

Synodon's Input to the Federal R&D Review

Summary Paragraph:

Synodon has developed and commercialized technology to detect gas leaks from natural gas pipelines and other energy infrastructure. The world class technology was pioneered at the University of Toronto and adapted for use on a helicopter in order to detect leaks quickly and efficiently. Canadian universities are major players in the development of new technology, however, oftentimes there is not enough focus on commercializing products and services developed at these institutions despite the amount of capacity they have to conduct cutting edge R&D. There is also a major funding gap at the commercialization stage for technology and it is difficult to find funding even from venture capital organizations. To improve the state of Federal R&D support in Canada, the government can look to programs such as Alberta's AVAC funding organization (which provides high risk capital at essential stages), as well as many funding programs in the United States. At the same time more needs to be done to improve and unify the application process for federal R&D funding in Canada.

1. In addition to the R&D activity defined by the OECD, should government be funding other business activities related to the commercialization of R&D? If so, what and why?

In Canada the largest gap in funding is at the commercialization stage. Federal R&D funding should be shifted towards commercialization of products and services.

2. Does Error! Reference source not found., the model of business innovation capture the key structural factors and inputs to innovation? If not, what is missing?

No opinion.

3. Regarding capital, is there an adequate supply of risk capital for Canadian firms at each stage of their growth (start-up, small, medium, large)? If not, why not? Where returns on investments are low, what are the reasons and potential solutions?

In Canada, risk capital is not easily accessible but it is available at certain stages of technology development. Small companies usually have fairly good access to risk capital in early stages of R&D. As a company moves toward commercialization, funding from the provincial and federal governments becomes scarce, and there is typically much more venture capital available at this stage. Large and medium sized companies are typically well established and have access to many different financing options; government through funding programs and tax credits, and financial institutions which don't usually fund start-up companies. In addition, much of the capital used by these larger organizations doesn't necessarily go towards innovation, but simply process improvements. There needs to be a shift towards providing low interest loans and funding for smaller organizations starting from the R&D stage through to full product and service commercialization.

4. Regarding ideas and knowledge, do you believe it is important for Canadian firms to perform their own R&D and, if so, what do you believe are the key factors that have been limiting business R&D activity in Canada?

Companies that are small and involved in technology development and innovation must invest in R&D as they are in the business of innovation. Larger organizations that sell products don't necessarily conduct their own R&D but can buy companies that have performed R&D and have innovation assets in their pipeline.

5. Regarding networks, collaborations and linkages, what are the main impediments to successful business-university or business-college partnerships? Does the postsecondary education system have the right capacity, approaches, and policies for effective partnerships with business?

The extent to which meaningful relations between post-secondary institutions and businesses are formed is highly dependent on how post-secondary institutes are set up to deal with business. Some post-secondary institutes are better able to deal with businesses, especially when there are policies and procedures in place when dealing with the ownership of Intellectual Property and accessing facilities and equipment to aid in R&D. Despite the large investments made to support R&D capacity at universities, there is much more innovation that gets commercialized by business. This means that there needs to be additional emphasis placed on capacity to commercialize R&D conducted at the post-secondary level.

6. Regarding the creation of demand for business innovation, what role, if any, do you believe that government should play in being a "first customer" for R&D investments in Canada?

The Canadian government has a significant role to play when it comes to being a first customer for new technology. As a large purchaser of products and services, government can provide excellent opportunities to fund initial commercialization of products and services. Government needs to change its procurement practices to favor the purchase of new and unproven Canadian technologies to help companies with their important first sale. At the moment procurement practices favor lowest price and proven performance which present barriers to new technologies. The government could source their goods and services from SME's providing them with a market as well as an income for their products.

7. Regarding talent, is Canada producing sufficient numbers of graduates with the right skills to drive business innovation and productivity growth? If not, what changes are needed? Where demand for advanced skills is low, what are the reasons and what changes, if any, are needed?

Canada generates the right amount of skilled individuals from a scientific and engineering point of view, however, seems to be providing insufficient graduates with business and entrepreneurial skills – essential for innovation and development of new technology in Canada. There should be programming targeted toward providing assistance to individuals that pursue entrepreneurial activities and we should try to create a culture of entrepreneurs in Canada.

