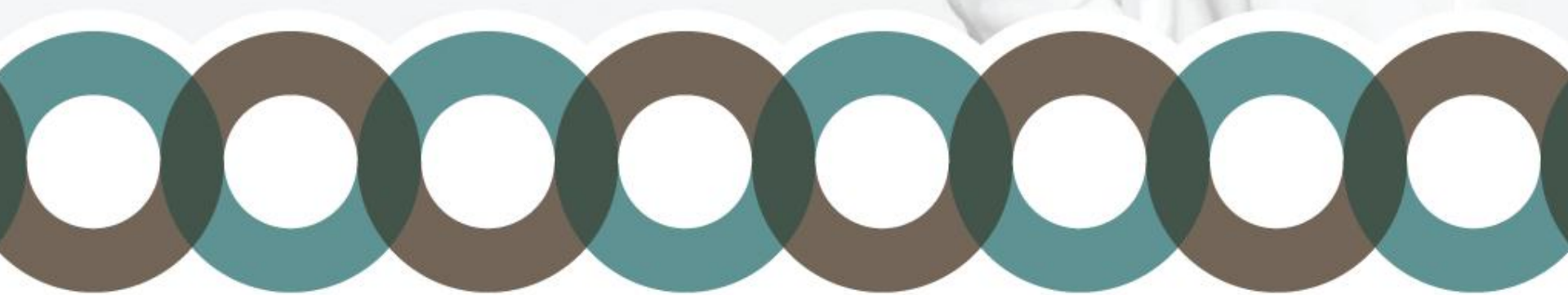




NSERC Funding and R & D Project Support Options

Workshop: Enhancing Intermodal
Passenger Travel in Canada

May 31, 2012



Natural Sciences and Engineering
Research Council of Canada

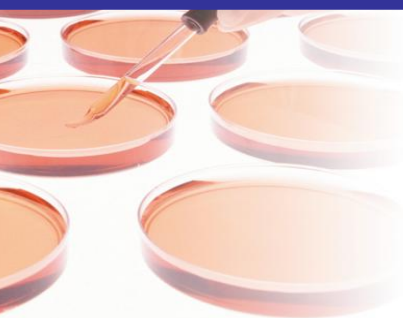
Conseil de recherches en sciences
naturelles et en génie du Canada

Canada

Prosperity and high quality of life for Canadians

Vision and Mission

We invest in:



Natural Sciences and Engineering Research Council of Canada

DISCOVERY

Competitive research in science and engineering, providing access to new knowledge from around the world

