

MINISTRY OF RESEARCH AND INNOVATION

STRATEGIC PLAN



November 2006

FOREWORD

Today more than ever, Ontario's economic and social prosperity depends on our ability to compete and win in the global marketplace. Innovation is the key to growing our existing companies faster and creating successful new ones. When that happens, people in Ontario enjoy the benefits through more rewarding jobs and more vibrant communities.

It is not enough today to simply imitate what the leaders are doing: we must become leaders ourselves. Innovation provides that competitive edge, by creating value from bold new ideas and approaches.

Because valuing and rewarding innovation is so vital to our future economic prosperity, my government created the Ministry of Research and Innovation in June 2005, to drive a coherent and coordinated innovation agenda for the Ontario Government. To underscore the importance of this ministry, I undertook the role of Minister of Research and Innovation.

This document sets out the strategic plan for our new ministry. In crafting it, we consulted extensively with researchers, industry, the private sector, academic institutions and other government ministries. Their advice reflected in-depth understanding of the importance of innovation and a desire to enhance its impact in Ontario, and I appreciate their support.

I especially wish to thank the Ontario Research and Innovation Council (ORIC), under the leadership of Dr. Adam Chowanec. The members of ORIC have helped us a great deal with their advice on how Ontario can create an environment that is both innovation-focused and commerce-friendly, providing a strong foundation for economic leadership.

This document marks our commitment to the vital need to create that environment in Ontario – so that individuals, firms and organizations have the tools they need to transform creative ideas into economic advantages.

Premier Dalton McGuinty

Minister of Research and Innovation

Ontario's Innovation Goals

High-level goals for the impact of innovation in Ontario by the year 2020:

- Ontario will be the preferred location to grow knowledge-based businesses because of its innovation culture, commerce-friendly environment, highly qualified workforce, support for business and entrepreneurship, access to investment capital and competitive tax policies.
- Ontario will be the preferred location for the best and brightest scientists and innovators from around the world because of its globally recognized R&D excellence and the efficient transition of ideas from the laboratory bench to the marketplace.
- Ontario will attract increased private-sector investment in R&D, becoming a leader in the rapid introduction of innovative products.
- Ontario will generate the highly qualified workforce needed by an innovation-based economy through greater awareness of the key role played by careers in science, engineering, business and entrepreneurship.
- Ontario's government will lead by example, with integrated and coordinated innovation initiatives across all ministries and a culture of innovation in its own operations.

Source: Ontario Ministry of Research and Innovation

Table of Contents

1	Creating an innovation culture	1
	Providing a focus.....	1
	Ontario Research and Innovation Council.....	2
	Ontario Innovation Strategy.....	3
2	Value from research.....	5
	Enhancing the value of investments.....	5
	Working together to leverage funding	6
	Building strength through partnerships.....	7
	Indirect cost support.....	8
3	The move to the marketplace.....	9
	Intellectual Property	11
	Venture capital	12
4	Focusing for success	14
5	Innovation is about people.....	16
	Growing the culture	16
	Building human potential.....	18
	Leading by example	19
	Communicating success	19
6	Aligning the goals	21
	Across jurisdictions	21
7	Measuring results	23
8	Sustaining innovation.....	25
9	The way forward.....	26

1 Creating an innovation culture

This document sets out the foundations on which Ontario will build strong and sustainable economic growth through valuing innovation. Its purpose is to trigger discussion among all of the partners – businesses, academic institutions and government ministries – who by working together can create an “innovation culture” in Ontario.

An innovation culture is built on understanding the value of all new ideas, recognizing the benefits they provide to society as a whole, and rewarding those who create knowledge and those who put it to use to achieve growth and prosperity. An innovation society has both the respect for the education and research that drive the creation of new ideas, and the nimbleness to act on opportunities to achieve their full value.

There is no question that the world’s leading economies have always been innovation-driven. Today, both current leaders and those poised to become the next leaders of the global economy are not just investing in innovation, but have also developed well-integrated strategies to guide those investments.

While people in Ontario enjoy a high standard of living, many indicators underscore the need for a better focus for our investments in the sources of future growth, particularly innovation. Provincial and federal investments in post-secondary research in Ontario have resulted in a rich research base and a large number of major scientific accomplishments. However, this research has not resulted in an equally strong base of innovation-driven industry in Ontario.

Without better focus and a more strategic approach, we risk missing out on opportunities to realize the full value and impact of these investments. More critically, we risk slipping from the first rank of economic prosperity.

