE networks and centres help make graduate students and post-doctoral fellows job-ready by rounding out their post-secondary education with the hands-on training employers demand. By working collaboratively with the companies, organizations and communities that will ultimately benefit from the research, students learn the value of turning knowledge into solutions that matter.

In 2013–14, the IRDI program supported **1,155 internships** in **546 companies**

**1,155** internships at  
**546** Canadian companies



**More than 95%** of industry partners put the R&D work done by interns to use in their organization

**95%**

OF **INDUSTRY PARTNERS**  
implement interns' ideas

## Calgary student helps turn consumers into “prosumers” Mitacs (IRDI)

Calgary-based Chaordix, a crowdsourcing pioneer serving IBM, LEGO, Virgin and other global companies and organizations, was looking to gain further insight into market research intelligence and analytics. The Mitacs Accelerate internship program helped out by connecting them with Khobaib Zaamout, a University of Calgary student completing his PhD in Information and Communication Technology. Zaamout used his expertise in data analytics and social networking to create a new platform that is empowering once-passive customers to become active “prosumers” who are directly involved in designing and producing a product.



Khobaib Zaamout

“Working closely with a team putting theory into practice has offered me a brand new perspective on my research. I’m able to verify and validate my work using new and practical measures. It’s also satisfying to know I’m helping a Canadian company become even more competitive on the global stage.”

- **Khobaib Zaamout**, PhD candidate, University of Calgary



Mentors Bryna Rudner (LEFT) and Paula Rudner (CENTRE) help Kelly Kay ensure the views of seniors are always front and centre.

## Improving care for the frail elderly

Technology Evaluation in the Elderly—TVN (NCE)

A new training program from TVN emphasizes hands-on experience as the best learning tool. For example, it has helped Kelly Kay embark on the next step after working for 25 years in health administration and policy. As executive director of the Seniors Care Network, she is tackling a new role as a researcher to understand how technology can improve the care of seriously ill elderly people and support their families and caregivers. Kay is one of more than 120 working professionals, undergraduate, and graduate students who are benefiting from the new program.

“Right now if a vendor comes and tells me how great some new piece of technology is for seniors I have no way of evaluating it. My research with TVN will help organizations make more informed decisions about which technologies are best suited for older people, and will explore how the perspectives of seniors are informing development.”

- **Kelly Kay**, Executive Director, Seniors Care Network, Central East Local Health Integration Network, Ontario; Interdisciplinary Fellow, TVN

# Commercialization—Building stronger companies and launching new products

It's not enough to develop an exciting new technology. NCE networks and centres work on multiple fronts to ensure that the best ideas make it to the marketplace, whether through forming a startup company, negotiating licensing agreements or supporting product development. They help validate technology, build relationships throughout a supply chain, promote investment, cultivate access to markets, and match experienced entrepreneurs with startup companies.

## Processing wood waste into green replacement for coal

BioFuelNet (NCE)

Made-in-Canada bio-coal is competing to replace traditional coal currently used for heat and power. Starting in 2015, Vancouver start-up Global Bio-Coal Energy (GBCE) will produce 320,000 tonnes of eco-friendly fuel each year at a new plant in Lumby, B.C. BioFuelNet helped develop and commercialize the process used by GBCE, which takes wood waste from sawmills and forestry operations (including wood from trees killed by mountain pine beetles) and turns it into high-quality bio-coal.



“Dr. Shahab Sokhansanj and the Biomass and Bioenergy Research Group at the University of British Columbia have been absolutely crucial to our business. We initially planned to go into production in 2010 using a different technology but had to shelve that when the research showed that the process required too much electricity. We're now ready to go to market with a less expensive technology, thanks to our collaboration with UBC and BioFuelNet.”

- **Sonia Shoukry**, President & Chair,  
Global Bio-Coal Energy Inc.

## Turning research investments into life sciences companies

Accel-Rx Health Sciences Accelerator—Accel-Rx (CECR)

Canada has a new way to turn the country's \$6-billion investment in basic health research into successful and well-managed companies. Accel-Rx will partner with BDC Capital to invest up to \$1,000,000—matched by other investors—in three to four life sciences companies annually. Five health-related CECRs representing 70% of the country's drug development pipeline will share their most commercially promising discoveries with Accel-Rx. The new CECR will make them investment-ready by providing entrepreneurial training and access to capital, specialized infrastructure, strategic partners and experienced entrepreneurs.

“BDC Capital now supports early-stage health sciences company creation across Canada. CDRD Ventures Inc. and the consortium of CECRs they have pulled together under the Accel-Rx framework are uniquely positioned to support the healthcare space. This pan-Canadian collaboration really increases success chances for the companies involved in the program.”

- **Dominique Bélanger**, VP, Strategic Investments  
and Partnerships, BDC Capital

## Making Canadian-built planes quieter

Green Aviation Research and Development Network—GARDN (BL-NCE)

Bombardier Aerospace's new Global 7000 luxury jet will operate more quietly thanks to new software that makes it possible to identify and correct noise sources early in the development process. The results save companies time and money, and help them respond to noise regulations while meeting a growing demand for global travel. Funded by GARDN, Bombardier also collaborated with universities, the National Research Council (NRC) and small- and medium-sized companies to refurbish an echo-free wind tunnel at the University of Toronto and develop a new acoustic testing service at the NRC which have strengthened Canada's capacity to conduct noise tests.

