

## Submission to the Expert Panel on the Review of Federal Support to Research and Development

February 18, 2011

## Executive Summary

The Canadian Chamber of Commerce is pleased to provide our submission to the Expert Panel reviewing federal support to research and development in Canada.

Canada continues to lag comparatively with a disappointing productivity performance. With the right plan, Canada can play a leading role in the global digital economy to lay the foundation for a more productive and competitive economy. By building on our strengths and working together with the federal and provincial/territorial governments, Canadian businesses can realize the benefits of new technologies and achieve a competitive advantage internationally.

Government has a definite role to play, but businesses must also continue to evolve their business models with a greater focus on innovation. Government programs, like the Science Research and Experimental Development (SR&ED) program, are key to the early success for many Canadian companies. Venture capital is also a key element for early stage success for Canadian companies and the government's recent move to remove a tax reporting burden on foreign investors, specifically in information and communications technology (ICT), clean technology and life sciences, is helpful in aiding research and development.

The Canadian Chamber urges the Expert Panel to recognize that the enhancement and importance of broadband networks across Canada is critically important to the commercialization of R&D to enable the private sector to continue to innovate and drive productivity. It is not sufficient for the government to invest in R&D unless that investment is pursued in the context of an industrial strategy of promoting strategic innovation through commercialization and adoption of new products, services and processes. Additionally, ownership of intellectual property is of principal importance to a successful business/post-secondary partnership. There should be one model that is used across the board.

The adoption of smart technologies, preparing Canadians with appropriate education and skills training and implementing the Digital Economy Strategy are all key elements to improving productivity in Canada. Canada must continue to develop its digital infrastructure to strengthen its capacity to compete in global supply chains.

### 1. Specific Comments on Three Types of R&D Initiatives

In response to the Expert Panel's mandate, the Canadian Chamber is pleased to comment on three specific types of R&D support in a few additional areas.

#### Tax Programs (such as the SR&ED program)

As noted earlier, the SR&ED program is an essential element that enhances the ability of companies operating in Canada to compete on the global stage. Part of the problem with the current SR&ED system is the complex compliance and administration requirements. Indeed, the program is increasingly focusing on compliance rather than on the effective delivery of an incentive program. The program has become complicated, costly and unpredictable. For instance, Canada Revenue Agency (CRA) auditors do not always possess the necessary expertise to assess the work and the cost of claims. While initially it was larger firms negatively impacted by the CRA's administrative changes, now many small- and medium-sized firms are also impacted. It is urgent that the government resolve the administration problems of the SR&ED program. Additionally, our members urge the federal government to improve the design of the SR&ED program to provide a more direct incentive to global decision makers when considering R&D jobs and investment dollars. For example, consideration could be given to allowing companies, in each

taxation year, to choose between a reduced refundable wage credit and the non-refundable SR&ED credit that exists now.

#### Programs that support innovative business R&D

The Expert Panel's consultation paper has noted the importance of venture capital and seed capital from angel investors as an essential ingredient to a firm's success in the early stages. Government programs aimed at this gap, such as Sustainable Development Technology Canada (SDTC), should be strengthened and expanded. An angel investor and venture capital credit would also help address this critical gap, bridging the gap between start-up and traditional financing. Angel investing is often accompanied with a mentorship which is invaluable to a start-up. The Canadian Chamber recommends that the federal government consider a collaborative industry investment incentive that would help to improve global innovation investment in Canada. In 2010, our chamber network passed a resolution calling on the federal government to work with other levels of government, private sector lenders and innovator companies, trade associations and venture capital firms to develop a strategy/action plan to promote and finance new technology development, and to expand the awareness of existing innovation funds.

#### Programs that support business-focused R&D through research granting councils

Many of the Canadian Chamber's members, including IBM and Research in Motion, have been extensively involved with programs that are delivered through research granting councils, such as the Natural Sciences and Engineering Research Council of Canada (NSERC) on various programs with great success. IBM also has extensive experience with the Business Led Networks of Centres of Excellence and the Centres of Excellence in Commercialization and Research. While these programs are good, the Canadian Chamber believes it would be beneficial to see the government encourage tighter collaboration between universities and businesses. Additionally funding may be required to foster greater collaboration between university, college, technical institute, government and industry researchers, and will eventually lead to commercialization of products and processes. It is not always easy to solely rely on a university to move in the direction the company requires, or at the needed pace necessary for global competitiveness. Post-secondary R&D models that permit researchers to own their work and, thus, the responsibility for its commercialization (as is the case at the University of Waterloo), present an incentive that is worth further examination.

