



**“Are Canada’s Business R&D Incentives Working?”
The Sixth Annual RESEARCH MONEY Conference
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Conference Proceedings

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Panel 4: Wrap-up

Panelist: Jim Roche, Acting President & CEO, Canadian Microelectronics Corporation, Retired President & CEO, Tundra Semiconductor Corporation

Panelist: Janet Walden, VP, Research Partnerships Programs, NSERC

Panelist: Clive Willis, Consultant

Moderator: Paul Johnston, President, Precarn Incorporated

Johnston confessed that the morning sessions left him somewhat confused, because he heard conflicting opinions about the role of universities, incentives, and government programs. But he expressed some satisfaction with the convergence of ideas that emerged in the afternoon. What emerged, he concluded, was a concept premised on the importance of the need to focus. He therefore asked the panel to comment on the need to focus and what it means for taking action.

Roche began by pointing out that focus is critical to survival in the private sector, where it would be hard to overestimate this virtue.

“One of my board members once told me, ‘I have yet to see a company fail for attempting to do too little’.”— Jim Roche, Canadian Microelectronics Corporation

Roche added that the same could well be true for countries, as demonstrated by nations that have chosen to do so. Canada could well benefit to the same extent as places like Taiwan, which has become the undisputed leader in semiconductor manufacturing. However, it will be important for Canadians to limit their scope, not choosing eight or nine fields but just one or two, and subsequently limiting our investments to those areas. What this requires is leadership, he insisted. “My experience over the last couple of decades is that we’ve been talking about focus, we’ve been talking about ‘picking the winners’ for a long time, but we haven’t actually acted on that talk. We continue to consult with people.” He maintained that we have enough information and qualified people now, and require the political will to make decisions and stick by them.

Walden responded to this point by arguing that the government's role is that of enabling, specifically the building and sustaining of innovative enterprises. Much of this activity will involve micro- and macroeconomic policies and support mechanisms designed to support a broad base of activities. This is how NSERC approaches the issue, ensuring a broad spectrum of research areas across the country. However, she agreed that to achieve truly world class excellence, it will be necessary to preferentially invest. Yet because of the diversity of governments within the country, preferences cannot be defined in a top-down manner by the federal government.

“When I look at what's happening in the provinces now, you see a lot more activity not only in research investment, but in the support infrastructure for business to grow and develop. If that's not aligned, federally and provincially, then I don't think we're going to be a success.”— Janet Walden, NSERC

Walden acknowledged the value of looking at other countries that have focused successfully, such as Ireland, but she warned against overlaying simple models on Canada without an appreciation of the context. “We take the lessons from those examples, but then we have to look at the context in which we live and apply them to the culture of our research and business community.”

Willis argued that there is no magic bullet to direct at what is in fact a very complex, dynamic situation. He noted that the day's deliberations had not done justice to the genuine value reflected in the country's universities, referring to them as sources of technology or human resources. That is true, he maintained, but their real strength lies in an unrivalled knowledge of the state of the art. They are the ultimate authority for advice.

“If you want to know something about nanotechnology, you don't ask a bureaucrat, you don't ask someone from NSERC, you go to a university. And that's what firms have to do. They don't have to go and get results from a university, they have to talk to them.”— Clive Willis, Consultant

Willis added that the issue of national labs was likewise overlooked. But remarking on the question of focus, he suggested that provincial governments have in fact taken this outlook to heart. For example, in 1999 Quebec identified five technology thrusts it would support, and made it clear to the universities that it was supporting these areas, yielding a strong cohesion around genomics, nanotechnology, and information and communications technology. A similar cohesion has been emerging in Alberta around the resource sector, as well as British Columbia and Saskatchewan. And, he concluded, the real question underlying focus and making choices must take into account the “real” economy, meaning such things as forestry, mining, or agriculture. “It's not the high tech sector, in isolation, that is going to drive the economy.” This real economy manifests itself much more profoundly at the provincial level, meaning the federal government cannot effectively drive change in the absence of a consensus with the provinces.