The need to strengthen the link between innovation investment and economic prosperity underlies the creation of both the new Ministry of Research and Innovation and the Ontario Research and Innovation Council.

Providing a focus

The Ministry of Research and Innovation was created to place a clear focus on the government’s commitment to innovation as the driver of economic growth across all sectors of the economy.

The Ministry’s mandate is to:

- Develop an integrated innovation strategy and lead in its delivery;
- Align and coordinate Ontario Government investments in both policies and programs to deliver on the innovation strategy; and
- Foster a culture of innovation and showcase Ontario, nationally and internationally, as an innovation culture.

Ontario Research and Innovation Council

The Ministry’s strategic plan reflects the advice and initial recommendations of the Ontario Research and Innovation Council (ORIC), an advisory body reporting to the Premier.

ORIC’s broad mandate is to help Ontario develop a long-term vision for research and innovation. In delivering on its mandate, ORIC has noted that Ontario is well-positioned to achieve greater prosperity, given its investments in knowledge-based education and training, and research and development.

Moving forward, ORIC stressed, the province must cultivate a commerce-friendly environment. This requires addressing a range of related issues, including improving business skills, assuring access to venture capital, and adopting pro-innovation and pro-commerce government policies and practices.

ORIC’s main recommendations may be summarized as follows:

- Government investments in research and development, and associated skills training initiatives, should be more focused.
- Investments in research and development should be complemented by investments designed to enhance commerce competence.

ONTARIO RESEARCH AND INNOVATION COUNCIL 2006

Dr. Adam Chowaniec (Chair)

Dr. H. Douglas Barber

Mr. Dominic D’Alessandro

Dr. Mike Lazaridis

Dr. Tak Mak

Dr. John Mann

Dr. Elspeth Murray

Dr. Gilles Patry

Dr. Janet Rossant

Dr. Molly Shoichet

Dr. Mamdouh Shoukri

Dr. Ilse Treurnicht

Mr. Thomas Vair

Ex officio members

Dr. John Evans

Dr. Alastair Glass

Mr. David McFadden

Mr. Murray Porteous

Dr. Carol Stephenson

- Skills formation should focus more on commercial know-how and offer more opportunities for experiential-based learning, as well as technological and scientific training.
- Government should establish and/or expand regional centres of innovation convergence, to foster collaboration by linking researchers, entrepreneurs, managers and investors.
- Better access to appropriate capital at all stages of the innovation process, from seed capital through venture capital to later stage funding, is required to build strong companies.
- A communication strategy promoting a culture of innovation and commerce would encourage the public, and youth in particular, to embrace science and technology.
- Government should promote an effective intellectual property system to ensure a healthy and expedient flow of intellectual property out of universities to the market.
- The Ministry of Research and Innovation should establish metrics to track the outcome of efforts to build an innovation-intensive economy and improve decision-making.

These recommendations provide the foundations for the government's innovation strategy.

Ontario Innovation Strategy

This strategic plan outlines the fundamental goals, values and policy foundations for a government-wide innovation strategy. The plan aligns with the high-level goals for the year 2020 set out on page ii of this document.

Through discussions with ORIC and stakeholders, the Ministry of Research and Innovation has identified a set of common principles as the basis for the strategy:

- **Excellence:** pursue excellence across the entire innovation system, from research through to company development and growth.
- **Value:** focus on achieving value from innovation investments for those who create, use and benefit from new ideas, as well as society as a whole.
- **Strategic importance:** focus on areas in which Ontario can be a world leader, by building on its research strengths, industry capacity and unique advantages.

- **Collaboration and partnership:** build government-academic-industry teams, networks and partnerships to foster discovery and ensure the rapid spread and application of new knowledge.
- **Talent and leadership:** develop, attract and seek out highly qualified people for the entire innovation system.
- **Awareness:** showcase Ontario's strengths in innovation across the province, nationally and internationally.

These principles set a clear direction for this Ministry and a focus for the government's innovation strategy as a whole. They will provide a solid basis for action as the Ministry works with its partners within government and across the province to support Ontario's prosperity and global competitiveness.

The next sections of this document set out the major elements of the Ministry's strategic plan, and the actions it will undertake in support of the plan.

2 Value from research

Support for research is a critical investment in Ontario's prosperity, because research yields the ideas and knowledge that can fuel economic and social growth.

Research stretches across a continuum, from basic research, also called fundamental, pure or "curiosity-driven" research, to applied research carried out with specific goals. Basic research is often considered to be undertaken purely to generate new knowledge, while applied research focuses on solving problems and generating ideas with more immediate marketplace application.