## **2. Implement the Digital Economy Strategy across the government and make adoption of information and communications technology a priority**

The Canadian Chamber strongly agrees with the federal government that Canada needs a comprehensive strategy to tackle the digital world and get more businesses engaged

#### Government's role as model user:

The information and communications (ICT) sector is a fundamental ingredient in the building of tomorrow's economy. The role of government in fostering a strong strategy that would benefit ICT starts with its own actions, and extends to the policies and programs affecting industry and other stakeholders. Government can play a catalytic role in ICT adoption as a model user and rural anchor tenant. As the largest ICT purchaser in the country, government must do more to demonstrate the benefits of adoption and integration of ICTs. It can lead by expanding the roll-out of e-government services and modifying its procurement practices to implement innovative ICT solutions and to take a government-wide approach to ICT projects, relying on commercial standards rather than government-specific standards.

#### Investing in skills and talent:

Today, the successful deployment of ICT in any country is inextricably linked to the skills and productivity of the country's workers and the strength and resilience of its economy. Investments in hardware and software alone will not lead to the economic benefits of ICT, as there is a need for visionary

leaders and skilled end users as well. In short, people must be at the centre of any national ICT solution. Canada's ICT strategy requires comprehensive support programs and policies that will provide a sufficient supply of technologically literate workers and citizens to keep Canada's economy globally competitive. Particular attention should be paid to improving Aboriginal peoples' education and labour force success rates as they represent the largest, fastest-growing source of home grown workforce talent.

#### The knowledge to participate

The ability to effectively use ICT has emerged as a form of literacy that is as critical to worker productivity as reading or math. Canada's education system should raise the priority of workforce development in ICT at all levels. For example, ICT fundamentals should be integrated into all areas of education, from elementary through high school, community colleges and universities, to new immigrant learning programs (using ICT as an economic literacy tool) and to workers facing new challenges due to industry restructuring or downsizing.

#### Investing in soft infrastructure

Any successful strategy to improve productivity will include public and private investment in technology products including broadband and wireless networks as well as computer hardware and software. It is critical to complement investments in broadband and computer hardware and software, i.e. "hard" infrastructure, with a broad-based set of supporting policies and programs. For example, the Competition Policy Review Panel noted that in the knowledge economy "intellectual property frameworks play a central role in rewarding and encouraging innovation by granting creators the rights that enable them to monetize the products of their innovation." The Panel also found that modernizing our IP framework in the online environment was critical because of the ever-increasing importance of the economic activity associated with the digital economy. As such, the Panel concluded that it was urgent that Canada's patent and copyright frameworks be updated in the "Internet Age" so that we "develop strong IP capacity and demonstrate to the world how competition and productivity can be furthered by a modern IP regime."

Additionally, taxation and regulatory policies should support the implementation of ICT in existing businesses, and help people build new ones around it. Having a more connected nation is essential to the quality of life of Canadians and a key element for attracting and retaining skilled workers.

#### A culture of excellence

Enrolment in science, technology, engineering, and mathematics programs are declining while employment opportunities in these fields continue to grow. The choice to pursue a program of post-secondary education related to ICT would seem like a practical one, but it is a choice that Canadian students are making less frequently. The role that our culture plays in these choices should not be underestimated.

Across Canada, we should encourage youth to career paths that will lead to greater economic prosperity for all Canadians. We need to instill the excitement of discovery and invention in today's youth by celebrating entrepreneurship in all its forms and sharing the real-life success stories of Canada's technology innovators. This could be attained by:

- Business visitation, innovator lectures and tours for teachers,
- Hands-on exploration of ICT,
- Integration of information of ICT industry trends,
- Connecting curriculum to required ICT skill sets,
- Encouraging students to explore ICT career opportunities, and
- Connecting classroom learning to ICT-related programs and career opportunities

It is important that the federal government continue to promote a culture of excellence in Canada and take an active role in encouraging youth to get engaged in ICT and entrepreneurship in innovative technologies.

### 3. Investment in ICT and ICT-related programs

#### ICT infrastructure:

Canadians are justifiably proud of our prosperity and quality of life. We must also aim to improve our environmental stewardship, including the consumption of resources like water and energy, improve our health care system for better patient outcomes, enhance the way our cities function, and provide integrated government services to improve the lives of every citizen. These are admirable goals; ones that all Canadians can support. Achieving them will take much effort, but they are reachable.

