

2002/2004

S u m m a r y



An extraordinary
force bringing greater
growth to Ontario



ONTARIO CENTRES of EXCELLENCE



PHOTONICS
RESEARCH
ONTARIO

CRESTech MATERIALS AND MANUFACTURING ONTARIO

A Letter From The Minister



*The Honourable Joseph Cordiano
Minister of Economic Development and Trade*

The Ontario Centres of Excellence have the winning formula for success. Created to bridge the gap between our brightest researchers and our most innovative companies, OCE Inc. has played an important role in helping to commercialize more made-in-Ontario ideas.

In its 17 year history, OCE Inc. has set the bar high for excellence in innovation, and has worked diligently to establish an international reputation for Ontario research.

In today's world, we need creativity and innovation in order to compete and win. Success in moving new products from the labs into the marketplace is key to creating new companies and job opportunities. It's how we increase our economic prosperity and improve our quality of life.

OCE Inc. has nurtured the creation of 65 new spin-off companies. I'm pleased that my ministry will be working closely with the centres to place even more emphasis on commercialization.

OCE Inc. not only supports innovative research through unique partnerships between industry and researchers, but it also works closely with Ontario's universities to develop world-class researchers and transfer knowledge and technology to industry.

By collaborating, sharing research knowledge and expertise, we can successfully position Ontario as a leader in the innovation and knowledge economy.

I'd like to thank the Board of Directors for their expertise in steering the centres to their next level of growth. A new governance model was signed on April 1, 2004, which joined the four centres into OCE Inc. Under one corporation, the centres will be able to leverage their strengths more effectively.

And, I'd like to thank the staff at OCE Inc. for their hard work and dedication to making Ontario more competitive and prosperous.

I'm confident that OCE Inc. will continue to be "an extraordinary force bringing greater growth to Ontario."



David McFadden

Fostering a culture of innovation in Ontario has been the hallmark of the Ontario’s Centres of Excellence Program since its inception 17 years ago. It has always been our focus and our raison d’être. It was in furtherance of this commitment that on April 1, 2004 we completed the merger of the four centres—CITO, CRESTech, MMO and PRO—to form Ontario Centres of Excellence Inc. (OCE Inc.).

The four centres have certainly lived up to the “excellence” denoted in our name, but for many strategic reasons it was time for the next phase in the program’s evolution.

First, there is the crucial issue of brand identity. We are proud of the names that the individual centres have made for themselves not only in Ontario, but also beyond our provincial borders. However, in order for us to be able to fully leverage the strengths of the individual centres, it was critical to strengthen the market recognition of the OCE Program as a whole. The merger provides us with a strong, unified brand identity that will enable more effective promotion of OCE Inc.’s capabilities and of Ontario’s innovation capacity to provincial, federal and international audiences.

Second, despite their impressive track records, given the realities of the globalized environment in which we operate, any one of the centres by itself was competitively limited due to its size. Now as a merged entity comprising the four centres, OCE Inc. has a critical mass that will enable it to contribute even more to the economic and social future of Ontario.

Third, as a unified “Ontario” centre, there is now tremendous potential for OCE Inc. to explore avenues of funding that have not been traditionally pursued, including provincial and federal government agencies, and private sector funders such as research foundations.

And let us not forget the challenges we face in retaining skilled knowledge workers in Ontario and in Canada. In developing new divisions, new concepts, new strategic alliances and new research ideas, OCE Inc. will be able to offer exciting growth opportunities for employees and interesting challenges for Ontario’s talented research community to keep them productive within our own borders.

Finally, though OCE Inc. will continue to work within the key areas defined by the four centres, the new structure will allow more cross-pollination throughout the entire program, making it easier to meet emerging market needs. Expanding into new fields of activity such as energy, the environment, and life and health sciences will further increase our potential to add benefit to Ontario’s economy and enhance the quality of life within the province.

In the past two years, the four centres have played an integral role in furthering a culture of innovation in Ontario—an overview of which is found in this summary. We also have a lot to be proud of from an overall organizational point of view, including completion of the merger, striking a new agreement with the universities regarding intellectual property and working out a new agreement with the province. By attending to these key fundamentals of our organization we have laid a strong foundation to proceed with what we do best—mobilizing Ontario’s intellectual capabilities in partnership with the business community and our colleges and universities.

I would like to thank the Board of Directors for its hard work and dedication throughout the various challenges we confronted during the transition over the past year. The directors, along with our management team, have dealt with a myriad of complex issues as we moved from four separate centers to one corporation, while at the same time keeping our ongoing activities on track.

In conclusion, I would like to express my appreciation to the Honourable Minister Joseph Cordiano, and the Ministry of Economic Development and Trade for their continued support of our program and their belief that OCE Inc. truly is an “extraordinary force bringing greater growth to Ontario.”

Overview

Brief history of the Program and Four Centres/Divisions

In 1987 a unique program was introduced to enrich Ontario’s research and development landscape. This program, known as the Ontario Centres of Excellence, comprised four centres that collectively promoted the economic development of Ontario through directed research, commercialization of technology and training for highly qualified personnel.

Each centre had its own specialty developed around four key functional areas: investing in research; investing in people; moving technology into the marketplace; and building the infrastructure for innovation in Ontario.

Communications and Information Technology Ontario (CITO) worked to foster critical links between the industry/business community and academic research in information technology, telecommunications and digital media sectors.