In fact, basic and applied research stimulate each other. Thousands of products and processes in today's world grew out of ideas formulated by basic research and honed by applied research. At the same time, applied research can create new challenges for basic researchers and trigger investigation that yields rich possibilities for future application.

Supporting this interplay is critical to the innovation cycle, particularly as the global marketplace sets an ever-quicker tempo for the application of new ideas. While the time span between discovery and application varies considerably by industry, speed in taking ideas from concept to marketplace now determines industry leadership, particularly in new fields.

This creates challenges for all partners in the innovation cycle: the private-sector companies that fund internal and external research; the universities and other public institutions that carry out basic and applied research; the entrepreneurs and investors who identify and act on emerging opportunities; and the governments who support research activities and help to shape the environment for all partners.

To meet these challenges, this strategic plan aims to ensure an environment in Ontario that supports research as a central pillar of growth and prosperity.

Enhancing the value of investments

Competitive research grant programs generally rely on the internationally accepted process of peer review to assess research proposals. Through peer review, recognized experts in a discipline give their opinion of the proposed work and how it ranks relative to ongoing activities in the field around the

world. It is generally agreed that peer review is the best way of determining the academic quality of research and research proposals.

The Ministry will complement scientific peer review with external expert assessment of the strategic value of the research to Ontario, based on such factors as relevance to industry, potential for commercialization, and alignment with identified priorities. Proposal evaluation will be open and transparent, and applicants will receive full information on the substance of the reviews. In line with common practice for most granting bodies, the Ministry will not disclose the identity of individual reviewers.

The joint requirements of excellence and strategic focus will help to ensure maximum value from research investments. By focusing on those areas where Ontario can lead innovation, this approach will help to build critical mass and create the close partnerships between researchers and industry that ensure new ideas yield better and more rapid rewards.

ACTION

The Ministry will support excellent research, whether fundamental or applied, that:

- Provides strategic value in terms of new knowledge, industrial application, potential for economic benefit or enhanced quality of life; and
- Creates, attracts and retains the world's best researchers.

Working together to leverage funding

Federal government

Ontario co-funds post-secondary research infrastructure projects that are supported through the federal government's Canada Foundation for Innovation (CFI), as well as research funded by Genome Canada.

The Ministry will partner with federal funding agencies such as CFI to ensure that proposals that offer the greatest strategic value to Ontario (and that meet the standards of excellence) are recommended for funding. It will also continue to work with the federal government to improve the complementarity and effectiveness of co-funded programs.

Private sector

Such Ontario government research programs as the Ontario Research Fund have relied on private sector/industry co-funding as a test for relevance and impact of the research.

Going forward, the Ministry will place particular emphasis on meaningful partnerships between academia and industry that accelerate innovation. Recipients will need to show a clear path between the intellectual property resulting from the research and its application in the marketplace.

The review process will consider the effectiveness of the partnership and levels of co-funding when recommending awards.

ACTION

The Ministry will give preference to investment in proposals that can demonstrate significant leveraged co-investments by the federal government, academia and/or the private sector.

Building strength through partnerships

New ideas and important advances often arise at the interface between disciplines. Bringing together the expertise of scientists and engineers of different backgrounds and the skills of people working in business, the social sciences and humanities can best realize the full social and economic benefits of innovation.

At the same time, partnerships across another set of boundaries – jurisdictional ones – is also important. Because Canada’s research community is small, in the global context, it needs to integrate nationally and take advantage of international opportunities. For Ontario, this provides the advantages of being better positioned to compete internationally and offering its researchers a broader platform and more scope for the uptake of their achievements.

For example, partnerships built on digital networks, such as Ontario Research and Innovation Optical Network (ORION), allow university and hospital researchers to collaborate more easily and build the critical links to achieve competitive success.

The Ministry will build strong research partnerships among different disciplines; among research institutions in Ontario and those across the country; between

academia and industry; with the federal government and the other provinces; and at the international level.

It will support international partnerships through research agreements, funding visits and/or exchange programs for scientists and engineers, and sponsoring major meetings and conferences in Ontario.

ACTION

The Ministry will expect proposals to demonstrate meaningful partnerships between academic institutions, between industry and academia, across disciplines and/or between jurisdictions (inter-provincial, international).

Indirect cost support

Sponsored research—that is, research funded externally – can incur incremental costs, for facilities and administration, that may reduce funds available for teaching and student services. The Council of Ontario Universities (COU) and the Association of Universities and Colleges of Canada (AUCC) maintain that granting bodies should provide indirect cost support at 40% of total direct costs.