In each case, ICT will play a valuable role. The application of ICT to our electricity grid can substantially help improve our environmental stewardship through energy efficiency, while also being the catalyst for the creation of new industries and jobs. ICT can similarly improve our health care system, the functioning of our cities and government service delivery.

The application of ICT to help achieve Canada's social and economic objectives is, of course, predicated on having a comprehensive and inclusive strategy for ICT infrastructure. Applications such as remote diagnosis, smart appliances and intelligent traffic systems, for example, all rely on the availability of broadband; the underpinning of 21<sup>st</sup> century infrastructure. They also rely on the intelligent use and management of information. The Canadian Chamber believes that a vision for Canada's digital infrastructure must include the ability to gather data on our most critical systems – natural and man-made, interconnect these systems and make sense of information through intelligent tools such as analytics, information management systems, etc. A digital infrastructure strategy must rally the collective strengths of the ICT industry and position Canada to be a global leader in the development, deployment and export of intelligent systems.

Canada's communications infrastructure is world-class. The significant Canadian achievement in broadband network deployment is a result of private sector investment and features the latest and most robust network technologies such as 3G+ wireless, DOCSIS 3.0 and Fibre to the Node. Billions of dollars have been invested and billions more will need to be invested. Only the private sector is capable of sustaining the ongoing investment needed to enhance networks and be responsive to the needs of Canadian consumers and businesses. Given the need to rely on the private sector, the government's focus should be on ensuring appropriate incentives to promote ongoing investments. If the government wants the private sector to accelerate its investments in next-generation networks, it should review its tax policies to ensure they stimulate investments on a geographically- and technologically-neutral basis.

Investments in infrastructure would provide a return on investment well into the future by improving the overall productivity of the economy. Many countries have seized the opportunity to include significant cornerstone investments in the infrastructure that will underpin tomorrow's economy: digital infrastructure.

#### The Smart Grid

The traditional electricity grid, the technology that manages the transmission, distribution and delivery of electricity has not changed much over the decades. It did not need to, as electricity was cheap, plentiful and its generation and use was not connected to concerns about potential environmental impacts. This is no longer the case. Electricity supply struggles to keep up with surging demand and in many cases the source of supply creates environmental challenges. At the same time, Canada faces the need to replace a significant amount of its aging electricity infrastructure. According to the International Energy Agency,

Canada will need to invest in excess of \$185 billion by 2030 to replace and build new generation, transmission and distribution infrastructure.

A significant opportunity exists to modernize the nation's electricity infrastructure by using ICT to build intelligence into our grid system. A "smart" grid would sense, collect and monitor grid data to optimize the management of the grid, provide real-time analysis and enable event prediction capabilities and mitigation strategies.

Investing in smart grid infrastructure would also produce significant near-term job creation. The Information Technology and Innovation Foundation (ITIF), a U.S. think-tank, studied the employment impacts of investing in digital infrastructure. In the case of smart grids, the ITIF concluded that 23,000 jobs would be created in the U.S. for every US \$1 billion invested, the great majority of which are outside of the ICT sector. Similar investments in Canada would also result in significant job creation.

Over the long-term, the employment impact of such investment is even more attractive as smart grid infrastructure represents the catalyst for the creation of a host of new, innovative industries and jobs. The smart grid will facilitate the widespread roll-out of commercial plug-in hybrid vehicles, smart appliances, smart homes and distributed electricity generation: the industries and jobs of tomorrow's economy. Again, most of this employment would be created across industries outside the ICT sector.

#### The need to modernize export controls systems

Cryptography is the critical underpinning of the modern digital economy. It permits the safe and reliable transmission of financial and other critical data over the Internet, protects the integrity of information and communications systems, and has become an indispensable tool for protecting privacy and intellectual property. The importance of cryptography was recognized by the Government of Canada in its 1998 Cryptography Policy. Since then, encryption technology has become much more ubiquitous with many products, such as the BlackBerry and Smartphones.

To maintain Canada's success in the face of global competition, it is imperative that Canadian exporters be on a level playing field with competitors from other countries and that they face a domestic export-control regime that is no more onerous than those faced by companies elsewhere, in accordance with Canada's stated policy. The Canadian Chamber, in conjunction with many Canadian technology companies, encourages the Canadian government to adhere to this stated policy and to review and update the current Canadian framework and licensing practices, as necessary, to keep Canada competitive. This is particularly urgent given the recent reforms announced by the U.S. government to their export-control regime for cryptography products and technology.