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Envisioning a world-class Commercialization System for Canada

Arthur J. Carty
National Science Advisor to the Prime Minister

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Introduction

Good afternoon everyone. Bonjour. I'd like to start by thanking Jeff Crelinsten and Mark Henderson at Research Money for organizing today's event.

I'd also like to thank everyone present –speakers and members of the audience. Your comments are an important contribution to the emerging dialogue around this definitive issue for Canada's future.

As National Science Advisor, I have been asked by the Prime Minister to work with the Minister of Industry to develop a comprehensive and integrated action plan that will see Canada emerge as one of the world leaders in turning ideas into wealth and social benefits for the nation.

So let me share with you some of my thoughts on what actions we need to take to improve our capacity to create new commerce.

Taking Stock – Getting the Fundamentals Right

Let me start by taking stock.

The Government of Canada has a remarkable record in getting Canada's economic fundamentals right over the last decade – balancing its books and bringing down the federal debt.

At the same time, it has made a significant commitment to strengthening Canada's capacity for innovation -- injecting $13 billion into our science base over the past 7 years.

- In 2002-2003, Canada's R&D spending per capita in universities and research institutes was the highest in the G8.

- Canada offers one of the highest rates of tax credits for R&D in the world.

- Canada has invested substantially both directly and indirectly in R&D.

Canada Must Play At the Top of Its Game in Science and Innovation

These are substantial, concrete gains. But in an increasingly competitive, global knowledge-based economy, we have to ask ourselves whether this is enough?

Canada is a small, highly trade-dependent nation and there are currently forces at play that are threatening to challenge our continued success in historic areas of strength.

First, the competition is getting more intense every year. China's emergence as a major economic power not only in low-cost goods and services but increasingly in science and technology is case in point. Last year, China surpassed Canada in numbers of scientific publications in the natural sciences and engineering and is currently graduating 200,000 engineers per year, three times that of the US. It is interesting to note that the Canadian Manufacturers and Exporters Association through their Manufacturing 20/20 Initiative consultations identified the *economic and industrial emergence of China* as the top issue of concern facing

manufacturers today, followed by the *shortage of skills* and the *importance of innovation as a priority for business success*.

This is quite a different list from the one ten years ago when taxes, access to the US market and exchange rates were the priority issues. And it is not just China. In the future the global competitive landscape will include India, Brazil, and South Africa at the cutting edge of new technologies. Canada can and must be both competitor and partner if we are going to continue to prosper. I am convinced we can.

Second, the value of commodities – long the mainstay of the Canadian economy – will continue its historic decline despite the recent surge in commodity prices. In order to maintain our success, we need science and technology to give us a competitive advantage in extracting, producing, and adding value to our traditional sources of wealth: minerals, forests, oceans and farms.

We are going to have to play <u>at the very top of our game</u> across every sector, activity and institutional structure of

society to maintain our position in the global marketplace. And science and innovation are key.

It is absolutely critical that Canada have the capacity to not only perform leading-edge R&D; but a world-class system for getting the ideas and discoveries to market – in other words reaping commercial value from this R&D.

Certainly we can expect our competitors to do the same.

The launch of the United Kingdom's ten-year science strategy, for example, has been accompanied by a careful examination of the factors needed to increase the country's innovation performance and productivity. In fact the Lambert Report on Business – University collaboration places the onus for increasing technology transfer squarely on the shoulders of business and identifies the single most important challenge as "boosting the demand for research from business, rather than increasing the supply of ideas and services from universities". The response from British industry to the UK's Innovation Plan has been rapid and positive, resulting in hundreds of millions of £ in new R&D investments. We need to do the same and better.