INNOVATION

Productive use of new knowledge in all sectors of the economy and society

EXCELLENCE

PEOPLE

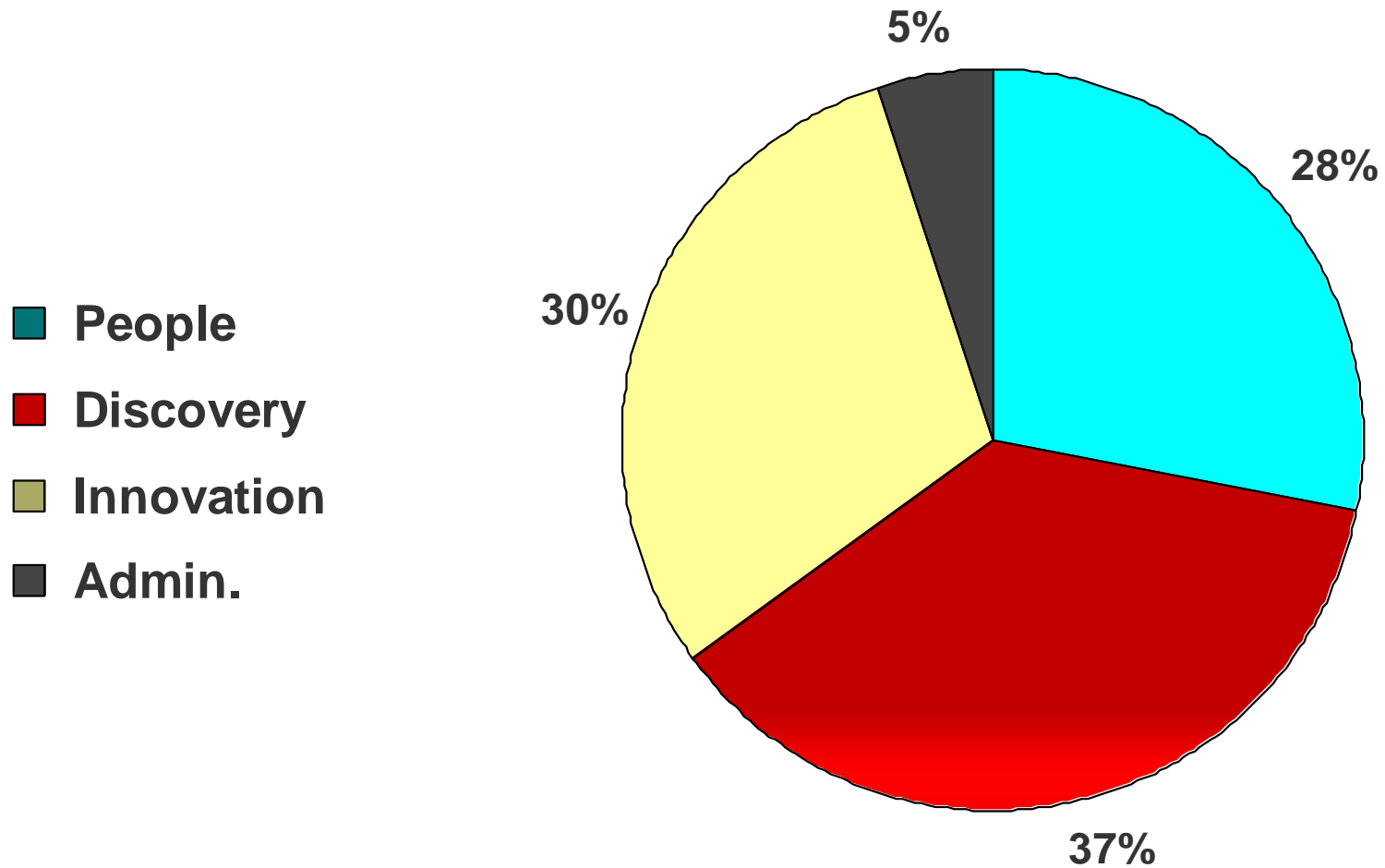
Highly skilled, well educated and capable of lifelong learning

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NSERC Budget 2010-11

Total: \$1.08 billion



Strategy for Partnerships and Innovation (SPI)

Goal: Better connect and apply post secondary research to create prosperity for Canada

4-Point Plan launched December 2009:

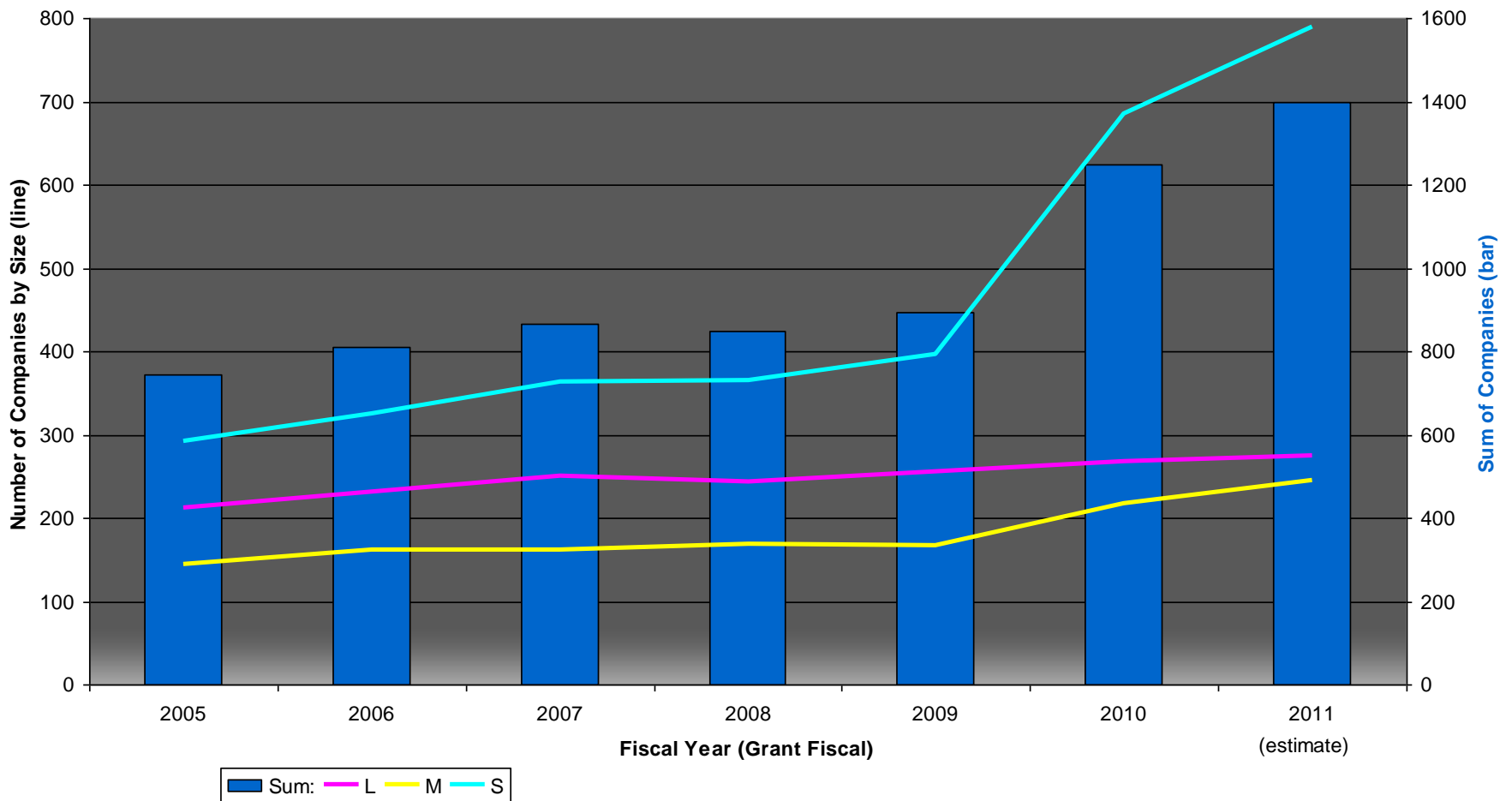
- Build relationships: Help researchers and companies collaborate
- Streamline Access: Program changes and new initiatives to increase the relevance of university and college research to industry innovation
- Connect People and skills: Incent innovating companies to hire people with advanced degrees
- Focus on priorities: Build depth on the basis of technical area, industry, and/or region by focusing resources

