

# NRC Technology Clusters

## COMMUNITY INNOVATION, ECONOMIC GAIN

**T**hrough dynamic and rapidly growing technology clusters, the National Research Council advances world-class R&D in collaboration with Canadian communities. Using its research facilities as hubs for community innovation, NRC partners with universities and industry to inject local drive into the Canadian economy.



## Montréal— Aerospace

Montréal's aerospace technology cluster—one of the most vibrant anywhere in the world—ships more than \$10 billion of product a year. The cluster's business activities account for 95 percent of Quebec's astonishing success in the aerospace industry and 55 percent of Canada's total activity in this lucrative sector. The industry comprises roughly 170 private companies and employs more than 35,000 people.

### Delivering on local needs

For many years, NRC enhanced the Montréal cluster's research capacity through the NRC Institute for Aerospace Research, located in Ottawa. After extensive consultation with stakeholders, NRC determined it could

best serve the cluster's evolving needs by building a new research facility in Montréal—the world-class NRC Aerospace Manufacturing Technology Centre, situated on the grounds of the Université de Montréal.

### Maintaining its global edge

NRC has enhanced Montréal's competitive position at the world forefront of aerospace technology. But to protect its standing as a world-class R&D hub, the Canadian aerospace industry must continually maintain and upgrade its innovative capacity. To address this emerging need, NRC helps develop next-generation manufacturing based on critical industry requirements.

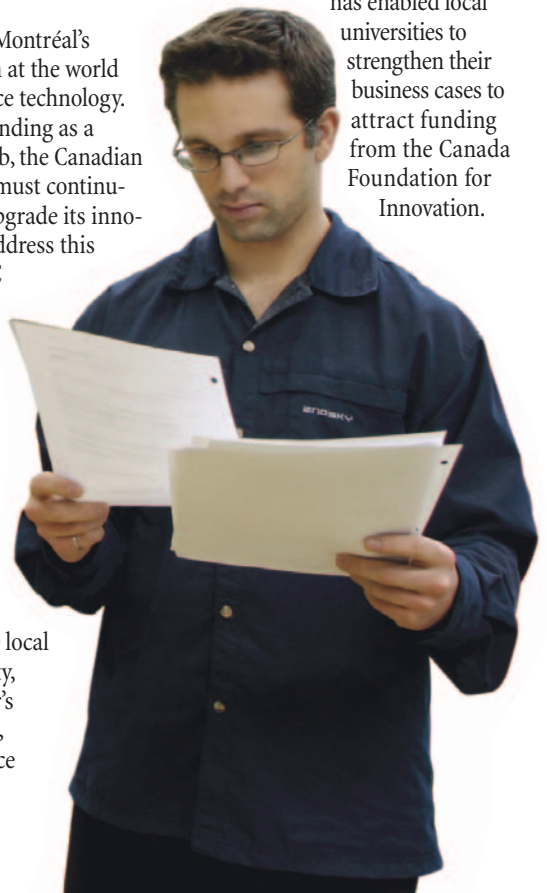
To identify specific research thrusts for its Centre, NRC led a comprehensive round of strategic sessions with the local aerospace community, including the cluster's association of SMEs, the Quebec Aerospace