Australia is also recognizing the need to balance its investments in public research with strengthened mechanisms to foster technology transfer and nurture the growth of start-ups capable of success in global markets. They recently expanded their Commercializing Emerging Technologies program and launched a new "Commercial Ready" program to this end.[1]

I want to emphasize that strengthening our capacity for commercialization does not mean neglecting basic research. Leading edge research is the feedstock from which advances in science and technology and new innovations flow. There is no better testament to this than the unprecedented contribution of Mike Lazaridis to the creation of the Perimeter Institute of Theoretical Physics which recently opened in early October. Mike is the first to argue that we cannot neglect our support for science, nor should we force feed it to the market. Rather we must create the conditions for science to flourish and create an environment for companies to innovate.

[1] UK Treasury, *Productivity in the UK: The Evidence and the Government's Approach*, November 2000; Australian Institute for Commercialisation, *The economic impact of the commercialisation of publicly funded R&D in Australia*, 2003.

A Vision of the Future

Looking ahead then, what would a well functioning commercialization system look like for Canada?

Over the past year, I've spoken with hundreds of leaders from industry, government and academia on this matter. While I've heard a variety of ideas, I've also noted some common themes. As a result, my vision of an integrated system looks like this:

- A competitive business environment – encouraging firms to constantly innovate in developing and marketing their products.

- A solid research base with leading-edge capabilities, especially in key enabling technologies such as biotechnology, information and communications, and advanced materials.

- Strong linkages between researchers and industry, allowing ideas to move seamlessly back and forth between the marketplace and the laboratory bench.

- A global-focused economy which searches the world for the best sources of people, knowledge, capital and markets.

- A constant supply of talented graduates and highly skilled people.

- An internationally competitive risk financing system that encourages the emergence of new ideas through the building of strong companies.

- An up-to-date, internationally compatible regulatory system that protects public safety and environmental sustainability while ensuring trade and investment.

How Do We Get There? A Change in Mind-Set

So what will it take to get there? In my view, our starting point – and perhaps our key challenge – is fostering a fundamental change in attitude.

All of us – whether we are engaged in firms, learning institutions, markets, networks or government – have to realize that commercialization is about markets and customers. Doug Barber has been drilling this message home to all of us for years now. "*If you can't find a customer to buy your product, you are not going to commercialize anything*"!

The objective of a world-class commercialization system, therefore, is to create the conditions that enable firms to grow as viable businesses.

Government *can* and *does* have a key role to play in such a system. As much as possible, initiatives should be market driven, with government adding value chiefly as a facilitator, enabler and catalyst, and where appropriate, as a partner.

How would such a change in mind-set play out?

Well, let's look at a few areas where applying a market lens could shift policy focus:

- Moving beyond government subsidies for new technology development to providing incentives to stimulate private sector investment and eliminating disincentives to investment and growth.

- Building on current efforts to supply the workforce with highly qualified scientists and engineers as well as people with a broad base of commercialization skills. Roger Martin has recently pointed out that what is lacking more than anything in commercialization in Canada are managers and business leaders who know how new ideas can be translated into products for commercial success.

- Evolving government policies from lowest cost-based purchasing and risk avoidance towards early adoption incentives, procurement and shared risk management.

Let me stress that what is not required is another centralized big government program. Rather what we need is a series of well-coordinated and cohesive activities – on the part of industry, government and others -- that will address the wide

range of influences on the commercialization system. It is up to the federal government to provide leadership in ensuring cohesion and integration and reducing fragmentation of efforts.

Our rule of thumb should be to build on our strengths, to invest strategically in initiatives that will deliver real value to Canada, and to use partnerships to make the most effective use of our resources and energies.

In fact, creating a partnership environment is essential if we are to bring together and leverage the knowledge, expertise, infrastructure and capital necessary to meet the challenge of finding and succeeding in global markets.

Update on Government Initiatives

We are not starting from scratch. Commercialization has remained a priority in the past two SFTs and the March 2004 budget. The October SFT reiterated the need to build on our investments over the past 7 years, the need to create an entire innovation system and the need to focus on key

enabling technologies. I'd like to draw your attention to some good first steps that have been taken recently.

Certainly one of the most high-profile issues relating to commercialization is risk financing, especially at the early stages of technological development.