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What the federal government can do, however, as has already been suggested, is to simplify the types of support systems it provides to businesses.

Johnston returned to the question of focus by referring to the virtue of setting forth big goals as an incentive. He recalled when he was with Precarn's Institute for Robotics and Intelligent Systems, he toyed with the idea of asking researchers to design a robotic goaltender, a project that would inspire on many different levels.

A questioner pointed out that matters of focus are not new, and most parts of the country have conducted such exercises. Almost by definition, he said, people do not want to exclude others, especially if those others are doing good work.

Roche responded by observing that applying focused choices is far from being an easy exercise, but companies are successful precisely because they do make difficult decisions to exclude good, promising work in favour of concentrating their efforts. He insisted that we as a country would reap significant benefits if we did the same.

Walden disputed the point, however, arguing that the government has a very different role from the managers of a company. Just as universities have a mandate for education, they must be careful to focus their efforts only to a certain extent. You run the risk of guiding people into areas that can quickly become either useful or useless.

“The role of the universities is not just about producing the next widget or the next idea for industry, it's producing the people and the thinking and the learning and the understanding that's going to be part of our sustainable growth in future. And you want to have a flexible enough workforce that you can actually achieve that.”— Janet Walden, NSERC

Willis recalled a cluster study that indicated Winnipeg had something like nine major clusters of activity and upward of 36 sub-clusters. Economic progress will only be premised on picking one or at most two of these options, and then moving forward. Instead, you wind up with far too many sectors being highlighted.

“If we go back 20, 30 years ago, we as a country could afford to have a broad-based investment strategy, because 20, 30 years ago we didn't have India, China, Brazil, Russia and many other countries nipping at our heels. We are incapable now of having a broad-based strategy and succeeding.”— Jim Roche, Canadian Microelectronics Corporation

Roche added that the last company he ran had development centres in Shanghai and Bangalore, where he found attitudes that contrasted starkly with the attitudes he found in Canada. “There

was no concept of work-life balance in Shanghai. It was work, work, work. They were hungry, passionate; they wanted to eat our lunch.” Such observations have convinced him of the need for Canada to focus.

Another questioner raised the notion that objectively concentrating effort in key areas has a salutary effect on areas that appear to have been overlooked or dismissed. For example, an economically healthy Toronto sustains an economically healthy rural Ontario at the same time by sustaining supply chains and value chains. [Bob Fessenden later offered an even more political interpretation, “A healthy oil sands is a healthy Toronto.”] When the Conference Board of Canada’s Leaders’ Roundtable on Commercialization suggested points of focus, however, it may have no pre-existing bias about doing so, but it has no authority to enforce its recommendations.

Walden responded to this point by indicating that matching objectivity and enforcement is not just a question of balance, but a question of definition. When NSERC took part in that roundtable exercise, she recalled, it was unclear what had to be done. “We walked away after a full day of discussion still undecided. What does that mean to pick an area? Are you picking a business sector, are you picking an underlying technology, are you picking a series of research themes and challenges that might go along with them?”

Willis insisted that even if you get through the difficult task of choosing and standing by your decision, you must then confront the important role of cities. “There is absolutely no doubt in my mind that you start with the cities.” The resulting choices are not made by government, then, but in the context of geography, the local, regional economy.

Roche described a dilemma facing anyone assigned the task of making decisions to focus our economic effort, namely that they are striving toward certainty. In other words, we must pick exactly the right area of focus, running the risk of picking one that disappoints or even fails, while excluding others that would have succeeded.