ACTION

The Ministry will:

- continue to support indirect costs to a maximum of 40% of total direct costs for its research programs;
- work with other Ontario government ministries to develop a consistent indirect cost policy and rate; and
- work with institutions to ensure that indirect costs support the institutions' research and commercialization mandate and activities, including maintenance of research infrastructure, research administration, technology transfer and intellectual property protection.

3 The move to the marketplace

Achieving economic and social value from investment in research depends on successfully moving creative ideas to the marketplace. Societies that value innovation ensure that this happens swiftly and simply, whether the ideas flow from companies or public research institutions.

Where an idea has been developed within a research institution, the move usually happens by transferring intellectual property to an existing company or by creating a new “start-up” company. In either case, the effectiveness of the process is determined by:

- The extent to which the research institution provides a positive culture of entrepreneurialism and effectively manages intellectual property issues;
- Institutional and individual awareness of market opportunities, and selecting research projects to address those opportunities;
- Close partnerships between the research community and those who can help move research into the marketplace;
- The availability of funds to show the investor-readiness and commercial feasibility of new ideas; and
- The development of entrepreneurial, business management and commerce skills to support the growth of companies.

Ontario needs to do better on many of these fronts. While our universities have been very successful in creating start-up companies, spinning out an average of 30% more companies per million dollars of research funding than the average in the U.S., these companies do not generally grow into major Ontario-based businesses. The number of patents generated in universities per million dollars invested is only 62% of that in the U.S., and the income per patent licence is only 19%. This suggests that the market value of commercialization activity by Ontario universities is considerably lower than in the U.S.

New knowledge achieves commercial value only when it is put to use by companies. Firms at every stage of growth, from start-up to global leaders, rely on the university research community for both talent and ideas. Making it easier for companies in Ontario to draw out ideas from the research community and

realize their value in the marketplace is central to turning ideas into products and prosperity.

At present, the interactions between industry and academia in Ontario are relatively weak. Research projects in academia are generally not industry-driven, so few academic researchers have benefited from working with industrial partners to address specific market challenges.

World-wide, in contrast, recent years have witnessed a shift toward sustained, long-term partnerships between academia and the private sector. This has created numerous networks of excellence, typically centered on academic research institutes that act as hubs for emerging industries. The interplay of world-class researchers and opportunity-focused companies has resulted in breakthroughs that have abruptly changed the technology landscape and opened entirely new opportunities for industry.

Moving more decisively in this direction would help Ontario improve its commercialization efforts. To that end, this Ministry will actively support and facilitate closer partnerships between academia and industry.

This will include developing centres of excellence in focus areas. A network of linked regional centres of innovation would foster a culture of partnership and collaboration among universities and with the business community. Such centres build linkages between small and large companies and create more business development opportunities within the region.

The benefits to the province of developing more research hubs will include:

- Increasing industrial research capacity;
- Improving return on the research investment to deliver greater economic prosperity to Ontario;
- Keeping more emerging companies in Ontario;
- Increasing venture capital investment;
- Absorbing more university and college graduates into industry; and
- Attracting industry and industrial research to Ontario.

In developing such a culture, MRI will support partnerships between business

ACTION

The Ministry will stimulate the development of close industry-academia partnerships and networks at the regional and provincial level, to bring researchers, entrepreneurs, industry and investors together and to create a rationalized network of commercialization centres anchored by regional innovation convergence centres.

schools and technology centres to develop new opportunities, entrepreneurial training and business support.

Intellectual Property

One of the main returns on research investment is intellectual property (IP). IP consists of both patents, which legally protect IP, and know-how or background knowledge. Identifying, protecting, communicating and commercializing IP to reap the economic benefits of the research investment are central to an innovation strategy.

At present, industry in Ontario is often unaware of the IP generated within Ontario research institutions. Access to IP is further hindered by lack of consistency in IP policies across Ontario research institutions. Some offer ownership of patents to the inventors, while others retain ownership and share IP revenue with the inventors. Many institutions have technology transfer offices, but practices used to manage IP vary from one to another. IP access can be further impeded by complex and time-consuming licensing agreement negotiations, often with multiple institutions.

Industry frequently cites poor access to academic IP as a barrier to forming partnerships with academic institutions. This, in turn, represents an obstacle to economic growth. Straightforward access to IP is therefore integral to ensuring that Ontario captures the greatest value possible for the research investments it makes.