The Centre for Research in Earth and Space Technology (CRESTech) focused on investing in multidisciplinary collaborative research and development in clean air and energy, clean water, sustainable agriculture, sustainable infrastructure, and niche technologies within Ontario’s environmental, resource management and space sectors.

Materials and Manufacturing Ontario (MMO) took the lead in developing new knowledge and technology relevant to needs, now and in the future, of Ontario’s materials and manufacturing industry.

And Photonics Research Ontario (PRO) focused its research and development efforts on photonics—the generation, transmission, storage and detection of light—and biomedicine, seeking a competitive edge for Ontario’s industrial sector in the generation and harnessing of light and other forms of radiant energy.

The centres have become an integral part of Ontario’s R&D system. Their partners include leading academics in Ontario universities and colleges, the federal Networks of Centres of Excellence, and several other government programs that have complementary mandates and service-oriented agendas for the support of innovation. The centres’ clients include business, industry and public organizations in Ontario that are best positioned to

apply the results of research to improve their competitiveness.

Over the years, the Centres of Excellence played an important role in the commercialization of many innovative technologies. Over the last year, the centres combined made contributions to the success of nearly 777 organizations, many of them small and medium enterprises (SMEs), through R&D co-investments, knowledge-sharing and networking opportunities.

Creation of OCE Inc.

On April 1, 2004, the Ontario Centres of Excellence Program started a new chapter in what has been a rich 17-year history with the announcement that the four centres had formally joined to become a new corporate entity, Ontario Centres of Excellence Inc. (OCE Inc.). The contract between the Ministry of Economic Development and Trade was signed on March 31st with the transfer of assets effected on April 1st.

The success of the centres has certainly been noteworthy; however, the forces at work in today’s globalized competitive environment are undeniably more challenging than in 1987. Increasing competition for limited R&D dollars. Aggressive courting of trained personnel on an international scale. Customers who are paying attention to even the slightest fluctuation of their bottom line. Indeed, Ontario businesses in 2004 face many challenges, and the SMEs are feeling the pressures even more acutely. Such factors demand innovative solutions that will give Ontario and its industries a competitive edge.

And therein lies the rationale for merging the centres. The size and scope of the centres limited them competitively. As a merged entity, OCE Inc. will now be able to leverage shared resources, expertise, and collaborative opportunities to provide more value to clients and partners, and bring greater growth to Ontario.

OCE Inc. will build on the strength of its traditional core activities: investing in Ontario-based research, and building partnerships between industry and researchers in Ontario that help move technology, knowledge and young innovators to the marketplace. With its significant critical mass, OCE Inc. will now be able to support the development and commercialization of innovation on a whole new level.

In terms of organization, the four original centres—CITO, CRESSTech, MMO and PRO—will comprise the four divisions of OCE Inc., with each division led by managing directors. OCE Inc. will be led by an executive team consisting of a new CEO, four managing directors, and vice-presidents representing each of the newly centralized financial and marketing functions. As a member-based, not-for-profit legal entity, OCE Inc. is ultimately responsible to a board of directors selected from its members. The membership and the board will be constituted from OCE Inc.’s client and partner base, as well as other leaders in the private sector, public sectors and academia.

As part of the new business model, the new OCE Inc. corporate office has three primary roles. The first is to act as strategic leader for the organization and to facilitate new high-level initiatives; many of which will translate into programs at the divisional level, while others will help build OCE Inc.’s core-innovation services. The second is to service and assist the core businesses delivered through the divisions. Last, but certainly not least, is the critical role of acting as primary interface with OCE Inc.’s primary investor—the government of Ontario—through the Ministry of Economic Development and Trade, and with Canada’s financial and investment community.

The merger provides OCE Inc. with a single, more effective and coherent brand identity. Such a solidified brand can be leveraged not only provincially, but also federally and internationally, resulting in a stronger market recognition of Ontario as a world leader in innovative technologies. Extending the network beyond Ontario will ideally lead to a situation where we can either export technology developed here, or leverage innovative developments originating in other countries for the benefit of Ontario’s economy and for the people of the province.

At this time, OCE Inc. will maintain its current sectoral foci, as they still reflect the combination of the highest priorities and best opportunities for Ontario and its partners, with the core business still delivered through the divisions. The new structure will open the door to increasing opportunities for cross-divisional partnerships, which has already been occurring in the centres, but now this will be even easier to facilitate, resulting in powerful synergies.

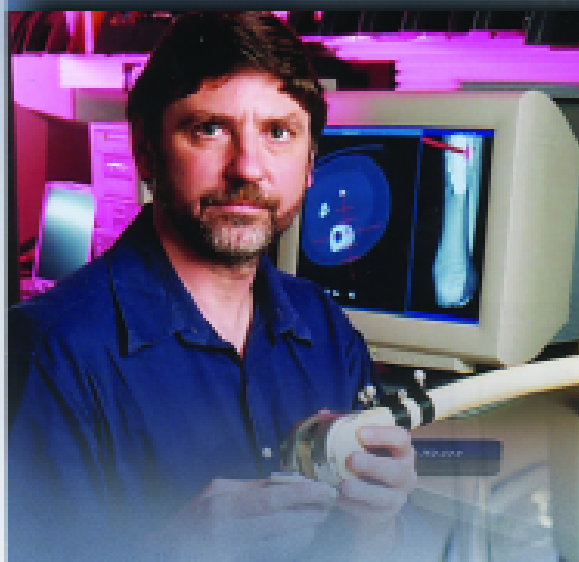
The merger will also provide OCE Inc. with the scope and flexibility to identify and support emerging technology areas such as energy and the environment, nanotechnology and life sciences under new divisional areas. These changes will occur over time, in partnership and with guidance from the corporation’s community.

