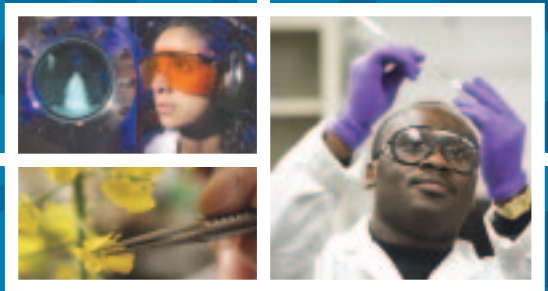
NRC·CNRC

From **Discovery** to **Innovation...**

SCIENCE AT WORK FOR CANADA



2006 – 2011

National Research Council Canada | Conseil national de recherches Canada

Canada

NRC·CNRC

From **Discovery** to **Innovation...**

For nearly a century, the National Research Council (NRC) has excelled on the national and international stages by continually refocusing its activities to better tackle new national challenges and priorities.

Today, more than ever before, NRC has an opportunity to stimulate the growth of world-class science- and technology-based industries, nurture groundbreaking technology clusters nationwide, and contribute to large-scale, multi-disciplinary research and development initiatives in priority areas across the country. Our Strategy capitalizes on those opportunities.

NRC's purpose has never been more focused; the need for evolution never more pressing. Driven by 90 years of proud service to Canada, NRC's strategy reaches forward to embrace a promising future.

Pierre Coulombe, Ph.D, P.Eng., President,
National Research Council

THE STRATEGY

Contribute to the competitiveness of Canadian industry in key sectors and to the economic viability of communities

In recent years, NRC has contributed substantially to the development of Canadian technology and its commercialization both on a global scale and within our communities. To achieve even greater impact on both fronts, NRC will adapt and integrate its programs and step up its efforts on key technology development and commercialization activities, developing highly valued technologies, helping increase the innovation capacity and growth of firms, and promoting environmentally sustainable business practices.

Strengthen Canada's innovation system

To ensure Canada's continued global relevance as an innovator, all of Canada's innovation system stakeholders – the financial sector, every level of government, the academic community, and science and technology organizations – must work with industry toward a cohesive commercialization agenda.

With a presence in every province, an extensive research and development capacity, and a history of working to connect key players in the innovation system, NRC is well positioned to act as a vital instrument for the federal government's innovation objectives.

To deliver on this goal, NRC will increase its capacity to transfer technology and better integrate its strengths to improve industry's innovation power. NRC will engage key players from across the innovation system to ensure that its programs and services respond to their priorities and needs.

Make significant contributions to national priority areas critical to Canada's future

NRC will focus its research excellence and multi-disciplinary competencies to address three urgent national priority areas – **health and wellness, sustainable energy**, and **the environment** – in which it can make the most significant contribution.

By converging enabling technologies such as biotechnology, information technology and nanotechnology with disciplines such as manufacturing, transportation, advanced materials and construction, NRC will be able to develop new technologies that allow more sustainable economic growth and development. NRC's multi-disciplinary nature, its collaborative approach and its international networks are unique assets that will be invaluable for developing solutions to complex national problems.

NRC will also continue to dedicate significant resources and expertise in programs to support industry in key sectors such as aerospace, construction, information and communications technologies, life sciences and manufacturing.

THE KEY ACTIONS

NRC will more effectively target the needs of industry in vital areas of economic growth. Strategic actions will ensure NRC's continued critical impact on national and international stages.

1

TO ANTICIPATE AND PERFORM R&D IN AREAS THAT WILL IMPROVE THE COMPETITIVENESS OF CANADIAN INDUSTRY, NRC WILL:

- concentrate research and development efforts on key areas,
- build on a portfolio approach to manage NRC programs and competencies,
- create a dynamic research and development environment, and
- increase NRC capacity to support development of technologies and the commercialization of those technologies.

KEY RESULT:
Increased flow of technologies into high-impact sectors of the economy

2

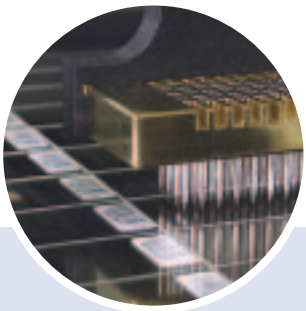
TO PROVIDE INTEGRATED INDUSTRY SUPPORT THAT ENGAGES KEY PLAYERS, NRC WILL:

- develop single-point gateways to NRC expertise, services and facilities,
- build a "quick response" capacity to serve clients,
- increase NRC capacity to work in large-scale, multi-disciplinary programs that take advantage of the convergence of technologies, and
- increase NRC's proven capacity to support major science infrastructure and technology platforms.