More productive, sustainable business = jobs and growth

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Industry-Driven RPP Programs: Company growth
(Industrial Research Chairs, Collaborative Research & Development, and Engage Grants)

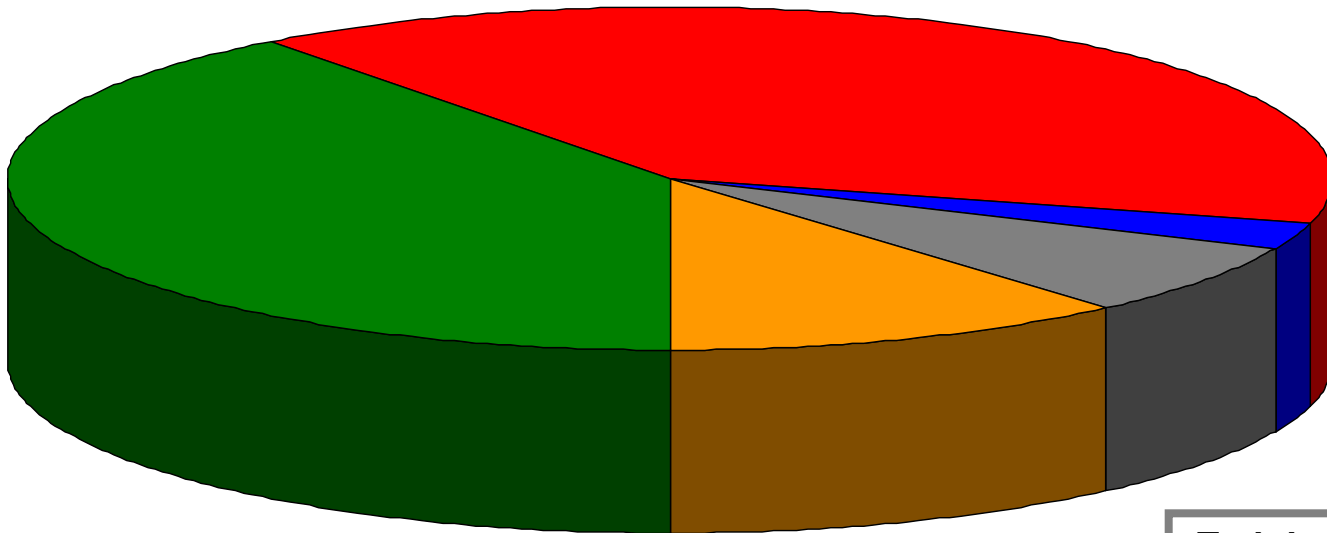


RPP Budget 2011-2012

(\$265.1M)*

Strategic Partnerships
Program 41.9%

Industry-Driven Collaborative R&D
Program (41.4%)



