



InPartnership - Volume 3, Issue 1 - March 2012

The Natural Sciences and Engineering Research Council of Canada's (NSERC) *InPartnership* bi-monthly e-bulletin showcases the many ways Canadian business can connect and collaborate with researchers, and prosper as a result.

Latest News

NSERC Celebrates 1,000th Engage Grant Collaboration

In December 2011, NSERC celebrated the 1000th Engage Grant collaboration.

The collaboration between [Survival Systems Training Ltd.](#) and Darrel Doman, from Dalhousie University, will see the partners work together to develop the first full-scale simulator that can mimic the impact of a seaplane crashing on water.

"As a company that's been committed to R&D since our beginnings in 1982, we're really pleased to kick-off a new collaboration with Dalhousie University with this project with Dr. Doman," said John Swain, Chief Executive Officer of Survival Systems Training.

Over 90 percent of companies that have been involved in an Engage Grant state they gained new knowledge and/or technology that helped them improve their existing products or develop new ones. Seventy-five percent could see new business opportunities develop as a result of the collaboration.

The [Engage Grants](#) initiative was launched in 2010, as part of NSERC's Strategy for Partnerships and Innovation. Based on consultations with businesses engaged in research and development (R&D), this grant is designed to provide a fast, easy and low-risk option for companies to work with a researcher for the first time, with the aim of introducing



companies to researchers whose work could assist the company's R&D goals. An Engage Grant provides up to \$25,000 to an academic researcher for a six-month research project with a company that the researcher has not previously worked with. The project must address a company-specific problem.

Ten Millionth Milestone Reached in Ontario: 400th Engage Grant Celebrates University-Industry Partnerships

On January 29, 2012, NSERC marked \$10 million dollars in Engage Grant funding received by researchers in Ontario with a celebratory event at Ryerson University's Digital Media Zone—the university's new small business "workspace." At the event, computer science professor [Vojislav Misisic](#) formally received the 400th Engage Grant, marking the beginning of his collaboration with local company [More Automation Solutions Inc.](#) Over the next six months, Dr. Misisic's research team will work with More Automation Solutions on an advanced vision-based process control system for a commercial bakery. The proposed research will enable tests to collect real-time length, width, height, temperature and colour data for products before packaging, and is expected to have applications in other industries. Speaking on the importance of partnership programs to Ryerson University, Sheldon Levy, President of Ryerson University stated, "Engaging in innovation and entrepreneurship is the key for universities to stay relevant and to contribute to Canada's economy and to the quality of life of Canadians." [Read more about the event.](#)

Successful Partnerships

Interested in partnering? Wondering about the return on investment? Learn how companies across Canada are working with researchers to advance their products or processes by participating in an NSERC partnership.

Timely NSERC Support Key to Start-Up's Success

Chief Executive Officer Matt Rendall, and his partners Ryan Garipey, Bryan Webb and Patrick Martinson—graduates of the University of Waterloo's Mechatronics Engineering program and members of its winning robotics team—founded [Clearpath Robotics Inc.](#) in 2009. Today, the company is making its first sales. For this small start-up, NSERC's programs were a good fit to help add staff and improve their technology.

"What led us to create the company was seeing more and more companies looking at unmanned vehicle systems and realizing their potential to change the world," says Ryan Garipey, Clearpath's Chief Technology Officer.



In the early days, NSERC's Undergraduate Student Research Awards helped Clearpath add University of Waterloo co-op students to its small work force. Recently, Clearpath took part in an NSERC-funded Engage Grant project with [Regina Lee](#), an assistant professor in [Space Engineering](#) at York University, to access the university's expertise in environmental testing and design.

"We worked with their lab to improve our battery technology," says Gariepy. "That kind of exploration is something we don't have staff for, but it's something York University is great at."

"Temperature profiling is a critical component in battery testing, and we tried to come up with the battery that would perform best in extreme hot and cold environments," says Dr. Lee.

The opportunity to work with Clearpath was also eye-opening for Dr. Lee's students. "A lot of space engineers don't actually find jobs in the space industry. So for them to see a small company in a field related to theirs was a good experience for them."

Cutting It Right the First Time: Manufacturers Gain Competitive Edge with New Virtual Cutting System

In manufacturing, even the slightest error in cutting, or "machining," a part can cost thousands of dollars in materials and lost production time. Existing virtual cutting systems lack advanced simulation software to mathematically model and optimize the range of machining processes. Companies from around the world have begun licensing a made-in-Canada virtual cutting software that enables manufacturers from diverse industry sectors to machine parts correctly, cost effectively, and in the shortest amount of time.

CUTPRO, developed in 1999 out of a long-term collaboration between [Pratt & Whitney Canada](#) (P&WC) and [Yusuf Altintas](#)—the NSERC-Pratt & Whitney Industrial Research Chair in Virtual High-Performance Machining at the University of British Columbia (UBC), incorporates the physics of the cutting process to enable operators to produce more repeatable and consistent results.

"UBC develops the integrated mathematical algorithms and then trains industry to deploy the know-how in their own production shops. At the same time, we need industry at the table telling us their problems, their expected solutions and priorities," explains Dr. Altintas.

For P&WC, the benefits have been significant. "We get early exposure to emerging technologies and the opportunity to get involved at the development stage. We are also implementing these technologies at our company as they're developed," says Donald McIntosh, Senior Manufacturing Fellow for P&WC.

The Industrial Research Chair's activities have led to three spin-off companies, and the technology has been licensed to more than 130 companies, research centres and universities worldwide.



The Best Route Forward

[Med Express Inc.](#)—a courier company in Québec—partnered with the Interuniversity Centre for Research on Business Networks, Logistics, and Transportation ([CIRRELT](#)) at Université Laval to analyze the company's current dispatching process and identify potential improvements using an NSERC Idea to Innovation Grant.

According to [Jacques Renaud](#), professor at the CIRRELT, the project aimed "to work with the company to analyze its current operations and identify ways of improving them so that it could provide cost-saving solutions to its customers." Dr. Renaud's team of students worked with the company to accelerate the pre-competitive development of promising technology.

The final outcome of the project is that the company's drivers now take the most efficient routes, optimizing their time, and passing the savings along to the company's customers. Another unexpected result of the project was recommendations to improve the software Med Express Inc. uses to dispatch drivers to handle unscheduled requests for urgent deliveries.

Dr. Renaud's team identified several modifications to help dispatchers decide which driver is in the best geographic location to pick up a shipment whenever a request comes in.

Stéphane Boudreau, Chief Executive Officer of Med Express Inc., sees a distinct advantage here. "Good, reliable drivers are hard to find. They aren't our employees—they're independent contractors. So if we help them to make more deliveries and thus earn more money, they're going to keep working with us."