KEY RESULT:
Integrated research and development, and innovation support to industry

ATTRACTING THE BEST

NRC will recruit and develop top talent to lead in these strategic areas. Young, promising researchers and innovation experts will have the infrastructure, the funding and the intellectual freedom to use their knowledge and talent to create groundbreaking science and industry solutions. Canadian industry and the innovation system will benefit from a new supply of highly skilled personnel.



3

TO INVEST IN AND FOCUS NRC'S UNIQUE STRENGTHS AND COMPETENCIES ON AREAS OF IMPORTANCE TO CANADA, NRC WILL:

- articulate and implement a retooled national approach, framework, programs and infrastructure for science contributions — in concert with federal science players, and
- lead federal research and development programs in chosen critical fields in collaboration with key players in those fields nationally and internationally.

KEY RESULT:

NRC research and development efforts better aligned to more effectively address enduring issues of the nation

4

TO BUILD A SUSTAINABLE AND AGILE NATIONAL RESEARCH AND INNOVATION ORGANIZATION FOR CANADA, NRC WILL:

- market the organization's position within government as a superior target for research and development investment,
- attract new funding, both nationally and internationally,
- increase NRC's level of influence in public and private sectors,
- leverage NRC competencies by meeting the research and development and commercialization needs of other federal government organizations, and
- build a more unified NRC with a commitment to common objectives and values.

KEY RESULT:

A sustainable and agile NRC contributing to Canada's economic growth and quality of life

THE OUTCOME

BY YEAR FIVE, NRC will have successfully targeted its research and development efforts to meet the needs of industry in key areas of economic growth. NRC will have strengthened the research and development environment through nationally and internationally recognized programs in key strategic areas. These programs will be led by top talent with access to full and diverse research teams. Technology transfer and other commercialization support activities will be firmly rooted in our corporate culture – supported by a winning strategy based on creating value and impact for Canada.

BY YEAR FIVE, NRC's single-point gateways will be in full gear to offer industries – both in Canada and around the world – access to NRC's range of programs, services, infrastructure and facilities. NRC will have increased its capacity to work in large-scale, multi-disciplinary, multi-partner projects, and will have developed a series of integrated solutions to increase the innovation capacity of small and medium enterprises (SMEs).

BY YEAR FIVE, using its unique strengths and focusing on research and development goals of critical importance to Canada, NRC will have established groundbreaking national science and technology programs, and will be recognized as the leader of major Government of Canada research and development initiatives.

BY YEAR FIVE, NRC will be recognized nationally and internationally as a key player in support of Canada's science and technology infrastructure. NRC will be ideally positioned to secure continued federal government funding – and to attract significant funding from new sources in Canada and abroad.

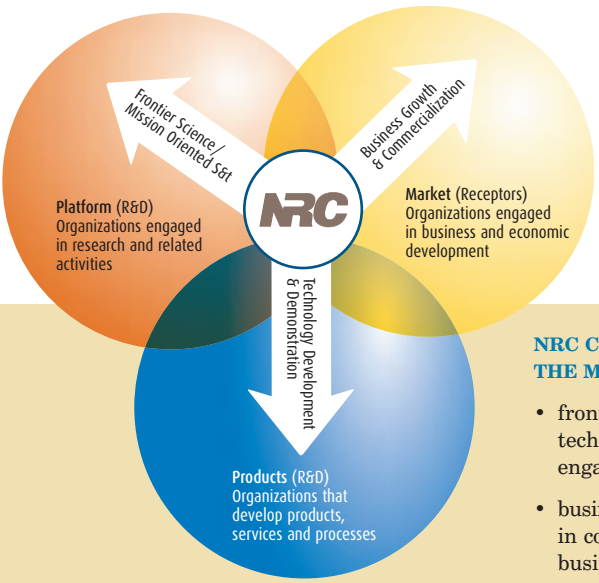
As part of its new strategy, NRC will work to:

- increase its innovation and commercialization support to industry,
- integrate its programs, increasing its emphasis on technology development,
- align its research and development agenda to support the goals of Canadian industry,
- strengthen its contribution to Canadian innovation through multi-disciplinary, multi-partner initiatives in specific areas,
- strengthen national and international collaborations to further increase NRC's efficiency, and
- become a more sustainable organization.