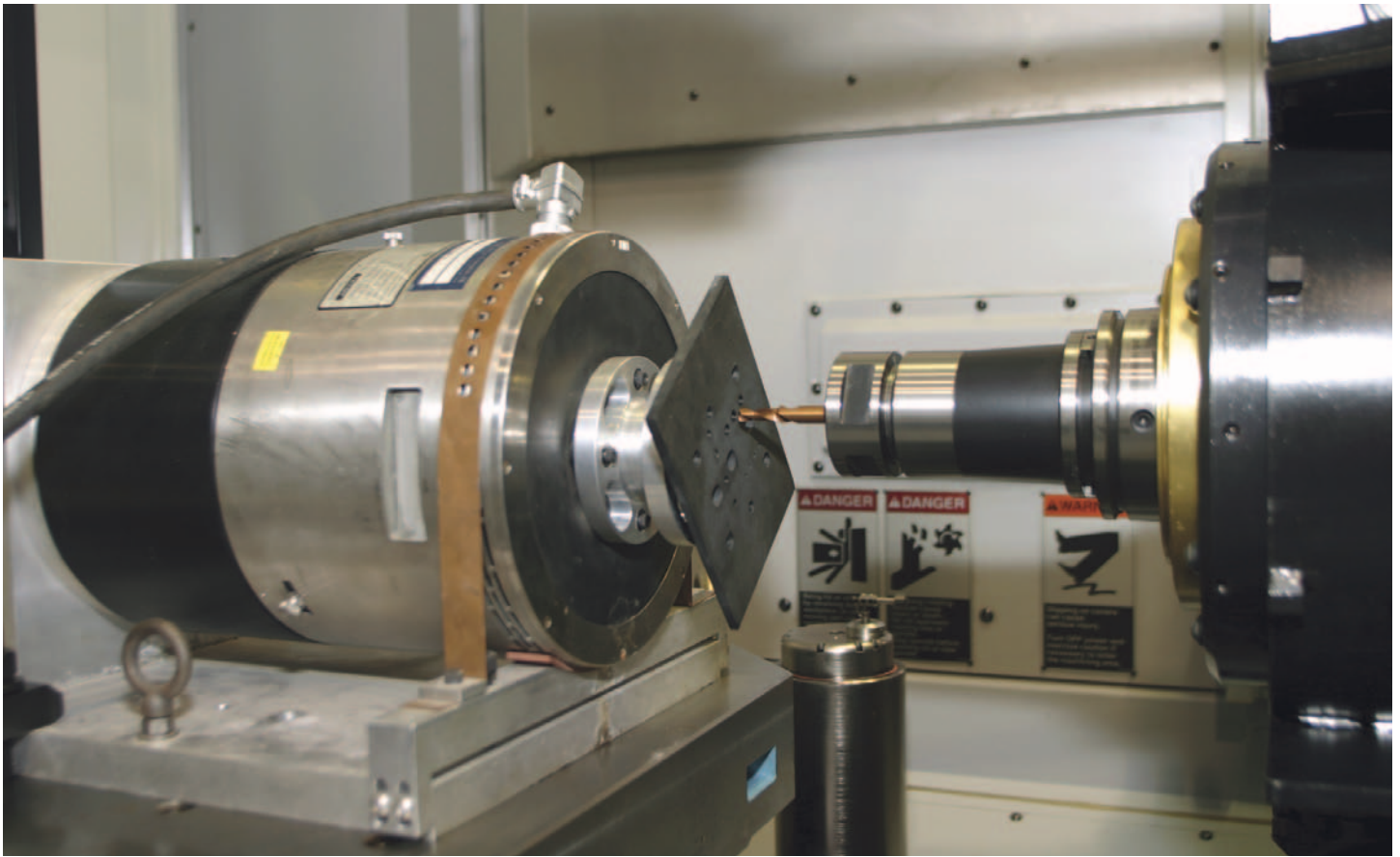
Association. Those consultations led to several key areas of collaborative R&D:

- advanced machining technologies for aerospace
- new manufacturing and repair technologies for engine components
- advanced composites manufacturing processes for airframe components
- application of automation and robotics in aircraft assembly and surface treatments

### Building community partnerships

To reinforce linkages with the cluster's other leading research organizations, NRC participates actively in the Consortium for Aerospace Research and Innovation in Quebec (CRIAQ). NRC's input has enabled local universities to strengthen their business cases to attract funding from the Canada Foundation for Innovation.





## STATE-OF-THE-ART FACILITY

Originally proposed as an immediate response to a 1996 Aerospace Technology Roadmap, and spurred by further NRC research into cluster priorities, the new NRC Aerospace Manufacturing Technology Centre can accommodate 100 research staff and guest workers from around the world. Co-financed by NRC and Canada Economic Development for Quebec Regions, the facility's research priority is to develop processes that deliver significant cost savings and high-quality, reliable aerospace products. The facility serves as a hub for Montréal's vibrant aerospace cluster enabling researchers from public and private sectors to collaborate and innovate—and keep Canada at the forefront of aerospace manufacturing technologies worldwide.