Commercialization
Program (2.7%)

College and Community
Innovation Program (11.8%)

Training in Industry
Program (2.2%)

*Does not include Networks of Centres of Excellence

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Research Partnerships Toolbox

Industry-Driven Collaborative R&D Program

- Interaction
- Engage
- **Collaborative Research and Development**
- Industrial Research Chairs
- Partnership Workshops

Training in Industry Program

- Industrial Postgraduate Scholarships
- Industrial R&D Fellowships
- Industrial Undergraduate Student Research Award

Commercialization Program

- Idea-to-Innovation

College and Community Innovation Program

- **Applied Research and Development**
- Innovation Enhancement
- Technology Access Centres
- Applied Research Tools and Instruments

Strategic Partnerships Program

- **Strategic Networks**
- **Strategic Projects**
- Automotive Partnership Canada
- Chairs in Design Engineering
- Innovation Frontiers
- Collaborative Health Research Projects

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Interaction

...gives companies that operate from a Canadian base and researchers from Canadian universities an opportunity to meet and identify a company-specific problem they could solve by collaborating in a subsequent research partnership.

- Maximum of \$5,000 for 3 months



Engage Grants

...foster the development of new research partnerships between academic researchers and companies. Grants support short-term R&D projects that address a company-specific problem.

- Six-month projects, max. of \$25,000 from NSERC
- No company cash required (in-kind expected)
- The company owns the IP



Collaborative R&D Grants – with Universities

➤ Objective

CRD can support **short-term** projects or segments of **longer-term** research programs

- **Projects are driven by partner needs:**

*Process development & optimization / Product design and development
Environmental impact studies/remediation technologies / Novel materials*

- **Milestones and deliverables** are **clearly identified** and **feasible** given available resources and time

- **Knowledge transfer** plans are defined

- **Partners** must **exploit results**

➤ Duration

1 to 5 years (most are 2-3 years)

➤ Offer

Average grant about \$65,000/year (can be up to \$1M)

- Industrial cash and in-kind **leveraged**

- **Industrial cash** must be at least ½ NSERC contribution

- Supports students, postdocs, consumables, equipment

➤ Application

Anytime

➤ Success Rate

85%

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Industrial research Chair

- **Objective**
 - Prestigious appointment of a **distinguished researcher**
 - **3 levels: Associate, Senior, Executive**
 - Capacity building for the university: A significant university research program is **established or enhanced** in area of **interest to industry**
 - Currently over **180 active faculty** positions
- **Duration** **5 years**, renewable, depending on level
- **Offer**
 - Average grant **\$75,000/year**
 - Industry provides **50%** of cost in **cash**
 - Supports students, postdocs, consumables, equipment
 - Frees up the Chairholder salary
- **Application** Anytime



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Training in Industry Program

Industrial Undergraduate Student Research Awards

- NSERC award: \$4,500 for a 16-week term
- Company contribution: minimum of \$1,125

Industrial R&D Fellowships

- NSERC award: \$30,000 per year (2 yrs)
- Company contribution: minimum of \$10,000

Industrial Postgraduate Scholarships

- NSERC award: \$15,000 per year (2 to 3 yrs)
- Company contribution: minimum of \$6,000



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Applied R&D (ARD) Grants – with Colleges

- The ARD is intended to provide Canadian companies access to the knowledge, expertise and capabilities available at colleges
- ARD supports well-defined applied research and development projects undertaken by college researchers with their private-sector partners



Applied R&D (ARD) Grants – with Colleges

Three Levels Of Review And Contributions:

Level 1 - Under \$25,000 for up to 6 months.

Requires a New partnership

Internal review

Level 2 - Up to \$75,000 per year for up to three years:

Partners contribution 1/3 of project costs

External review

Level 3 - Over \$75,000 per year for up to three years:

Partners contribute ½ of project costs

External review and committee review

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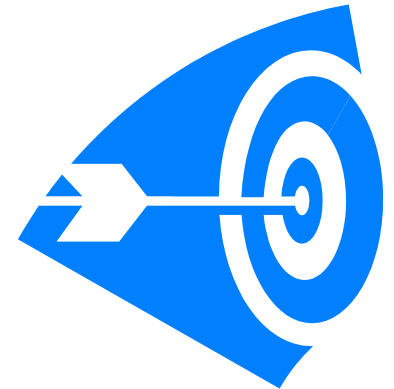
Strategic Partnerships Program

