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## The Issue: Commercialization

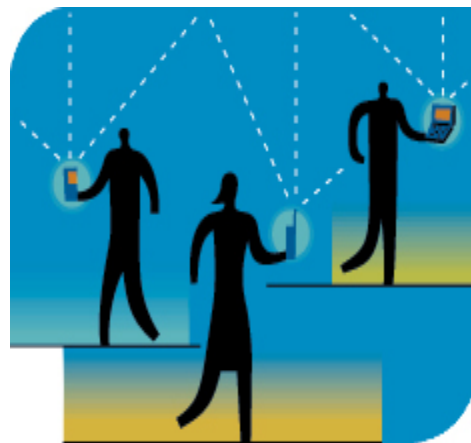
There are a number of definitions of commercialization. In simplest terms, it means introducing a new product into the market. The Government of Canada defines it as "the process through which research discoveries are brought to the marketplace and new ideas or discoveries are developed into new products, services or technologies that are sold around the world."<sup>1</sup>

Sun Microsystems co-founder, Scott McNealy, who knows as much about commercialization as anyone, offers this elaboration: "the process of taking a new product from development to market. It generally includes production launch and ramp-up, marketing materials and program development, supply chain development, sales channel development, training development, training, and service and support development."<sup>2</sup>

Commercialization is a complex and highly risky business process. The Conference Board of Canada estimates that for every 3,000 new ideas that emerge in industrial R&D, 125 become "small projects," 4 grow into major developments, 1.7 make it to market launch and 1 idea becomes a market success.<sup>3</sup>

Regardless of what definition you use, the marketplace plays a central role in commercialization. It is both the beginning and the end of this business process. Eighty per cent of the companies surveyed by the Conference Board for its 5<sup>th</sup> Annual Innovation Report identified clients and customers as their prime source of ideas.<sup>4</sup> This demonstrates that commercialization of innovation usually begins with a question or request from the marketplace. It rarely, if ever, begins with an idea in a research lab pushed to an unready or unreceptive marketplace.

A country, seeking to expand its success rate at producing new products and services for export from the new ideas and discoveries it generates, has several strategic options. First and foremost, it can invest heavily in advanced education, academic research, and the infrastructure that supports public sector R&D. This has been the course the Canadian Government has pursued since the late nineties. With the creation of Canada Research Chairs, the Canadian Foundation for Innovation and significant investments in the granting councils, Canada has invested more than \$13 billion in our academic research capability. This public sector investment has advanced Canada from 15<sup>th</sup> to 13<sup>th</sup> place in terms of global per capita R&D spending.



This is an important foundation for Canada's commercialization capacity. Well-funded university and government research programs achieve many positive outcomes. They help to create a strong science and technology culture. They prepare the next generation of researchers and science-based entrepreneurs for the exacting tasks of asking fruitful questions and knowing how to find the answers. And they enable the discoveries necessary to advance our scientific understanding.

<sup>1</sup> The Budget Plan 2004, page 133.

<sup>2</sup> [www.scottmcnealy.com](http://www.scottmcnealy.com)

<sup>3</sup> Conference Board of Canada, 5<sup>th</sup> Annual Innovation Report 2003, page 19.

<sup>4</sup> Ibid, page 20.

Public R&D investment is critical to a country's capacity for commercialization. But it is misguided to expect universities, detached as they are from the commercial marketplace, to drive the commercialization process. This is not, and should never be, the university's core contribution. No matter how heavily we invest in the commercialization offices in our universities, we cannot alter the reality that successful commercial enterprises know more about commercialization than universities do.

So beyond, funding for a strong culture of discovery in our advanced academic institutions, what is the role of government in the commercialization process? The Federal Budget set aside 75 million to support pilot projects to determine the best strategies for commercialization. We agree with this approach. In our view, the alchemy of innovation involves three key ingredients: ideas, money and people. The Government can have a catalytic effect on each of these.

1. Build better linkages between public research and business. A number of models have been developed to attempt to do this. ITAC believes that fourth pillar organizations have demonstrated the most promise in terms of building the bridges between industry and academe that produce commercial outcomes. These organizations are structured as independent, not-for-profit entities that lever private and public investment to implement shared cost R&D programs, share infrastructure and supply technical products and services. Precarn, for example, works in the field of intelligent systems and has helped to create products for the global export market for companies such as GE Medical, MD Robotics and Tundra Semiconductor Corporation. It has also helped to seed the intellectual capital for promising start-ups such as C-core in St. John's and Motion Metrics in Vancouver. The key to its success is its focus on R&D projects distinguished from the start as solving problems for which there is an identified market need, a commercial application or an identified customer. Fourth pillar organizations can be highly fruitful contexts for collaboration between academe, industry and government.
2. Improve the appetite for risk in Canada's capital community. It takes tremendous sangfroid to seek investment opportunities in the innovation intensive sector. The 3,000:1 ratio of ideas to commercial product is daunting enough. But commercial R&D is rarely either an inexpensive or quick-return prospect. Canada needs more sources of smart capital that understand the

unique realities of the innovation-intensive sector. Otherwise, our discoveries and high-potential ideas will follow the too-familiar pattern of achieving commercialization elsewhere.

There is a great chasm between the technology and the market readiness of the technology. This gap must be bridged by seed financing – financing that is even scarcer than venture capital. The most effective source of seed financing is the individual who has invested before and understands the risks – the angel investor. Canadian population of angels is very small. To motivate more people to take these risks, we need to examine effective tax incentives to attract more investors to the angel community.

3. Deepen our talent pool. As noted above, universities fulfill a vital role in educating and conditioning highly qualified people for their vital role in the innovation cycle. But Canada's demographics suggest that our own supply of talented men and women will not be enough to build a successful innovation-intensive economy. Government and industry must collaborate to strengthen Canada's science and technology culture. We must also develop skills around commercialization. We must stem the downward trend in enrollment in advanced technology disciplines. And finally we must create a progressive immigration regime that positions Canada as the homeland of choice for highly qualified émigrés from all around the world.



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