## CLUSTER FACTS AT A GLANCE

- Montréal's Aerospace cluster is globally competitive and the fourth largest in North America
- Aerospace is Quebec's leading export industry with more than \$10 billion in annual product shipments
- The cluster comprises more than 170 aerospace organizations with combined employment of over 35,000



# Transforming technology into business

NRC offers strategic services to businesses that want to take their innovations to market—easing the transition from small start-up company to bona fide industrial presence.

## Assisting with industrial research

The NRC Industrial Research Assistance Program supports small- and medium-sized companies as they commercialize groundbreaking technologies and ingenious business ideas. The program has assisted 10 emerging aerospace companies in Montréal with invaluable technical and business support.





## Best available science and technology literature

NRC is a world leader in electronic publishing, and Canada's largest and best resource for scientific, technical and medical information. NRC's information specialists are highly active in Montréal's Aerospace technology

cluster, offering clients access to the same top-notch document-delivery services NRC scientists enjoy. Furthermore, NRC offers a range of fee-based services to industry researchers, including access to hundreds of relevant databases and thousands of scientific and technical journals. In 2005 alone, information specialists conducted nearly 800 information searches for aerospace cluster clients.

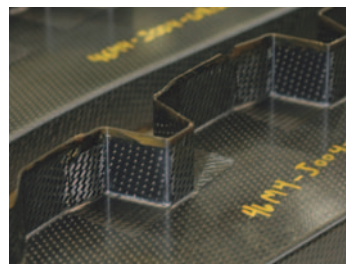


## CENTRE OF EXCELLENCE

Montréal is home to the fourth-largest aerospace cluster in North America. In fact, it is one of the world's few metropolitan areas that produces every one of the thousands of components necessary to build an aircraft. In addition to this remarkable production capacity, the Montréal cluster is ranked first in North America for overall business operating cost performance—a powerful incentive for leading-edge aerospace companies to make Montréal their home.

## COMMUNITY ENGAGEMENT

- 1996—Industry Canada initiates Aerospace Technology Roadmap in collaboration with NRC and others
- 1998—NRC proposes construction of NRC Aerospace Manufacturing Technology Centre
- 2001—NRC secures funding for technology centre
- 2003—Technology Centre begins partnering with original equipment manufacturers (OEMs), SMEs and R&D organizations
- 2004—Technology Centre opens its doors



## NRC'S MAJOR INDUSTRIAL COLLABORATORS

- Bombardier Aerospace
- Bell Helicopter Textron Canada
- CAE Electronics
- Canadian Marconi
- General Electric Canada
- Héroux Devtek
- Messier Dowty
- Pratt and Whitney
- Rolls-Royce Canada
- Aerospace Association

## NRC'S CLUSTER PARTNERS

- Canada Economic Development for Quebec Regions
- Quebec Aerospace Association
- Consortium for Aerospace Research and Innovation in Quebec (CRIAQ)
- Local universities (Université de Montréal, École polytechnique, McGill University, École de technologie supérieure, Concordia University)
- Canada Foundation for Innovation

“Montréal's aerospace cluster has the scale, breadth, and excellence to compete against the top aircraft manufacturing centres in the world. With the addition of the new NRC Aerospace Manufacturing Technology Centre, the Montréal cluster now has a well-equipped focal point for the adoption of cutting-edge fabrication technologies. NRC's presence further fortifies Montréal's competitive edge as the location of choice for aerospace industrial innovation.”

Sue Dabrowski, Executive Director, Quebec Aerospace Association

# NRC Technology Clusters

## GLOBAL REACH—LOCAL TOUCH

NRC has played a critical role in the development of emerging and mature clusters, acting as a catalyst for technological progress and economic growth in every region of Canada. Its successful clustering model encourages and supports local strengths while leveraging NRC's national and international resources, science and technology capabilities, networks and partnerships. This proven approach ensures that each cluster can develop according to its unique needs, opportunities and challenges.

### Committed leadership

Successful clusters need staying power, often taking decades to mature. The building process must be community-driven and focused, and must have the support of effective networks and committed local champions.

For many years, NRC has distinguished itself as an effective catalyst for cluster development, providing not only R&D expertise, but also the leadership clusters need to move research out of the lab and put it to work for Canada's economy.

NRC stimulates the growth of world-class technology clusters, putting its leading-edge research to work in innovative communities across Canada.