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Toolbox: Strategic Partnerships

Four Strategic Target Areas:

- Environmental Science and technologies
- Information and Communications Technologies
- Manufacturing
- Natural Resources and Energy



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Strategic Project Grants

<u>Objective</u>	<ul style="list-style-type: none">• Early stage university research• Potential to lead to future breakthrough discoveries (5 – 10 years)• Active involvement of non-academic participants• Often several team members (same or different institutions)• Some grants with single applicant• Researchers from partner's organization sometimes are members of the team (as “collaborators”)
<u>Duration</u>	3 years
<u>Offer</u>	<p>Average of \$130,000/year</p> <ul style="list-style-type: none">• Supports students, postdocs, consumables, equipment• <u>No industrial cash required</u>
<u>Application</u>	Annual competition
<u>Success rate</u>	20 – 25%

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Strategic Networks Grants

<u>Objective</u>	<ul style="list-style-type: none">• Multi-university, multi-partner pan-national Networks <i>Typically more than five universities and five partner organizations</i>• Address large-scale complex research problems• Require a governance structure <i>BoD and Scientific Committee</i>
<u>Duration</u>	5 years
<u>Offer</u>	Up to \$1,000,000/year <ul style="list-style-type: none">• Supports students, postdocs, consumables, equipment• <u>No industrial cash required (for 1st term)</u>
<u>Application</u>	Annual competition
<u>Success rate</u>	25 – 30%

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NSERC Intellectual Property Policy

- All research agreements must follow NSERC IP policy
http://www.nserc-crsng.gc.ca/NSERC-CRSNG/Policies-Politiques/ip-pi_eng.asp

Mandatory Elements:

- Benefit to Canada and timely use of research results
- Protect IP assets of all partners and prevent unauthorized disclosure:
 - ✓ Background IP
 - ✓ Review of Publications
- **Maximum publication delay of 6 months**
- **No delay of student thesis defense**
- Institution retains the right to use results for non-commercial purposes



Key Advantages for Industry Partners

- ✓ Stretch research dollars
- ✓ Lower cost of risk
 - ✓ Problem-solving: link to world-class expertise and facilities
- ✓ Creativity: access to new ideas
- ✓ Students working with/in your company (potential future employees?)
 - ✓ Long-term productive relationships

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NSERC Funded Research - examples



NSERC Strategic Network – Azzedine Boukerche, UOttawa
Developing next-generation Intelligent Vehicular Networks and Applications (DIVA) - \$5M over 5 years from NSERC

Partners: include Transport Canada, ITS Can., Ericsson, G4 Apps, IBM, Telus, Nokia, Amika Mobile, Lunaris, Olso Net, Combat Networks, Wavefront, Focus Microwave, Vestec, Networked Vehicle Association, BioPeak

NSERCPARTNERSHIPS.CA



NSERC Funded Research - examples

- **IRC** in Railway Geomechanics – Dr. Derek Martin, Uof A
Partners: CPRail, Transport Canada, CNR, Transportation Technology Center, ~\$200k/year, 5 years
- **Strategic Project Grant** – Dr. Zhong, UNB/CARIS/City of Fredericton, City of Saint John)
Development of a high-fidelity urban spatial information system for advanced land use and transportation plan, ~\$100k/year, 2 years
- **CRD** – Dr. El-Geneidy, McGill/Société de transport de Montréal
Competing or complementary bus routes, ~\$20k, 1 year, complete



NSERC Funded Research - examples

Active Discovery Grants

- A modeling framework for large-scale traffic networks (Alecsandru, Concordia)
- Sustainable Transportation Modeling (Casello, uWaterloo)
- Improving aviation safety through airport design (De Barros, uCalgary)
- Developing integrated microsimulation models of intra-urban, inter-regional and cross-border freight transport (Maho, uWindsor))

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NSERC Funded Research - examples

Active Discovery Grants cont'd

- Understanding and modeling route choice decisions (Scott, McMaster)
- Microsimulation-based decision support system for modern transit planning (Shalaby, UofT)
- Design & optimization of public transport & airport systems (Wirasinghe, uCalgary)
- Monitor and Improve Transit Service Reliability Using Automatic Data Collection Systems (Zhao, UBC)



Partnerships Options for Companies

NSERC works with companies to help you find highly-qualified people, advance your R&D, and build relationships that benefit your business through our suite of targeted offerings:

- **Training in Industry Program**
- **Industry-Driven Collaborative R&D Program**
- **Strategic Partnerships Program**
- **College and Community Innovation Program**
- **Commercialization Program**

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