PUTTING SCIENCE TO WORK FOR CANADA

In today's global economy, industrial innovation is shaping the competitive position of nations. In Canada, NRC supports this process by sharing its research excellence, state-of-the-art laboratories and commercialization capacity with companies and communities across the country. NRC's collaborative activities help create market solutions that sustain our quality of life and contribute to the competitiveness of Canadian industry.

With a focus on today's national priorities, NRC's new strategy is designed to generate sustainable economic and quality of life benefits for all Canadians, building on a long tradition of service to the nation.



NRC CONNECTS TO THE REAL NEEDS OF THE MARKET AND SOCIETY THROUGH:

- frontier science/mission-oriented science and technology in collaboration with organizations engaged in research and related activities;
- business growth and commercialization activities in collaboration with organizations engaged in business and economic development; and
- technology development and demonstration in collaboration with organizations that develop products, services and processes, and potential collaborators within the innovation system (academia, industry, federal laboratories, etc).

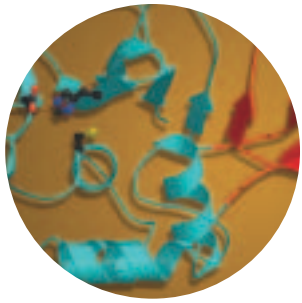
THE CHALLENGE

THE WORLD IS CHANGING MORE RAPIDLY THAN EVER BEFORE AND CANADA MUST POSITION ITSELF TO RESPOND AND ACT.

The Conference Board of Canada

Since its creation in 1916, NRC has been Canada's national science and technology institution, working with governments, universities and industry, pushing the limits of science and technology to address persistent issues, and meeting critical priorities for Canada and Canadians.

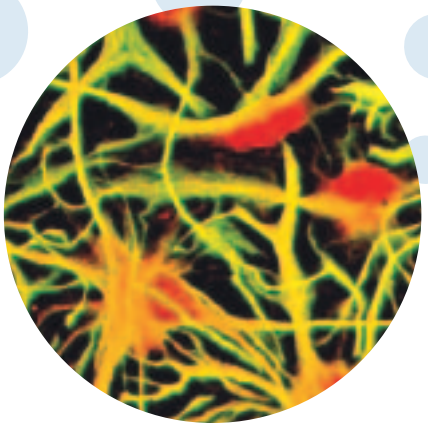
Today, Canada must deal with vital issues that affect the quality of life of its citizens and the performance of its economy. To keep pace, NRC is once again stepping forward to play a key role in Canada's evolution as a global force in science, technology and innovation.



Canada's competitiveness

Our national economy is facing increasing challenges. Countries that used to be our markets are becoming our competitors; low productivity is slowing down many industrial sectors; and low private investment in research and development is limiting innovation. In addition, complex issues such as the convergence of science and technology, the protection of intellectual property, and the emergence of global supply chains are weighing down the growth of our SMEs, which are the backbone of the Canadian industrial structure. To remain economically relevant on the world stage, Canada needs to:

- foster a dynamic environment that boosts the growth of its companies,
- help Canadian SMEs take full advantage of globalization and become key players internationally, and
- support sectors that are major contributors to our national economy.



Socio-economic issues

Canada must address a series of pervasive national concerns to provide its citizens with a promising and sustainable future. Those concerns include:

- an aging population, which has made chronic disease the most common and costly health care problem,
- increased demand for energy, which calls for the development of energy efficient innovations, and
- continued environmental degradation, which has created a critical need for sustainable industrial technologies.

The innovation system

The innovation system comprises all organizations that support and conduct research, and transform new knowledge into products and services for domestic and international markets. Canada's innovation system is critical to this country's economy. Dealing rapidly and effectively with gaps and weaknesses in the system will stimulate the nation's capacity to generate and transform new knowledge into real economic value. Canada must:

- address a chronic shortage of highly skilled workers in all sectors of the economy,
- facilitate the convergence of technologies,
- foster coordination and collaboration to create critical mass and competitive advantage, and
- enhance our position as a global player by creating the right business environment at home and abroad.

THE STRENGTH

As the Government of Canada's leading organization for research and development, NRC applies its resources through a diverse science and technology portfolio, an unparalleled infrastructure that includes state-of-the-art laboratories from coast to coast, and extensive industry support activities.