Access to more funding—both government and private sector. More leading-edge research. More commercialization of research leading to more spin-off companies and more licenses to existing companies for new products and services. All of these will enable OCE Inc. to contribute to academic and industry efforts to greatly enhance the opportunities for researchers, students and trained personnel keeping their knowledge and expertise at home in Ontario.

Moving forward, OCE Inc. will build on the strong legacy of the last 17 years and endeavour to foster a vibrant culture of innovation and commercialization in Ontario for the better social, economic and physical health of the people of the province.



Research



*OCE Inc.-supported researcher
Dr. Randy Ellis*

Investing in

Research



Overview

Out of the research conducted within Ontario’s renowned post-secondary research institutions come the kernels of knowledge that lay the foundation for applied research, which in turn can lead to intellectual property with commercial potential.

Successful commercialization of research can have incredible economic implications with new concepts, ideas and technologies spawning new companies and improving existing companies, providing the base for clustered business activities, and opening up job opportunities.

The Ontario Centres of Excellence have always worked in collaboration with industry in order to ensure that Ontario’s innovation pipeline is full. By investing time, money and expertise in the research of Ontario’s best and brightest, OCE Inc. can enable the work within the academic and research realms to continue, in order to bring it to the point of commercialization.

In the 2003/2004 fiscal year alone, the Ontario Centres of Excellence under the former structure invested over \$17.7 million in research that demonstrated a potential for commercial viability.

Highlights

OCE Inc.’s investment in research covers a wide range of initiatives including: establishing and facilitating collaborative research at the provincial, federal and international levels, and supporting a number of consortia-based research programs.

One example is the College Partnerships Program launched by OCE’s CITO division in May 2003, which is specifically tailored to the needs of Ontario colleges where R&D projects tend to be more applied in nature. This program demonstrates a solid commitment by the Centres of Excellence Program to develop the same level of involvement within Ontario’s diverse college community as they have historically had with Ontario’s universities.

Developed in conjunction with the provincial government and the Association of Colleges of Applied Arts and Technology of Ontario, this program invests in applied R&D partnerships with high potential to generate new knowledge,

skilled people, and innovative communications and information technologies.

At its launch, the College Partnerships Program provided \$1.3 million to promising high-tech research projects at five Ontario colleges, including projects on a virtual haptic surgical training station, real-time collaborative visualization systems, and ubiquitous location tracking using standard wireless technologies.

The College Partnerships Program has dual benefits. It allows small companies to leverage research expertise and lab time, while giving college-based researchers an opportunity to develop technologies and products in response to real-life industry requirements. Traditionally, SMEs have had limited resources to dedicate to long-term research and development; so for many companies this partnership could make the difference between moving forward as a profitable enterprise that contributes to Ontario’s economy or closing their doors.

Another way in which OCE Inc. invests in research is by facilitating collaborative research efforts that enable companies to leverage university research for product research—companies such as Millenium Biologix, based in Kingston, Ontario.

Since the early 1990s, Millenium Biologix has been finding new ways to help the body repair and re-grow bone and related connective tissues. Its products include Skelite™ biomaterials for the repair of skeletal trauma and Primacol™ /Peptos™ growth factors for accelerating the repair process; products that have the potential of improving healthcare outcomes for thousands of people in Ontario and Canada.

The Millenium Biologix story is truly an example of successful collaborative research. With the support of MMO-funded research at Queen’s University and the University of Toronto, Millenium Biologix made early strides in the development of its Skelite™ technology.

Quick Facts:

During 2003/2004:

- OCE Inc. invested over \$17.7 million in research in Ontario.
- This investment was more than matched by an additional \$21.5 million in support for research from industry partners.
- OCE Inc. partnered with 777 companies in Ontario.

“Our partnerships with leading researchers allow us to extend product development and manufacturing in new areas,” commented Dr. Timothy Smith, President and COO for Millenium Biologix.

Ongoing partnerships, facilitated by MMO with Queen’s University, have helped to further develop bone material technologies, as well as providing the company with access to leading resources, equipment and a broad network of experts in the areas of advanced materials and manufacturing.

Another OCE Inc. project that could have immense health implications is the research being conducted within the area of prostate cancer by a team that includes PRO-supported scientists. Prostate cancer is now the most commonly diagnosed cancer in men—with one in eight men developing the disease during his lifetime, and one in 26 dying of it. Treatment options are varied, with different levels of effectiveness, but all are likely to have unwanted side effects.

Fortunately, a new light-based treatment called photodynamic therapy (PDT), which has already shown significant promise, may soon provide men with another option. PDT uses drugs that become toxic only when exposed to light. First, the drug is injected into the bloodstream. Then, the tumour is exposed to light in a controlled manner via implanted optical fibers. This activates the drug, which destroys tumour cells with little effect on healthy tissues.

The treatment is currently in clinical trials in Montreal and in Toronto at the Princess Margaret Hospital, where the team has developed an international reputation for their expertise with the design and development of light-delivery services and instrumentation specifically for PDT. The biomedical resource group provides seamless coordination of specialized clinical trials by combining knowledge of optical biophysics with access to specialists and a wide patient base.