Going forward, the Ministry will require that publicly sponsored research organizations manage intellectual property in ways that support Ontario's long-term innovation goals. Institutions will need to show clearly how they plan to

ACTION

The Ministry will work with research institutions, industry and the financial sector to address issues of IP policy and management, with a specific focus on expediency and ease of access.

make IP more readily available to the commercial sector; provide incentives to inventors to identify, protect and commercialize IP; ensure very low barriers to rapid exploitation of IP; and provide access for companies that develop the IP in Ontario. The Ministry strongly supports the concept of research institutions pooling their intellectual property to offer a more effective means of commercializing technology.

Venture capital

A healthy continuing supply of venture capital (VC) investment in Ontario-based research-intensive firms and technologies is a key component of the province's future prosperity. However, investment in innovative companies in Ontario has declined significantly in recent years.

Venture capital in Canada is formed by about 175 firms that manage C\$21 billion, while in the U.S. about 1,000 firms manage U.S. \$250 billion. Canada has historically had similar per capita VC investment as the U.S.¹ but has experienced lower returns. Between 1998 and 2003, Canadian VC funds generated returns of just 1.8%, against to 22.8% in the U.S. The disparity was even greater in early-stage VC investments over the same period, with 3.1% in Canada compared to 54.9% in the U.S.² Much of Ontario's institutional investment has left the province since the dot-com crash.

Ontario needs a dynamic and responsive capital market that can take a company from the early seed stage through to the formation of a large, globally competitive late-stage company. Strategies to ensure continuous access to risk capital from ideas to market are key to successfully putting innovation to work. Any significant break in the capital continuum will curtail the economic benefit

¹ Institute for Competitiveness and Prosperity, Working Paper 6 *Reinventing Innovation and Commercialization in Ontario*, October 2004, p. 33-34

² MacDonald & Associates Limited, *An Overview of Venture Capital in Canada*, Canadian Venture Capital Annual Conference, May 27, 2004.

of Ontario's research investments and impede the future of firms with the highest growth potential in Ontario.

To address the shortage of venture capital funding at all stages, the Ministry will consider innovative funding vehicles to attract investment by large corporations, individual investors, and institutional investors.

An issue also arises with tax and regulatory barriers to foreign investment in Canada, particularly in the case of U.S. investors who back Ontario companies –

ACTION

The Ministry will work with the Ministry of Finance, the venture capital community, institutional investors and commercialization partners to facilitate access to capital at all stages of company creation and growth.

often these firms relocate their operations south of the border due to an unfavourable tax environment in Ontario/Canada. The Ministry will work with the federal government to assess and address these issues.

Further improvements in access to capital will flow from new programs to support the reduction of practice of novel concepts, support scale-up for manufacture, develop effective links between angel investors and high-potential opportunities, support early investments in promising commercial opportunities and attract institutional investment.

4 Focusing for success

Ontario's investments in research have been made mainly through competitive grant programs based on peer reviews. While this approach ensures scientific excellence, it cannot guarantee that research projects will lead ultimately to the creation and growth of global businesses in the areas where Ontario can lead.

The Ontario Centres of Excellence (OCE) illustrate how focused investments can create expertise in specific areas. These centres specialize in energy; communications and information technology; earth and environmental technologies; materials and manufacturing; and photonics.

The MaRS Discovery District provides another example of how government investment helped create one of North America's most concentrated clusters for innovation. MaRS brings together biomedical researchers, research networks, technology expertise, business and venture capital under one roof to help move new discoveries from the lab to the marketplace.

However, most of Ontario's investment has been spread across a wide range of sub-sectors and projects, which has not necessarily supported the creation of a critical mass of research and commercialization activity in any particular sector or industry where Ontario can be a global leader.

Given Ontario's relatively small research community, greater focus is needed, because we simply cannot compete effectively in all fields. By establishing areas of focus and investing significantly in them, Ontario will build global strength and recognition in certain industries. This strength will attract investment and growth, create high-value jobs and establish Ontario as "the place to be" in these selected areas. It will align investments in research with industrial needs and opportunities and drive new products rapidly to market. Focusing on our strengths will give Ontario a comparative advantage over competitors and will aid international partnership with other centres of strength around the world.

Criteria for identifying areas of focus include:

- Areas of substantial global market potential;
- Areas which are based on advanced emerging technologies (which typically outperform others in terms of employment, profitability and growth);

- Areas of public sector need;
- Areas of existing industrial strength relative to other jurisdictions; and
- Areas of existing research and development strength in academia and industry.

While establishing these new areas of strength for the province, MRI will continue to strongly support the research base to develop new future areas of opportunity.