- 8. Can you describe whether and how your firm employs students currently enrolled in community colleges, polytechnics and universities, and what government measures could make it easier to work with students during their academic programs and to recruit them after their graduation?**

Systems in place are already very good and Synodon has always received excellent students through NSERC.

- 9. With which federal programs supporting business or commercially oriented R&D in Canada do you have direct experience and knowledge? See Error! Reference source not found. In your view:**
- a. Which of these programs are working, and why?**
 - b. Which programs are not working, and why not?**

There is a difficulty when it comes to the fragmentation of the funding programs. It can be onerous to sift through the listing of different funding options to find the ones that are most relevant to the type of work our company is doing. There should be a simpler way for young tech companies to tap into these programs and understand the value and applicability of each program. Small companies simply don't have the human resources to weigh through the information and identify the best fit and value proposition of these programs

- 10. If you have direct experience and knowledge of the SR&ED tax credit, what are your views in relation to the following:**
- a. Does the current structure of the SR&ED tax credit encourage incremental investment in R&D? Does it free up capital to invest in other aspects of innovation activities in the firm? Does this vary by size, ownership, sector or nationality of firm?**
 - b. What are the strengths and weaknesses of the refundable portion of the SR&ED tax credit for Canadian-controlled private corporations and to what extent does it encourage the growth and commercial success of SMEs?**
 - c. Bearing in mind the improvements being made by the Canada Revenue Agency, are there additional opportunities for change to simplify the administration of the SR&ED tax credit and facilitate the applications process?**

The SR&ED program is relatively easy to tap into and there is a reasonable amount of effort for the amount of money that can be obtained from the program. There are several drawbacks to the program, one of which is the fee that consultants charge when they assist a company in applying for the SR&ED tax credit – typically in the range of 30%-40% of the value of the tax credit. There is also a time scale issue with SR&ED. In order to qualify for SR&ED you must conduct R&D activity one year, in order to obtain your tax credit the following year. There is also the issue of driving innovation. In small companies a SR&ED tax credit will not be a determining factor in conducting R&D whereas in larger organizations the SR&ED program is generous and is a motivating factor when conducting R&D.

11. How could the Government of Canada lighten the administration requirements of its programs on recipients and improve outreach to business?

There is the potential for the Government of Canada to implement a more unified application process for funding programs and create funding requirements that are similar across sectors.

12. How could the Government of Canada be more innovative and responsive to meet new needs or opportunities, and try alternative service delivery-approaches in its programs?

No Opinion

13. Are there any gaps in the Government of Canada's support to business and commercially-oriented R&D? Do firms performing R&D in other countries have an advantage over Canadian firms because of access to programs that are not available in Canada? What would be the principal features of new programming to fill these gaps?

There are a number of funding programs based in the United States that are very generous to companies conducting R&D activities. In addition there are a number of programs to assist small companies in obtaining large contracts with government departments and these programs are enhancing the ability of these small companies to move from pilot and demonstration projects to full commercialization rapidly. At the US Department of Energy there is a research fund that targets research efforts to reduce the cost of new technologies thereby sponsoring R&D that helps make US companies more competitive. The US has a number of directed research activities that would be worthwhile for the Canadian government to replicate.

14. What lessons and best practices can be taken from provincial business and commercially oriented R&D programs, and how should the two orders of government align their programming?

The Alberta government has a number of programs that have assisted our organization in obtaining PhD students and funding for R&D activities (for example, Alberta Ingenuity). The Alberta government also created a fund called AVAC which operates as a quasi-venture capital fund and are able to handle more risk than most funding organizations, allowing companies to obtain funding at various stages of technology development and invest in young technology companies.

15. Is there a difference between R&D and innovation? If yes, how are they different? Should government focus on R&D or Innovation? What should the balance be?

R&D is simply one step on the way to the commercialization of products and services. Innovation is a breakthrough product or service that has the ability to transform a given market and includes the process of commercialization. More emphasis on commercialization within the innovation continuum is needed.