In addition to such medical initiatives, OCE Inc. also invests in projects with significant environmental ramifications. One such recent success is a CRESTech-sponsored project that will help forest managers better diagnose the health of Canada’s forest lands. CRESTech’s project partners—York University, the Ministry of Natural Resources, and Dendron Resource Surveys—are applying hyperspectral imaging techniques to observe leaf chemistry from the air. This results in more meaningful, affordable observation on a vastly larger scale than was previously possible.

“There is increasing demand for good environmental-management data and it is only a matter of time until the Canadian and global markets switch over to these better methods...and Dendron will have a jump on the market,” commented Dr. Udo Nielsen, president of Dendron.

In fact, project partners estimate that hyperspectral imaging will be the norm for forest management within five to 10 years, thereby making an enormous contribution to the continued health of Canadian forests—a legacy that future generations will most certainly benefit from.

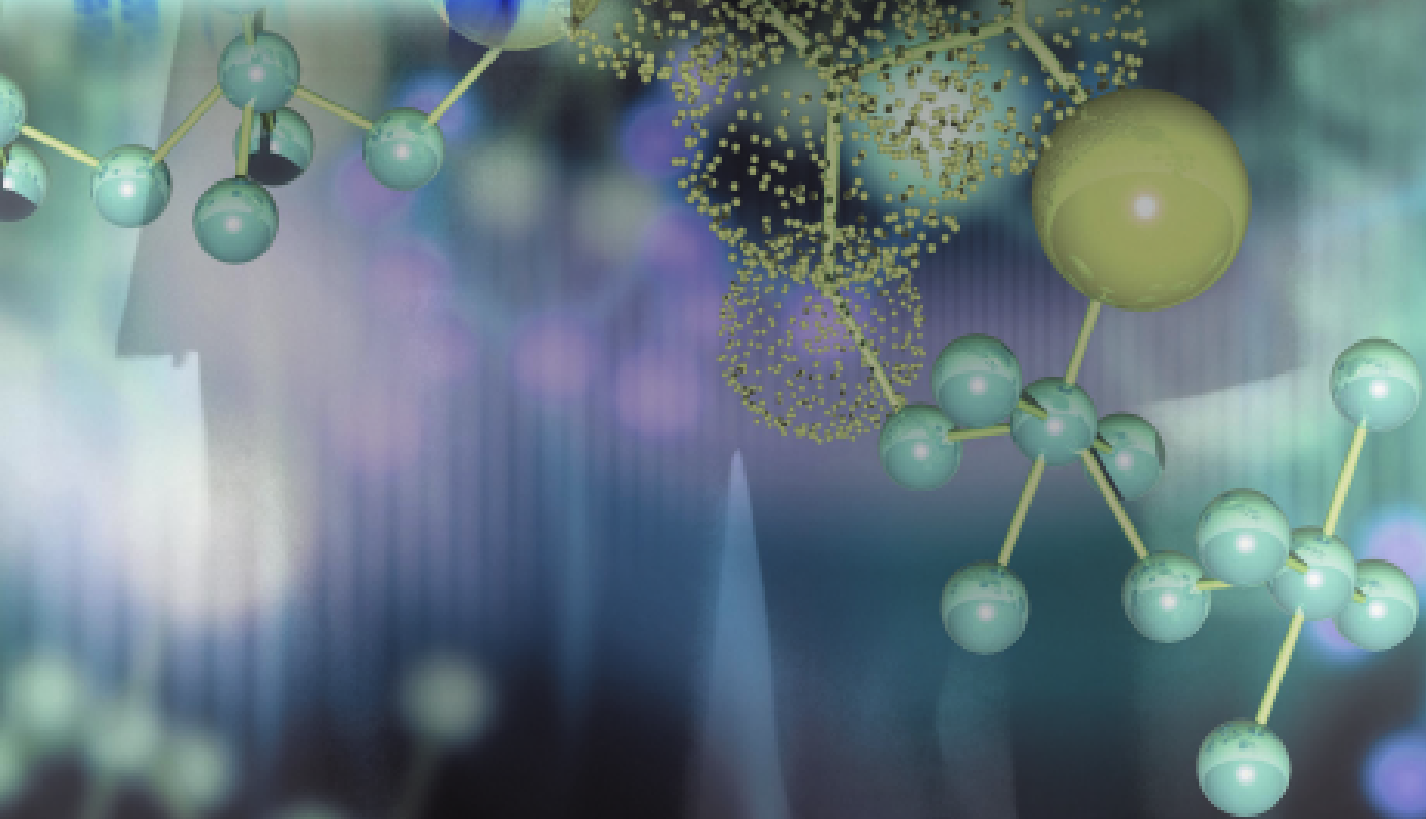
There are times when a problem is too large or complex in scope for the interests and capabilities of a single organization or it may be common to an entire sector of the marketplace. The CRESTech-supported Consortia Programs are a unique collaborative approach designed to ensure that valuable R&D projects do not fall by the wayside by virtue of their size and/or complexity.