ACTION

Ministries will work together and with external stakeholders to define areas of focus in which to make research and commercialization investments in areas of opportunity where Ontario can be a global leader, and where Ontario faces significant societal challenges.

5 Innovation is about people

Places that invest in innovation, that successfully tap into the creativity of people and market their ideas most effectively, are home to the strongest economies and the best quality of life. These are places that also have a thriving, deep-rooted culture that makes innovation inevitable rather than accidental.

Innovation is about people, and a successful innovation-based society has a workforce comprising educators, researchers, entrepreneurs, managers and skilled workers who are educated and prepared to meet challenges. A culture of innovation clearly grows, therefore, from a focus on people and skills.

Ontario will work on three fronts to create a culture of innovation, by:

- Building awareness and understanding of innovation in a modern society, both in terms of economic and societal benefits, and celebrating Ontario's success as an innovation province;
- Supporting the development of the skills needed to participate in research and development and facilitating the move of new ideas to market; and
- Building awareness of the value of commerce in ensuring the prosperity of Ontario, developing enhanced commerce skills to ensure company success and growth, and attracting business investment to Ontario, to bolster the "culture of commerce" needed for economic success.

ACTION

This Ministry will focus on developing an innovation culture and on promoting the skills that will be required to support Ontario's leadership as an innovative society.

Growing the culture

The Ontario Government has invested in building a science and technology culture, particularly among young people. The Ontario Science Centre and Science North, which are internationally recognized for their excellence in public science awareness, have forged strong links that connect citizens, especially children and youth, to science.

INNOVATION CULTURE

A thriving innovation culture is one in which:

- Citizens young and old embrace innovation and understand its role in achieving social and economic prosperity.
- Innovation and innovators are celebrated at every opportunity, whether in schools, institutions, industry or the marketplace.
- Research, invention, risk, entrepreneurship, and life-long learning are the rule rather than the exception.
- The innovation story is proclaimed globally to attract the best and the brightest talent, and to attract local, national and international investment.
- People recognize and appreciate the role of commerce as a vital link between innovation and prosperity.
- Life-long support for education and the development of skills and competencies is actively encouraged.

To enhance this culture, the Ministry will foster close relationships between the scientific and engineering communities in universities and schools, to increase youth awareness of exciting careers and opportunities in innovation, and provide a steady supply of qualified students at the front end of the innovation supply chain.

Specific initiatives might include engaging Ontario-supported researchers in outreach and awareness initiatives within their communities, as a fundamental component of public investment in research. As part of its web strategy, the Ministry will also develop an interactive and engaging website focused on youth.

Additional support for community, public and youth science awareness could take the form of public lectures on science and technology and its relation to prosperity and quality of life, or networks to link scientists, engineers and innovators to schools and the community to provide role models and mentors. Expansion of the Teachers Science and Technology Opportunities Program (TSTOP) will give science teachers more opportunities to experience science and innovation first-hand.

Research, innovation and entrepreneurship awards programs honouring Ontario's best and brightest will help to ensure maximum exposure through local, national and international media.

Ontario ministries will work together to encourage increased investment in awareness and educational initiatives relating to innovation. An example would include exploring the growth potential of the Ontario Science Centre, Science

ACTION

The Ministry will support an aggressive campaign to raise public awareness and exposure of science, technology and innovation. It will work with the Ministry of Education to ensure that all students in elementary and secondary schools have exposure to science and innovation – and to practicing scientists and innovators.

North and other science museums to enhance their offerings to families, the public and schools, and their outreach to smaller communities.

Building human potential

The creation, growth and success of technology-based companies requires excellent managers who understand the challenges of technology implementation, as well as scientists and technologists who respond to customer-driven pressures for performance. Success depends on the right mix of technical and commerce skills, the latter of which can be defined as knowing how to mobilize resources to meet customer needs competitively.

Formal training alone does not develop these skills. We need to rebalance the learning environment by providing more exposure to experiential-based learning through mentorships, apprenticeships and co-op programs, with a focus on people at the post-secondary education level and those involved in early-stage research and development enterprises.

Industrial internships for post-doctoral fellows in science and technology disciplines will also facilitate knowledge transfer as well as the development of entrepreneurial and commerce skills.

Three ministries – Research and Innovation; Economic Development and Trade; and Small Business and Entrepreneurship – will work with industry stakeholders to determine how to capture the knowledge of successful business leaders and successful companies. This might involve specialized professional training seminars/courses for managers and entrepreneurs, CEO mentorship networks and intern or co-op placements in successful businesses.

