

Universities/Academia & R&D

Research and Development activities are central to Canada's space program. They enable Canada to become involved in space missions by developing new technologies and training Canada's space scientists and engineers. In Canada, universities are the fundamental building block of space science and technology.

In Canada's space science program, universities:

- Have played a leading role in developing missions, whether in the area of atmospheric sensing, solar-terrestrial relations, space astronomy, or microgravity and life sciences;
- Led instrument development for satellite missions;
- Led research programs through the involvement of scientists and professors as Principal Investigators, whether in relation to Canadian or international missions.

In Canada space technology activities, universities:

- Undertake fundamental research and development in early phases of technology development;
- Provide Canada with the building blocks for industry and government-led missions;
- Provide critical expertise for every aspect of the space program: space communications, earth observation, space science and exploration and space education and awareness;

"Hot" issues:

- Technology transfer from universities to industry;
- Synergies for CSA with other academic funding organizations or mechanisms;
- Technology incubation;

Key players:

The **Networks of Centres of Excellence** are unique partnerships among universities, industry, government and not-for-profit organizations aimed at turning Canadian research and entrepreneurial talent into economic and social benefits for all Canadians. An integral part of the federal government's Innovation Strategy, these nation-wide, multidisciplinary and multisectorial research partnerships connect excellent research with industrial know-how and strategic investment. <http://www.nce.gc.ca>

GEOIDE is a research network established in order to consolidate Canadian expertise in geomatics. As a federally funded Network of Centres of Excellence, GEOIDE brings together many of the country's leading experts from academic, government and industrial institutions. <http://www.geoide.ulaval.ca>

CRESTech invests in a broad range of environmental and space technology research at Ontario universities and colleges. CRESTech offers the opportunity to make significant contributions to science and engineering for researchers and an opportunity to conduct innovative thesis research and a gateway to a career for students. Its emphasis on project partnerships allows businesses to take solutions to market and receive a significant return on their investment, and in some cases allows not-for-profit organizations (including government) to apply research outcomes to solve important social and economic problems. Over the next five years, CRESTech will invest in over 150 innovative R&D projects at Ontario universities and deliver \$25-million value to our partners in the environment and space sectors. <http://www.crestech.ca>

Academics often meet through academic organizations organized by area of activity, and use these meetings to share ideas and consult on issues of importance. These organizations are not research bodies but serve as a useful forum of exchange.

The **Universities Space Research Association (USRA)** is a private nonprofit corporation under the auspices of the National Academy of Sciences with 94 institutional members (87 in US, 2 in Canada, 3 in

Europe, 2 in Israel). All member institutions have graduate programs in space sciences or aerospace engineering. USRA provides a mechanism through which universities can cooperate effectively with one another, with the government, and with other organizations to further space science and technology, and to promote education in these areas. <http://www.usra.edu>

Ontario centre of excellence – has a space technology investment group
<http://www.crestech.ca/research/overview.htm>

Issues for the CSA

- Role of CSA in-house R&D versus university based R&D;
- Role of CSA and relationship to NCEs;
- Technology transfer in the space sector;
- Technology and commercial incubation;
- Links between CSA and other funding organizations.

Related Themes

Climate Change and Variability
Coastal and Marine Ecosystems
Data Policy
Industry and Industrial Policy

References:

http://www.arcticnet.ulaval.ca/index_en.asp
<http://www.crestech.ca/research/overview.htm>

GEOIDE – national centre of excellence on geomatics
<http://www.geoide.ulaval.ca/en/about/about.html>
<http://www.geoide.ulaval.ca/>

http://www.nce.gc.ca/nces-rces/sfm_e.htm

sustainable forest management NCE – 2002 honour on space imaging work

<http://www.usra.edu/about/intro.shtml>

ESTEC: European space and technology centre (in Holland) <http://www.estec.esa.nl/>