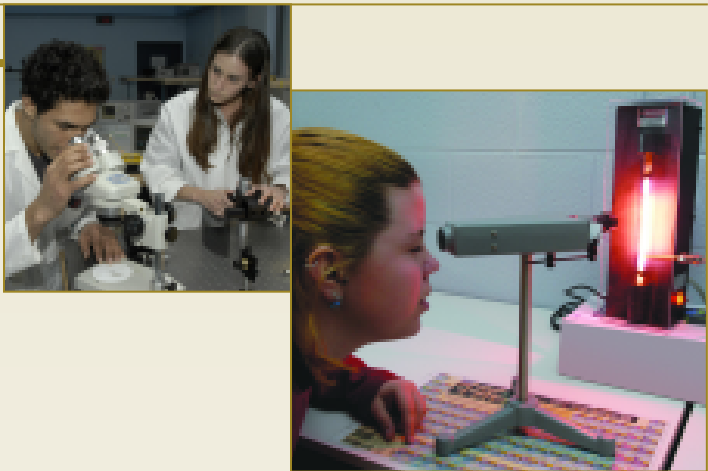
This initiative helps create cross-sectoral partnerships such as Geomatics for Informed Decisions (GEOIDE) and the Canadian Water Network (CWN), and provides infrastructure for strategic investments in support of the industry relevant R&D.

OCE Inc. will continue to develop strategic ways to invest time, money and expertise in research within the province, ensuring the kind of thriving research community that is needed to solidify Ontario’s leadership in innovation on the global stage.



People





Photos courtesy of Niagara College

Overview

In order for Ontario to maintain and further strengthen its reputation for innovation, it must look to its most important resource—its people. Different industries may be described as the engines of the economy, but without highly skilled people, these engines would grind to a halt. With the competition for Ontario’s “best and brightest” at an all-time high, the need to invest in people and provide them with opportunities reflective of their knowledge and expertise has never been greater.

OCE Inc.’s divisions have long recognized the need to educate and train people for highly specialized careers in the new economy. They have also identified the need to provide growth opportunities, in research and innovation, for Ontario’s leaders. And in doing so, OCE Inc. is also contributing to preparing a knowledgeable world-class base of researchers and skilled personnel. This is done with an eye to meeting not only Ontario’s current human resources needs, but also those of the future.

Highlights

OCE Inc.’s support, through its divisions, of industrially relevant research in Ontario’s post-secondary research institutions helps create a pool of highly skilled researchers with the skills Ontario industry requires. In addition, OCE Inc. has also implemented a wide variety of targeted initiatives specifically designed to foster the development of highly qualified people. These include: supporting the development of university and college courses and programs of study; developing and organizing professional development courses targeted at researchers and graduate students; and funding of fellowships and scholarships.

Years of commitment and investment in advancing education and training within the field of photonics in Ontario paid off in December of 2002, when Niagara College and Algonquin College were given approval by the Ministry of Training, Colleges and Universities to deliver a Bachelor’s degree program in Photonics. The team at the PRO division took great pride in this announcement as they had worked closely with both colleges with the common goal of advancing photonics technology in Ontario. This included the previously reported launch of the Photonics Education and Training project announced in 2001.

The degree program demonstrates how Ontario’s academic institutions are leaders within what will be a burgeoning area of technological growth. Indeed, photonics is systematically replacing electronics as the technology of choice for major industrial and health care companies, and will be an important economic driver of the Ontario economy over the next several decades.

The Bachelor of Applied Technology degree in Photonics, which will be introduced in the fall of 2004, will be one of the only bachelor’s level photonics programs in North America. It will give Ontario a distinct competitive edge, addressing an urgent need in the industry for highly skilled photonics employees in a wide variety of industries, running the gamut from automotive to communications to life sciences.

And in 2003, a training partnership co-sponsored by the PRO division was awarded almost \$2.7 million as part of the Strategic Skills Investment (SSI) Funding Projects announced in 2003 by the Ministry of Economic Development and Trade.

SSI is a multi-year grant program, providing start-up financing for business-led training partnerships that increase the number of people with critical skills. Specifically, it funds the best projects that develop “forward-looking” skills and supports collaborations between industry and training providers. This recognition of the Niagara College, Algonquin College and PRO Advanced Learning in Photonics for Manufacturing and Biotechnology Applications project attests to the value of the Centres of Excellence development initiatives.

Quick Facts:

During 2003/2004:

- OCE Inc.-funded projects support the research of more than 400 project leaders working in over 20 post-secondary research institutions in Ontario.
- Also supported through these research projects were 3,639 researcher team members, including co-investigators and graduate students.
- Forty-three percent of OCE Inc.-supported researchers who left their post-secondary research institution applied their expertise to positions in industry within Canada.

Investing in the development of people often entails financial support. For example, student researchers are often faced with harsh financial realities that hamper their ability to fully pursue a research objective. Programs such as the CITO division’s Student Research Excellence Scholarship Program help to alleviate some of the financial burdens that many student researchers face.

The tremendous response to the program resulted in the CITO division more than doubling the number of scholarships in 2004 from the previous year. These scholarships reflect the significance of the role that graduate student researchers can play in advancing knowledge within a particular research area. They are available to students in both university and college programs who meet qualifications and who are involved in a CITO-supported project.

In addition to current academic standing, scholars are selected based on factors such as the quality of the research, the impact of the student’s work on the CITO project, and their work’s potential for commercialization.

Another way in which the Ontario Centres of Excellence has invested in the development of highly qualified people is through a unique course they have sponsored for the past five years in partnership with Queen’s University. Research projects involve complexities beyond the actual focus of the research and demand that researchers and graduate students develop other skills, including project management. This course fills in the need for such training that falls outside of the realm of most theoretical and academic courses of study. Alumni have described the course as “interesting,” “informative,” and “useful,” with one participant making the comment that “I needed these [Project Management] tools and have tried to independently invent them in the past.”