ACTIONS

This Ministry will work with the Ministry of Training, Colleges and Universities and institutions to develop strategies to increase post-secondary enrolment in science and engineering studies.

This Ministry will work with the Ministry of Training, Colleges and Universities, the Ministry of Economic Development and Trade, industry and academia to strengthen linkages between students, business managers and S&T professionals, and explore opportunities to facilitate experiential learning.

Several provincial ministries, including this one, will work with other provinces and the federal government on initiatives to attract, develop, and keep innovation skills. Examples include incentives for learning in the workplace and the removal of entry barriers, to recruit skilled foreign managers and science and technology professionals.

Leading by example

The Ministry recognizes its leadership role in promoting innovation within government. It will work to build awareness and understanding of innovation, develop a research and commercialization culture, and foster a culture of commerce internally and across government.

Communicating success

Communicating Ontario's innovation story is a core part of the Ministry's mandate. A marketing and outreach program will capitalize on the unique opportunity presented by the role of the Premier as Minister and innovation champion.

In addition to public awareness, particularly among young people, the objectives of MRI's marketing and outreach initiatives are:

- To showcase Ontario research and innovation at home and abroad;
- To attract investment and high-quality jobs; and
- To brand Ontario as an international "centre of excellence" in innovation.

A multi-faceted public awareness, communications and marketing strategy will develop Ontario's "innovation brand", and will include a proactive media strategy, events to celebrate innovation and recognize accomplishment, and an

enhanced web presence. The Ministry's website will serve as the hub for focusing stakeholder outreach and marketing to build support in promoting Ontario's research and innovation agenda, and to actively support public awareness, media, youth and stakeholder strategies.

ACTION

This Ministry will lead a comprehensive outreach and marketing strategy to promote and celebrate Ontario's innovative capacity and success to a wide range of audiences – within Ontario, nationally and internationally – that will include the launch of an Ontario Innovation Website in early 2007.

6 Aligning the goals

Ministries across government, as well as other jurisdictions, have innovation-based policies and programs which address their particular mandates. There is a critical need to ensure a single voice for Ontario's innovation strategy, whether within or outside Ontario.

The initiatives of other Ontario ministries are informed by the ministries' specialized knowledge and their relationships with stakeholders. The emergence of a single, government-wide innovation policy framework would serve to bring together individual ministry strategies, thereby creating opportunities for coordination, shared responsibility and action. This Ministry has therefore been given the mandate to coordinate innovation agendas across government.

Ministries also need to work together to address issues other than investment which have an impact on the success of the innovation agenda. Examples include tax structure, legislative and regulatory regimes, support for entrepreneurship and small and medium enterprises, and foreign investment and trade.

The primary mechanism for inter-ministerial cooperation is the Innovation Deputy Ministers' Committee (IDC), which meets monthly to discuss innovation activities in the various ministries and to coordinate programs of interest to more than one ministry. The goal is to create a broad, integrated view of innovation within the Ontario Government, and to focus attention on those issues which cross the boundaries between ministries. In particular, the forum will establish working groups to develop a set of clear innovation targets for Ontario.

ACTION

This Ministry will work to coordinate and integrate innovation-based policies and programs focused on the goals of achieving prosperity and global competitiveness, and support other ministries' initiatives to foster innovation.

Across jurisdictions

Federal, provincial and territorial governments in Canada have developed, or are developing, individual innovation strategies. To be truly effective, we need to work with one other.

This Ministry will continue to represent Ontario at the federal-provincial-territorial table that focuses on research and innovation. Like its peers, Ontario looks to build programs and policies that are complementary, supporting national prosperity while focusing on its own strengths and priorities.

Issues discussed around the research and innovation table include federal policies and their impact on provincial priorities and initiatives, federal programs, especially with respect to expectations of cost-sharing, and opportunities for inter-provincial and federal-provincial collaboration.

ACTION

This Ministry will build strong partnerships with the other provinces and with the federal government to allow Ontario to leverage the strengths and expertise of other jurisdictions, and contribute to an integrated network across Canada.

7 Measuring results

To achieve the full value of Ontario's innovation strategy and prove its sustainability, we must measure its progress towards established goals over time, and compare this against competing jurisdictions, both within Canada and internationally. This Ministry will therefore work with stakeholders and ORIC to create an innovation "scorecard" for the Province.

The scorecard will be based on annual information required of all provincially funded research programs. As well, the province will ensure regular evaluations of programs to ensure their effectiveness and impact. This Ministry will also work with private sources and other ministries to collect information on Ontario's leading innovation-based companies and high-growth firms.