The Business Development Bank of Canada (BDC) announced in the federal budget last March $270 million for risk financing. $100 million of this is for a fund of funds, $150 million for direct BDC investments and $20 million through the Farm Credit program. This is a good initial step on behalf of the federal government to begin to address these gaps.

The Prime Minister's Advisory Council on Science and Technology recommended, in their report this past July, investing the $100 million BDC fund of funds in 2004, specifically in seed and pre-seed innovation, increasing this by $140 million and allocating $65 million for training and mentoring in Budget 2005. In total, these investments are expected to generate $ 1 billion in new venture capital.

A private sector Task Force on Early Stage financing is reporting today to the Federal-Provincial Innovation DMs meeting on their recommendations to improve the risk-financing ecosystem in Canada and to bring it to international standards. These recommendations include harmonizing SR&ED rules, concentrating on angels as mentors through tax credits, simplifying “Qualified Limited Partnership” rules to encourage pension fund participation, and clarifying Federal Income Tax Act provisions that discourage foreign investment. I have always been of the opinion that smart money follows good ideas and good people. And to be frank, when it comes to markets and customers, those who compete in these markets are those who should be making those decisions.

With the March 2004 budget, The National Research Council’s Industrial Research Assistance Program (NRC-IRAP) received $5 million per year to strengthen the innovation capacity of SMEs, which must be focused on not only supporting small companies but ensuring that they have the potential to grow into larger more viable businesses.

The federal government also created two new funds of $50 M and $25 M aimed at improving the commercialization capacity at universities, hospitals and federal science-based departments and agencies.

A private sector advisory group has been established to develop the terms of reference for the fund. While $75 Million is a very small amount it does present the opportunity to allow for the emergence of a new process, based on solid market driven principles, that we can develop, test, evaluate and improve on.

In addition to risk financing initiatives, the External Advisory Committee on Smart Regulation recently tabled its much-anticipated report on how to modernize Canada's regulatory system to international standards. The importance of regulations to commercialization is often under estimated but without a system that is transparent, predictable, efficient, and competitive, all other efforts at enhancing our performance in commercialization will be compromised.

The Minister of Industry has given a strong commitment to see these recommendations implemented.

Conclusion

In closing, I am aware of the growing expectation and anxiousness on the part of both industry and the scientific community around the issue of commercialization.

But I must caution you that initially progress is likely to be incremental. There are many ideas currently on the table but it's going to take some time to sort through them all to pull out best practices and workable solutions.

Budget 05 is likely to move us forward, but there are a lot of other considerations also competing for attention and funding. I see the need for a measured and staged plan that will build on improvements, correct market failures and adjust to new emerging realities in the market and among Canadian firms.

In the meantime, it is important to keep building the dialogue and the partnerships between all levels of government, industry, universities, colleges, research hospitals, fourth pillar organizations such as Precarn, the financing

community and the other players we will need to move forward on commercialization.

I'd like to leave you with five points to remember.

- First, the commercialization process is market driven. Technology pull from firms and the market is more important than technology push from labs. But both are needed.

- Second, building a dynamic and productive interface between the two through collaboration and partnerships is crucial.

- Third, we should not be looking for one big government program in support of commercialization; we are seeking a comprehensive series of solutions that will improve the innovation system.

- Fourth, these solutions need to be coordinated, coherent and kept relevant to Canada's changing needs.

- And fifth, we need to build on our strengths and invest strategically in areas of discovery and activities that will deliver real value to Canada.

In closing I would like to quote Gordon Nixon, the President and CEO of RBC in a speech given last week at the University of Alberta, entitled “Achieving Canada's potential in the 21st century”.

“If we don’t do a good job in commercialization, then the benefits of our expanding public investment in new knowledge will flow to other countries that can commercialize this knowledge. Our goal must be to create a new generation of Canadian companies, headquartered in this country, that can create good jobs here at home by producing valuable goods and services that can be sold around the world.”

This is the challenge ladies and gentlemen. There are many of you in this room who can help us to meet it.

Thank you, merci.