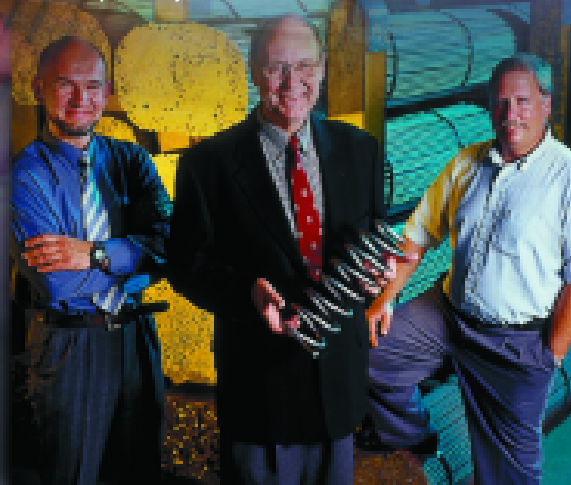
This year’s course held in April at Queen’s University was titled “Team-Based Project Management for Graduate Students and Researchers at Canadian Universities.” The course was designed to meet objectives such as highlighting the soft skills necessary in team-based activities; reviewing project management tools; discussing root causes of project failure; and developing an understanding of how projects are sponsored, funded and managed in a university setting.

Using a variety of teaching tools including lectures, case studies, group activities and videos, participants were taken through a number of modules, including “Introduction to Project Management,” “Leading through Team Work and Group Dynamics,” “Economic Considerations – The Concept of Time Value,” and “Protecting Intellectual Property.”

Developing a workforce composed of highly qualified people, skilled in new and emerging technologies, will benefit a wide variety of industries and, by extension, fuel the growth of Ontario’s economy.

Marketplace

(L to R) Dr. Dimitri Malakhov & Dr. Gary Purdy,
McMaster University, & Mr. Thomas King,
Meritor Suspension Systems



Moving Technology into The Marketplace



Dr. Jaymie Matthews rolls out the nearly complete MOST microsat



Michael Page, Photonix Imaging

Overview

What has always made the Centres of Excellence Program different from many other research programs is its focus on research discoveries that translate into economic value. In other words, this organization was always more than a funding body. It will continue to focus on taking Ontario-developed concepts, technologies, systems and commercializing them, supporting the province’s growth and prosperity. And in the process, advancing young innovators into the marketplace.

Highlights

OCE Inc.’s divisional initiatives supporting the transformation of academic research discoveries into commercial property have met with a high level of success.

Launched in September 2003, the CITO division’s Accelerator Investment Program is designed to accelerate the transition of research in Ontario’s universities and colleges into viable business opportunities. The program identifies promising opportunities and then helps these CITO-supported researchers develop a competitive technology product and an enterprise capable of bringing it to market. By example, the program’s first recipient, Ottawa-based TenXc Wireless, received \$100,000 to help develop and market its wireless-network antenna technology.

The ultimate goal is to ensure that the researchers create sustainable ventures with a high potential for growth, thereby attracting additional external investors. The program also provides venture capitalists and other investors with access to new technology-based companies that are primed for further investment and growth.

Experience has shown that the barriers to successfully commercializing research discoveries are not always financial; sometimes they result from a lack of “know-how.” With this in mind, the Accelerator Investment Program supports researchers through a combination of direct investment, collaboration with the investment community, and partnership with other government programs. In addition, each selected project is provided with an advisory committee comprising representatives with accounting, legal and business expertise, and a CITO Business Development Manager.

The Accelerator Investment Program is only the most recent example of OCE Inc.’s efforts to help move technologies from the lab to the marketplace. Many of OCE Inc.’s greatest successes grow out of investments made into research collaborations between post-secondary researchers and business. For example, a collaboration between McMaster University and Meritor Suspension Systems Company (MSSC), jointly funded by MMO and MSSC, will provide substantial benefits to drivers, car manufacturers and the Ontario economy.

MSSC, a joint venture between Arvin Meritor and Mitsubishi Steel, is leveraging a new microalloy, developed by Mitsubishi Steel, in production of new products. The new steel is stronger than traditional steel and can sustain greater stress, giving it immense potential. However, a problem known as decarburization was identified during processing that would have shelved widespread use of the new lighter steel grade.

With MMO and MSSC support, Dr. Gary Purdy from McMaster University, together with Dr. Dimitri Malakhov, developed a research and testing trial to explain why decarburization occurred and what process modifications could be made to prevent ruining the springs. Their recommendations met with instant success on the manufacturing lines in Milton, which meant that MSSC could use the new steel in more products.

“I don’t think our project could have been completed without the help of MMO,” observed MSSC R&D Engineer Tom King.

With the tangible benefits of lighter springs, including better fuel economy and better performance, MSSC is now poised to be a leader in sales and enhanced technology in the automotive suspension component industry.

Quick Facts:

During 2003/2004:

- Intellectual property generated by OCE Inc.-supported research attracted nearly \$24 million in investment funding by companies and capital markets.
- Nine new companies were created based on OCE Inc.-supported intellectual property.
- There are 61 companies in business today based on OCE Inc.-supported research employing over 300 people.

The Dynacon Inc. story is another successful venture in which an OCE Inc. division played a significant role. Dynacon was part of a team that built Canada’s first microsatellite, MOST, designed to host the country’s first space telescope. Dynacon received significant international exposure as the prime contractor to the team that included: CRESTech, Spectral Applied Research (a CRESTech spin-off company), the Canadian Space Agency, University of Toronto, and University of British Columbia. This heightened profile strategically positioned Dynacon to commercialize key technologies necessary for this emerging market.