In addition to gathering information from grant recipients and other sources, the Ministry will use additional metrics that help to indicate the success of innovation policies:

- Economic indicators, such as GDP, productivity, employment, trade, and foreign direct investment, generally available from Statistics Canada.
- Industrial innovation indicators, including R&D intensity in industry by sector (i.e. R&D jobs, R&D spending), new product introduction, and development of industry clusters.
- Academic indicators relating to publications, patents, license income, prizes, invited talks at major international conferences, number of Master's and PhD degrees granted, research commercialization (technology transfer, university-based start-up companies) and industrial partnerships.
- Innovation environment indicators, such as spending on R&D by funding source³ and by sector, industry sector and cluster profiles, start-up companies, company growth, innovation attraction and loss (researchers, innovators and innovation-intensive industry coming to and leaving Ontario), and inter-provincial and international partnerships.

³ For example, GERD = Gross Domestic Expenditures on R&D by all sectors, BERD = Business expenditures on R&D, HERD = Higher Education expenditures on R&D.

- Levels of investment indicators, including industry investment in R&D, angel investment, venture capital (VC) investment, and return on investment.
- Communications and outreach indicators, such as numbers of students enrolled in post-secondary programs in science and engineering, gender and racial balance, and public and international awareness of Ontario's innovation strengths.

To underscore its own commitment to achieving tangible results, this Ministry will set out, in its operational plan, specific targets for the outcomes of its activities, and will report regularly on these.

ACTIONS

This Ministry will work closely with ORIC and with other government ministries to develop and maintain a robust database of performance indicators and results metrics to develop an innovation scorecard that:

- Provides a comprehensive picture of Ontario's innovation capacity, performance and accomplishments;
- Compares Ontario to other leading national and sub-national jurisdictions;
- Monitors Ontario's progress towards its innovation and prosperity goals; and
- Informs strategic directions and initiatives.

This Ministry will develop and publish targets for the outcomes of its own activities and report on its progress on a regular basis.

8 Sustaining innovation

Successfully stimulating and harnessing innovation to create prosperity calls for a significant and sustained commitment from Ontario's government, and a delivery model that ensures effectiveness and accountability.

This delivery model must be informed by external expertise from the research and business communities on an ongoing basis, and must also be robust enough to survive changes in government. It must have the skills to manage a broad range of investment programs, ensuring compatibility and integration of investments.

Sustainability also requires a well-founded, long-range fiscal plan that provides a predictable source of funding, whether to invest in initiatives that support provincial strategic objectives, to promote sector growth or new industry opportunities, or to respond to external opportunities that meet Ontario objectives and offer major economic and/or social gains.

The investment program must be able to leverage industry and other government funding to significantly enhance Ontario's competitiveness. It should also be flexible enough to respond to knowledge and technology developments, as well as external factors impacting the economy and new opportunities.

However the government chooses to manage its innovation investments, these must adhere strictly to government standards of accountability and transparency.

ACTION

This Ministry will work with the Ministry of Finance and the Ministry of Public Infrastructure Renewal, as well as other government ministries, to develop a sustainable, predictable funding and governance strategy to support focused investments in Ontario's strategic opportunities.

9 The way forward

The need to turn ideas into innovative products and services has never been more urgent, for both mature and developing economies. The wisest jurisdictions are responding to that urgency by focusing their public investments on the creation of knowledge, and clearing the pathway from originator to market.

Ontario's economic prosperity depends on understanding the importance of this new approach and acting on it. This document has outlined the strategic actions with which its new Ministry of Research and Innovation will spearhead the government's innovation agenda. Although its immediate focus is on Ontario's business and research communities as drivers of prosperity, the plan is essential to ensuring this province's economic future.

It will achieve this by:

- building stronger links and greater interaction between research institutions and the commercial sector;
- integrating and coordinating all provincial innovation efforts;
- ensuring maximum returns on public investments in research;
- creating a culture of innovation and a commerce-friendly environment across the province and within the provincial government; and
- recognizing and responding to the significant time, expertise and effort needed to achieve optimal returns on investments in research.

Through these activities, Ontario will build and benefit from an innovation culture, one that values and nurtures creativity for the benefit of all citizens.

"We know that in a world where you can borrow capital and buy natural resources ... research and innovation are critical to building a high-wage, high quality-of-life economy."

Premier Dalton McGuinty,
in a speech to the National Angel Organization, October 2006