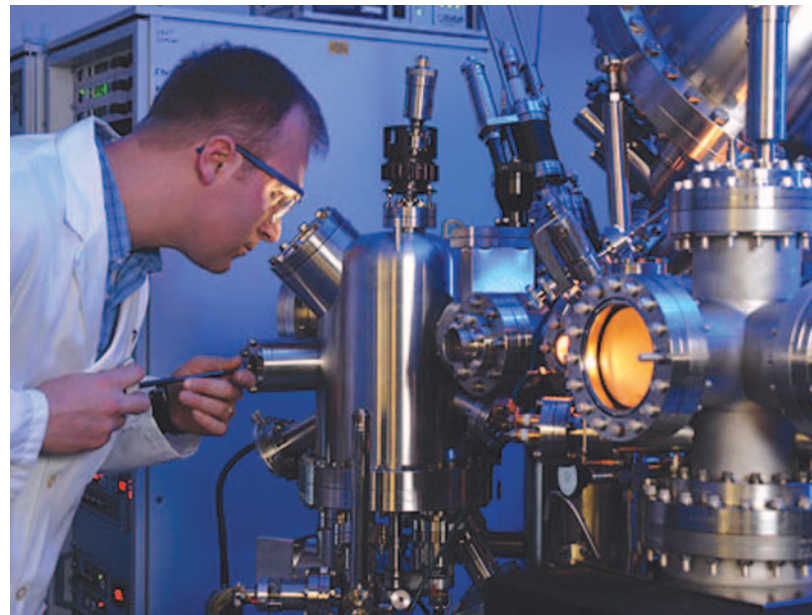
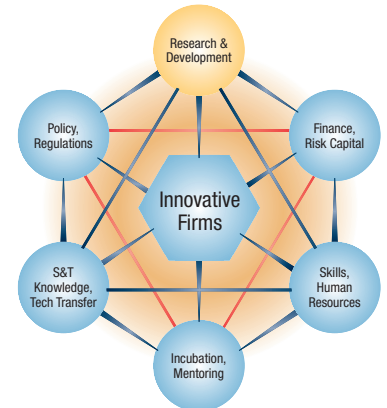
● NRC Technology Cluster Initiatives

## Delivering results

Clustering is a term economists have borrowed from science to describe the significant concentration of innovative companies around a nucleus of R&D facilities in a single locale—the ideal environment for innovation to flourish.

A key ingredient is the presence of a science and technology anchor—usually a government research institution or a university—able to work with local companies, transfer technology and spin off new enterprises.

Innovative, knowledge-based firms act as a magnet, attracting others with technical and business expertise to locate and invest in the area. Over time, partners grow into a critical mass of skilled people, capital and entrepreneurial drive.



## GREAT PEOPLE, GREAT MINDS

Recognized globally for cutting-edge research and innovation, the National Research Council helps Canada create a world-class, knowledge-based economy. NRC is home to nearly 4,000 creative and skilled people held in highest regard by their colleagues and collaborators worldwide. NRC employees have earned international acclaim for excellence and for winning innovations – their honours include a Nobel Prize, an Academy Award, and helping Canada capture Olympic Gold.

<http://iar-ira.nrc-cnrc.gc.ca>

**National Research Council  
Canada**  
1200 Montreal Road  
Ottawa, ON K1A 0R6  
Tel.: (613) 993-9101  
[www.nrc-cnrc.gc.ca](http://www.nrc-cnrc.gc.ca)

**NRC Institute for Aerospace Research**  
1200 Montreal Road  
Ottawa, ON K1A 0R6  
**Jerzy Komorowski**  
Director General  
Tel.: (613) 993-0141  
Fax: (613) 952-7214  
[Jerzy.Komorowski@nrc-cnrc.gc.ca](mailto:Jerzy.Komorowski@nrc-cnrc.gc.ca)

**NRC Aerospace Manufacturing  
Technology Centre**  
5145 Decelles Avenue, Université  
de Montréal Campus/PO Box 40  
Station Côte-des-neiges  
Room 315  
Montréal, QC H3S 2S4

**Mr. Pierre Dicaire**  
Business Development Officer  
Tel.: (514) 283-9139  
Fax: (514) 283-9445  
[Pierre.Dicaire@nrc-cnrc.gc.ca](mailto:Pierre.Dicaire@nrc-cnrc.gc.ca)