“Had it not been for CRESTech’s leadership and support with the initial satellite project [MOST], we would not be exporting anything...this gave us profile in the international marketplace,” commented Dr. Kieran Carroll, manager of space projects for Dynacon.

Dynacon now targets microsat makers in foreign markets with the MicroWheel 200 and MicroWheel 1000 reaction wheels, instruments that are necessary for critical navigation systems.

Photonix Imaging, a spin-off company from the PRO division, is another good example of how Ontario’s investment in the Centres Program helps strengthen the SME community and create jobs in the province. Photonix has developed a digital-based system that enables the creation of vivid holograms for use in advertising, education and medical imaging, at a third of the price offered by its competitors. The patent-pending light valve technique was created as part of a PRO project initiated by Michael Page, then professor at the OCAD, and now president of Photonix.

With an international market estimated at US \$1 billion, the growth potential for Photonix is immense. This technology has already resulted in new high tech jobs in Ontario and attention from France and the USA. Photonix clients include the Ontario Science Centre, the University of Michigan, the U.S. National Library of Medicine, and Magna International.

Sometimes OCE Inc. divisions are involved in projects that use new technologies

for problems of a more “elemental” nature. In the case of Dr. Monica Emelko, that element is water.

Dr. Emelko, a researcher at the University of Waterloo, led a CRESTech-funded project on drinking water safety that was successfully piloted in the City of Ottawa in 2002 and resulted in a considerable savings of \$4.5 million for the region. At a time when the safety of our water supply is top-of-mind, this new approach provides a safe and inexpensive way to test the effectiveness of filtration plants in removing pathogens.

Dr. Emelko first documented how a small lab filter can credibly parallel the workings of a large municipal filter, then delivered a replicable framework for measuring the effectiveness of large filters in a variety of real worked stressful conditions. This technique can be applied across Ontario, with the potential of saving municipalities hundreds of millions of dollars as they look to upgrade their ability to produce safe drinking water.

In addition to setting up similar projects in the Peel, Niagara and Halton regions, Dr. Emelko has received considerable interest from consultants in the United States.

Another way in which OCE Inc. demonstrates its commitment to furthering the commercialization of innovative technologies is through the Martin Walmsley Fellowship for Technological Entrepreneurship. This award honours the vision of Dr. Martin Walmsley in developing new institutional structures to promote innovation—the Ontario Centres of Excellence—and is designed to foster an entrepreneurial spirit within the OCE Program. Granted annually, the fellowship supports the commercialization of a new technology company that is based on intellectual property developed through OCE Inc. supported research.

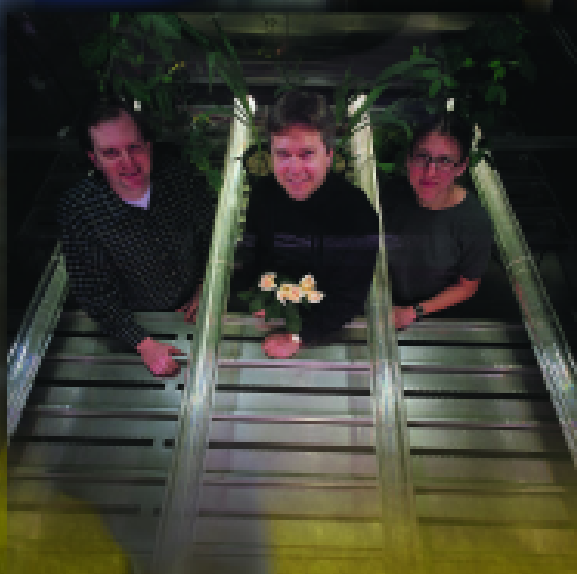
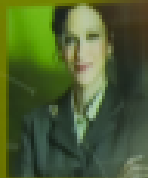
The ability to manage innovation from concept to commercialization is the point of differentiation that has led to tangible economic and quality of life benefits for Ontario in the 17 years of the Centres of Excellence history. And it is this expertise that will characterize the newly merged entity—OCE Inc.

ONTARIO CENTRES of Excellence

The Ontario Centres of Excellence Program is made possible through the financial support of the province of Ontario.

*An extraordinary force bringing
greater growth to Ontario.*

Innovation



Mike Dixon (C) stands with colleagues Mike Stasiak (L), and Nan McKay (R) inside a specialized growth chamber. This group, supported by the CRESTech division, has attracted partnerships with organizations as diverse as the Canadian Space Agency, Canada Life Assurance, Adason Properties Limited, Ontario's Ministry of Agriculture, Food, and Rural Affairs, and Honeywell.



Dr. Norman Zhou from the University of Waterloo

Overview

The old adage that “the whole is greater than the sum of its parts” accurately represents the kind of collaborative approach needed to address today’s complex research puzzles. Mindful of this reality, OCE Inc.’s divisions have done a stellar job in building a strong and vibrant infrastructure for innovation in Ontario.

The divisions have facilitated and supported the creation and expansion of broad networks that include individual entrepreneurs, researchers, the public sector, universities and colleges, financial institutions and governments. The connections and alliances made through these networks result in powerful synergies—synergies of ideas, expertise and funding. These synergies enhance Ontario’s competitive position within new and emerging technological areas, setting the stage for long-term economic growth.

Highlights

The divisions use a variety of mechanisms to strengthen the program’s networks. First are sectoral or industry events organized or supported by the divisions. Second are the many advisory and selection groups that tap into OCE Inc.’s network of innovators to identify research challenges and potential solutions, often through OCE Inc.-supported research. Finally, the divisions are contributing members of a wide variety of partnerships, not only with academic, research and industry bodies in Ontario, but also increasingly with international partners.