A proud past

NRC's history reveals a profound ability to tackle new challenges and respond to Canada's continually evolving needs. Recognizing the value of its foremost innovation organization, Canada has made a substantial and sustained investment in NRC – and reaped the benefits for some 90 years.

A dynamic present

To date, NRC has not simply honoured its commitment to its clients, its partners and the nation – it has exceeded that commitment. NRC creates value for Canada by transferring technology and knowledge to industry, demonstrates leadership in research and development, champions regional technology clusters, secures access to global research networks and facilities, and enhances international opportunities for Canadian firms and technology products.

A promising future

NRC will bring a new focus to its business activities to strengthen its position as a critical science, technology and innovation organization of the federal government. It will do this in a manner that makes the most powerful impact possible on the Canadian economy and quality of life. Key NRC objectives are to:

- become a more integrated organization, focusing research and development programs on today's issues of critical concern for Canadians and Canadian industry,
- recognize and respond to the evolving needs of clients and stakeholders, and
- expand and strengthen national and international collaborations.

LASTING IMPACT

Over the years, a number of specialized agencies have grown out of NRC's leading-edge programs. These include:

- Atomic Energy Canada Ltd.
- Canadian Space Agency
- Canadian Institutes of Health Research
- Natural Sciences and Engineering Research Council
- Communications Security Establishment
- Defence Research Board

ECONOMIC VALUE

Since 1995, the organization has generated close to $30 million in licensing revenue and established more than 60 new companies, which have created employment for 500 Canadians and sales of more than $300 million, and attracted private-sector investments of some $375 million.

90 YEARS OF ACHIEVEMENTS

2006—NRC's Dr. Paul Corkum receives prestigious Killam Prize for spectacular advances in probing atomic and molecular reactions.

2005—NRC/UofA develop a single molecule transistor – a breakthrough that could pave the way to miniaturizing computers

2004—NRC second-generation spin-off company XYZ RGB earns Academy Award nomination for special effects wizardry it created using NRC's 3-D technology.

2003—NRC spin-off company IMRIS receives regulatory approval from the US FDA and European Community to sell its state-of-the-art MRI system.

2000—NRC's Dr. Harold Jennings develops synthetic meningitis C vaccine, which leads to mass immunization of 18 million people in the UK.

1997—Researchers help Canadian company Iogen develop BioBrite™, an enzyme that decreases organochlorine discharges, saving mill bleach plants hundreds of thousands of dollars a year in operating costs.

1987—NRC identifies deadly shellfish toxin domoic acid, enabling the East Coast shellfish industry to resume operations.

1973—Researchers develop the first airline black box flight recorder.

1971—NRC's Dr. Gerhard Herzberg wins Nobel Prize for work identifying molecules in space.

1970s—Researchers develop an optical coating technology for anti-counterfeiting applications.

1966—Researchers develop a bomb sniffer small enough to fit into an attaché case and able to detect explosives in parts per trillion.

1952—NRC's Atomic Research Division spins off to become Atomic Energy of Canada Ltd., or AECL. Today, medical isotopes produced in the AECL reactor are used in the diagnosis and treatment of more than five million patients worldwide.

1950s—NRC scientists prove vital to the development of canola, now a leading agricultural crop.

1950—NRC scientist Dr. John Hopps develops the first pacemaker and becomes the acknowledged father of biomedical engineering in Canada.

1945—NRC's Chalk River labs produce the first functioning nuclear reactor outside the United States.

1939—NRC plays a key part in the development of radar.

1926—NRC develops a technique that makes concrete more resistant to water damage, saving millions of dollars in construction and repair costs.

1916—NRC finds a simple way to eliminate impurities from domestic magnesite used in high-temperature steel furnaces, reducing Canada's dependence on imports.

Our vision

To be valued as the world's best national organization for research and innovation

Our purpose

To provide integrated science and technology solutions in areas of critical importance to Canada

Our role

To be a vital instrument of the federal government, translating science and technology into social and economic well-being for Canadians

Our values

- Commitment to Canada's economic growth and public good
- Respect for all people
- Excellence and creativity in our work
- High ethics and integrity in all we do
- Service to our stakeholders

OUR STRATEGY IS ABOUT LIVING UP TO AN IMPORTANT PROMISE – A PROMISE TO INDUSTRY, GOVERNMENT AND ALL CANADIANS – TO PUT SCIENCE AT WORK FOR CANADA.

Pierre Coulombe, Ph.D, P.Eng., President, Canada National Research Council

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