

BE PREPARED

Being prepared to respond to an emergency poses challenges for procurement professionals. A unique college network is now working with industry to develop innovative products with your needs in mind.

by Dr. Katharine Janzen

A NEW, ONTARIO-WIDE NETWORK of colleges is working with industry to help make the lives of Canadians better. One area of focus is health and safety – from creating real-life simulation environments that are making emergency management professionals better prepared to respond to disasters, to developing assistive devices for the elderly, to a cost-effective alternative to a high-end virtual reality tool that helps people overcome phobias, researchers at Ontario colleges are making significant breakthroughs which have key real-life applications.

The network, called Colleges Ontario Network for Industry Innovation (CONII), is a one-of-a-kind industry innovation network that links 10 of the province's top colleges located along the technology corridor between Ottawa and Windsor: Algonquin, Centennial, Conestoga, Fanshawe, George Brown, Humber, Niagara, St. Clair, Seneca and Sheridan. With a focus on applied versus pure research, the network is making it easier for industry partners to access the research expertise they need, solve technical problems faster and move products and services to market more quickly in order to remain competitive in today's global marketplace.

CONII is funded by a grant through the Ontario Ministry of Research and

Innovation's Ontario Research Commercialization Program (ORCP), which includes \$603,900 for proof of principle research projects, and also taps into other government programs, such as the Ontario Centres of Excellence (OCE).

It was launched to develop research projects with organizations that make effective use of faculty expertise, provide students with real-world learning opportunities, and ultimately have a positive economic impact on the province. CONII members work to solve problems or meet goals driven by community partners, an approach referred to as "market pull."

The emergency management project, for example, is a joint initiative led by Toronto-based Centennial College and its partners. Developed to benefit businesses and emergency management professionals across Ontario, the group has created a comprehensive online course in disaster and emergency management, as well as a full-scale simulation environment to help prepare health and safety professionals for emergency response and test new technologies.

Centennial College is working with four academic partners – Michener Institute for Applied Health Sciences, George Brown College, Ryerson University and the University of Toronto – as well as industry partners across the Greater Toronto area, to enhance public

safety through the development of an innovative, Web-based instructional tool designed to promote inter-professional collaboration during an emergency.

It also continues to enhance its Scarborough, ON-based advanced emergency simulation centre, created following the SARS outbreak in 2003 and designed as a true-to-life place for community and industry partners to test safety-related products and processes.

Centennial's new eight-week Interprofessional Disaster and Emergency Action Studies course is available to students from health and safety disciplines, including medicine, nursing, allied health, police, para-medicine, social services and pharmacy. As a culminating activity, they participate in a mock emergency staged at Centennial's simulation centre – role-playing as a victim, shadowing a professional, or serving as an observer – to give students a better understanding of how various roles work together in an emergency. Other goals include giving health and emergency professionals a way to test procedures and plans, and providing businesses with a comprehensive test bed for emergency-related technologies.

Centennial director, Applied Research Centre, Trish Dryden, says "We take a seamless approach that enables inter-professional communication and collaboration through high fidelity simulation,

whether paramedics, firefighters, police officers or hospital staff. Professionals across disciplines learn more about how their actions impact each other, which is critical in helping to save lives in actual disasters and emergencies.”

To date, Centennial has completed seven full-scale community exercises involving more than 3,500 students, faculty and professionals. For example, the Rouge Valley Health System in eastern Toronto recently used the college’s simulation centre to stage a dirty bomb explosion in order to test its processes for decontamination and evacuation of patients.

Anvil Technologies Inc. of Toronto also collaborated with the centre to test and fine tune its RECoN wireless communications solution, using live voice, video and data feeds to provide timely, meaningful information to enhance the situational awareness of participants in the simulation exercise. All five institutional partners have signed on for a second iteration of the online course, which began in September.

Ontario colleges have always provided skilled employees and training to business. Working in a collaborative manner, CONII’s mandate is to build on that success by providing research, development and commercialization services in key economic sectors across the province, particularly supporting small- to mid-sized businesses across Ontario – the backbone of the Canadian economy.

Virtual reality technology

In Gatineau, QC, students and faculty from Algonquin College are working with the Cyberpsychology Lab at Université du Québec en Outaouais to develop virtual reality technology to help people overcome their fears.

The team is developing a commercially viable version of a highly specialized simulation tool by designing a graphical user interface that will bring the benefits of a three-dimensional virtual reality “cave” – used by psychologists to treat irrational phobias – to an even wider audience.

“Applied research projects are excellent learning opportunities for students because they provide hands-on training with leading-edge projects,” says Mark Hoddenbagh, director, Applied Research and Innovation, Algonquin College. “This

experience will help make these students project-ready employees upon graduation.”

The existing virtual reality “cave” combines polarized goggles and images projected onto each of the six surfaces of a room (four walls, floor and ceiling) to create a three-dimensional virtual reality scene. If a patient suffers from a phobia, for example, arachnophobia, spiders are gradually introduced into the virtual scene in different sizes, numbers and ranges of motion, allowing the patient to progressively overcome the fear.

Three students in the Game Development Program at Algonquin College, with guidance from a professor in the same program, are designing the graphical user interface that would allow this technology to be more compact, portable, and easier to operate. Patients would still wear special goggles but instead of being in a six-sided room, they can sit in front of a personal computer and experience a similar virtual reality – making the tool a viable option for office settings.

Other healthcare projects

Other healthcare-based projects include an initiative with Toronto-based Bloorview Kids Rehab to develop a postage stamp-sized circuit board that can fit on the head of a pen. Researchers at George Brown College have created a wireless prototype for Bloorview’s handwriting data analysis unit, which is under development. Once commercialized, the “electronic pen” will be used by occupational therapists and clinicians to assess grip strength, position and control, paper pressure, and speed of printing, and will serve as a diagnostic device for children with cerebral palsy, muscular dystrophy, and developmental coordination disorder.

Students and faculty at Toronto’s Seneca College are also working with Markham, Ont.-based Tercet Enterprises Inc., a system design house, to help the company incorporate advanced features into assistive devices for the elderly and disabled. Called Mon Ami, the project involves a Web-based communication link that allows caregivers to remotely interact with an electronic wall-mounted device in the home of the elderly or disabled. For example, if a patient’s medication regime has changed, a caregiver can remotely program the device to issue verbal reminders

about when and what pills to take.

As part of the CONII mandate, each member college has created an industry innovation centre to serve as a primary point of contact for organizations or business owners looking for assistance. Each college has also agreed to participate in a central database of resources so that anyone who approaches a college can be directed to the most appropriate subject matter expert, regardless of location.

The economic sectors targeted by CONII include alternative energy, environmental technologies and construction, digital media, health and life sciences, hospitality and tourism, information and communication technologies, manufacturing and materials, and viticulture and agri-business. However, all businesses are welcome and encouraged to contact their local college industry innovation centre for help with research, innovation and commercialization. The college network aims to complete 50 applied research projects by the end of 2009. For more information about CONII, please visit www.conii.ca. 

Dr. Katharine Janzen is Chair, Colleges Ontario Network for Industry Innovation (CONII) Steering Committee.