“Prior to GARDN, Bombardier was researching ways to predict and reduce noise. However, the leveraging we received from GARDN provided our company with the impetus to put more money into these efforts. The project also made us aware of the wealth of university experts and other national resources working in this field, and connected us with a lot of smaller companies.”

- **Stephen Colavincenzo**, Chief of Acoustics  
and Vibration, Bombardier Aerospace

CECR-supported companies raised **\$780 million of follow-on investment** in 2013–14, including almost **\$400 million from foreign sources**



Every \$1 in NCE grants leveraged more than \$2 in partner investments in 2013–14, a total of more than **\$250 million**

**\$1 → \$2 → \$250 MILLION**

## Advanced manufacturing efforts target a global market

Refined Manufacturing Acceleration Process—ReMAP (BL-NCE)

Canada's advanced manufacturing sector is getting even more high tech. ReMAP has developed an end-to-end value chain of electronics sector leaders that includes academia, suppliers, manufacturers, start-ups and companies of all sizes. The network connects the resources and knowledge of 38 labs and factories across Canada, to help partners lower costs, improve processes and bring new products to market faster. For example, Toronto-based Microbonds is collaborating with the University of Waterloo and Celestica to develop a new electrically conductive adhesive material that offers a cheaper and more reliable alternative to solders in consumer and telecommunications products.



Wes Karpik of Celestica, Inc. demonstrates new robotic technology to Prime Minister Stephen Harper.

“To participate in today's highly competitive global marketplace, companies need access to the expertise and infrastructure required to launch products on a global scale. ReMAP is creating a global centre that is attracting organizations from around the world and helping local companies to be more competitive on the global stage.”

- **Mike Andrade**, Executive Vice President, Diversified Markets, Celestica

## Boosting test capabilities for green tech

GreenCentre Canada (CECR)



GreenCentre Canada has taken its ability to test promising new green technologies to the next level thanks to an agreement with Canada's leading materials research centre—the Xerox Research Centre Canada (XRCC) in Mississauga, Ontario. The partnership enables GreenCentre to expand its development capacity beyond the bench scale conducted at its in-house lab, to the pilot scale that responds more completely to industry's need for green technologies that have been de-risked and scaled up. XRCC will also provide process engineering, pilot testing and developmental support, while allowing GreenCentre to retain rights to any new intellectual property created.

“Our partnership with GreenCentre extends our foundation of chemical engineering best practices and green materials science. It also underscores our commitment to sustainability and environmental responsibility in all of our materials and processes, while helping to nurture the growth of innovation here in Canada.”

- **Paul Smith**, Vice President and Centre Manager, Xerox Research Centre Canada

# Research excellence—Putting knowledge to work for Canada

Canada ranks among the best in the world when it comes to producing excellent research. Through the network model pioneered by the NCE, it is also home to proven approaches and best practices for putting this knowledge to use in addressing difficult challenges. Connecting the knowledge makers with the knowledge users ensures the research is relevant to those who need it most.

In 2013–14, knowledge generated by NCEs led to **over 3,200 publications** (including 2,100 that were peer-reviewed)

**3,200+ PUBLICATIONS**  
**2,100 PEER REVIEWED ARTICLES**



In 2013–14, NCEs connected Canada’s best research and entrepreneurial talents to the world, through partnerships with **179 foreign universities** and **192 other foreign organizations**



## Understanding your cybersecurity risks in two-minute bites

Smart Cybersecurity Network—SERENE-RISC (NCE-KM)

Did you pick the most secure password? Are you a target for fraudsters when you shop online? Just how secure is your smartphone? Individuals and companies now have a quick and easy way to answer these questions. SERENE-RISC has launched a website that draws on the latest research—minus all the technical jargon—to provide plain language updates about cybersecurity risks and threats, as well as advice about protection strategies. The network also provides its members with a Quarterly Knowledge Digest summarizing relevant scientific articles and reports in cybersecurity, designed to be understood in just two minutes. Other activities include a knowledge brokers’ forum, an online knowledge-sharing platform, a professional development program, workshops and seminars.

“Let me again express how impressed I am with SERENE-RISC so far. I find the workshops highly relevant and on target. The workshops are well run, making effective use of my time, and are very well organized.”

– **Senior law enforcement officer** who participated in a SERENE-RISC workshop

## Testing Canadian ocean monitoring technologies for better safety

Ocean Networks Canada Innovation Centre—ONCIC (CECR)

Major investments in Ocean Networks Canada will make Canada’s west coast communities safer and allow ONCIC, the network’s business division, to open new global markets for homegrown technologies. Existing subsea observatories will be expanded with five new community observatory systems along British Columbia’s coast. These will provide valuable data to improve public and marine safety and environmental monitoring, including early alerts of offshore earthquakes and tsunamis and their impact on coastal communities. The observatories also serve as an important test bed, validating Canadian technologies that ONCIC can then market globally under the Smart Ocean Systems™ brand.



“Ocean Networks Canada’s ability to take a holistic approach that bridges the intersection between science, industry, government and the individual is really unique. There are very few, if any, players in this market who understand this type of intelligence and who know how to commercialize it.”

– **Peter Madden**, High Performance Computing Solutions Manager, Western Region, IBM Canada