Events run the full scope of informational seminars to full day conferences which provide education, training, and networking opportunities.

For example, earlier this year CITO division partnered with The Ontario Research Network for Electronic Commerce (ORNEC) to present a workshop titled “Identity Theft—A \$5 Billion Speck on Canada’s Radar Screen.” In addition to this and other events, the CITO division co-sponsors InnoTalk sessions with the Ottawa Centre for Research and Innovation. InnoTalks are designed to help companies find effective answers to process, systems and technology issues.

The MMO division also produces a wide range of seminars, workshops and short courses. Its annual Partnerships event plays host to more than 1,000 key stakeholders in the materials and manufacturing R&D community. These events have helped build the MMO Network to more than 2,100 members, including more than 700 industry members, and more than 1,200 academic members and students.

OCE Inc.’s divisions are also very active in supporting, facilitating and playing an integral role in industry advisory panels which explore various issues. In August 2003, the CRESTech division announced the creation of an independent, multidisciplinary expert panel in support of a provincial program to improve sustainable water well infrastructure. With more than three million people in Ontario depending on a network of more than 500,000 private and municipal wells, this panel will play a critical role for Ontarians.

The panel’s objectives are to document knowledge gaps and opportunities for improving water well infrastructure in Ontario, as well as identify emerging threats to water well sustainability and assess Ontario’s capacity to mitigate these threats. In addition, the panel will provide a peer review of the findings from a CRESTech-sponsored “think-tank” process. It is also a supportive element of the Sustainable Water Well Infrastructure (SWWI) project launched by the Ontario Ministry of Environment in 2002, as part of its Clean Water Strategy.

The strength of OCE Inc. partnerships has contributed significantly to the success of the Centres Program. Whether it is a joint sponsorship of an event or an alliance that is broader in scope—partnerships with academic, research, industry and government bodies are the lifeblood of the program. The quality of the partners and the increasingly global nature of these partnerships signify the level of excellence that the divisions have become renowned for.

Quick Facts:

During 2003/2004:

- OCE Inc. produced 145 workshops, lectures or seminars, reaching over 4000 people in industry and over 5000 post-secondary researchers.
- OCE Inc. played a significant role in 156 consortia or alliances between post-secondary research institutions and industry, involving 453 companies and 545 researchers.

For example, in the past two years, the PRO division has developed some interesting partnerships. In May 2002, PRO signed a Memorandum of Understanding (MOU) with the Ottawa Life Sciences Council (OLSC), a not-for-profit organization committed to stimulating the growth of the life sciences sector in the Ottawa area. The MOU launched the convergence of light-based technologies with life sciences research. These types of convergent technologies have the potential to offer a multitude of critically important health-related applications, such as medical imaging, therapeutics, and environmental technologies.

This partnership was strengthened in April of 2003 when the photonics and life sciences communities joined to form the Advanced Biophotonics Consortium (ABC). The group—which includes the PRO division, OLSC, the Ottawa Photonics Cluster, Carleton University, the University of Ottawa and the National Research Council—will drive initiatives to leverage photonics technology in creating applications leading to better health, a cleaner environment and a more secure future.

In October of 2003, the PRO division further broadened its partnership base and its growth potential by signing an MOU with the Irish Photonics Association. This mission was one in a series of international gatherings aimed at showcasing Ottawa as the place to conduct photonics business in North America. The MOU, designed to facilitate scientific collaboration and create projects between the two organizations and the two countries, has already produced two successful projects, including a partnership between Superlum Diodes (a new start-up in Ireland), the PRO division and McMaster University.

The CRESTech division’s consortia initiatives include a variety of multi-stakeholder workshops, think tanks and other networking opportunities. The purpose is to explore directions in research, create projects and identify research clusters around which the CRESTech division can design its research initiatives. Events included multi-stakeholder workshops on brownfield developments and on green-roof technologies. Additional explorations included topics as varied as advanced life support systems, Canada’s mission to Mars and smart systems for agricultural research management.

With many divisional initiatives, partnerships often result in commercialization of discoveries. In 1995, the University of Toronto’s Condition Based Maintenance Lab (CBM) and MMO approached industry partners to form a consortium to develop a methodology and software tool to evaluate the economic consequences of mechanical failures and preventative maintenance. The resulting software tool (EXAKT) was tested by consortium partners that included Syncrude, Dofasco, Campbell Soup, Alcoa, Canada’s Defense Department and Hong Kong Mass Transit. Industry partner input helped to hone the tool and by 2003, the software was mature enough to be commercialized.

MMO worked with the CBM lab and created OMDEC, a new company responsible for the commercial development and marketing of EXAKT. But the power of synergy did not end there. Ben Stevens, the president of OMDEC, had been working to commercialize a new diagnostic maintenance tool developed through a German university. When he saw EXAKT, he realized the commercial potential of a combined prognostic and diagnostic maintenance tool. Given the staggering costs to a company when equipment breaks down, the successful commercialization of this MMO-supported research initiative could significantly impact an organization’s bottom-line.

As “an extraordinary force bringing growth to Ontario,” OCE Inc. is committed to continue creating, supporting and developing such productive networks of clients and partners. OCE Inc.

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OCE Inc.’s interim Board of Directors played a crucial role in managing the transition of four centres into a single, merged Ontario Centre of Excellence Inc.

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