“I believe that the country and the world is sufficiently complex that it’s not so much about certainty as it is about clarity. The important thing to do here is not to make sure we pick the number one, two and three of the world hit-list of areas to focus on, but we pick the ones that are good enough for the country such that when we focus, we’re going to get great results.”— Jim Roche, Canadian
Microelectronics Corporation

Bob Fessenden maintained that the term “focus” is dangerous to use. He suggested the language of enhancing existing strengths or accelerating an ongoing trend in a catalytic fashion. “This question of focus should be enabling, not constraining, and it should be building on strength. If you want to talk about focusing at an outcome level, we want to talk about focusing at the level of trying to accelerate the development of a particular industrial sector, and let the marketplace

look after the company issues.” If, on the other hand, we are proposing specific interventions to develop a specific technology, you need skilled people and educational support, and what looked like a simple matter of infrastructure becomes a much more involved undertaking. By way of example, he offered the development of the oil sands as a specific industrial sector in Alberta over the last few decades.

Willis agreed entirely with this interpretation, but added that it is necessary to look downstream, at the economic impact and wealth generating effects of the resulting choices. Some choices will yield much greater returns than others.

Walden also agreed, and further suggested that even a seemingly straightforward emphasis on natural resource sectors like the oil sands can wind up being more complex than they appear at first glance. Above all, you will need the talent to ensure that you can address the many different needs that will be posed by the development of such sectors.

Roche agreed with the notion of building on strengths, but insisted that the reality is that we will have to say “no” to some prospects, and this fact must be kept uppermost in everyone’s mind. Fessenden, for his part, replied: “Focus means never having to say no; just saying yes preferentially.”

Walden pointed out that NSERC has taken a catalytic approach to areas that are regarded as significant, but they remain cognizant of the need to accept surprises, to expect the significance of areas they know nothing about right now.

Ron Freedman argued that you cannot make a mistake in focusing, if you take certain steps. “You can do anything in this world and succeed, provided you’re one of the best in the world at it.” That principle applies to any product or service, from the obscure to the prominent, so long as we can mount a critical mass in the field.

“Critical mass doesn’t necessarily mean that you have to be the biggest in the world. It may mean that you have to muster your resources better than anyone in the world in a very tiny area.”— Ron Freedman, Impact Group

Referring to his current project on NRC’s clusters strategy, which he approached by wondering about how particular types of research enterprises wind up in specific centres — nanotechnology in Edmonton, for example, or nutraceuticals in Charlottetown. “You can make these strategic decisions at a national level, but they’re only going to work if conditions are right at the local level.” Such success follows when municipal forces align with the forces mustered by universities, provinces, NGOs, private firms to make something happen in their community.

Johnston noted that the panel’s comments had in fact avoided the question of whether business incentives are working, but in fact looked at the underlying premise behind such incentives, which would be the focus you are taking on R&D activities as a whole.

Willis reiterated Freedman's point that local conditions are paramount, including the mustering of local commitment and local resources.

Walden referred to the reinterpretation of critical mass, suggesting that this is also being reflected in the way we regard clustering. She suggested new models are emerging, but barriers such as intellectual properties remain, and we still have to learn how to deal with them if we are going to move quickly enough to compete internationally.

Roche suggested that Canada has been developing an appetite for complacency and shying away from risk, as evidenced by a growing use of the term "accountability". As laudable as this notion might be to check incompetent or illegal behaviour, it can have a generally dampening effect that actually contributes to our inability to focus, because focusing is a matter of taking a risk.

"Accountability is a good thing in concept. But the word is actually being used more and more in government programs that I see to slow the program down. We're penalizing the majority for the behaviours of the minority, by increasing our scrutiny of everyone's behaviour through these accountability practices. It slows things down and it further reduces our tolerance for risk as a culture."— Jim Roche, Canadian Microelectronics Corporation

He then suggested that this problem is one of cultural change, even to the point of it being unclear that the challenge is one of agreeing to make that change in order to set higher priorities. Nor is cultural change comfortable, he added, and people will feel we are making huge changes even if the actual effects are small and incremental.

Prior to Freedman offering a round of thanks to all participants and sponsors, Crelinsten offered two closing thoughts, first praising Fessenden's remarks on asking the right question as a superb coalescence of the entire day's proceedings, then quoting Einstein: "We can't solve problems by using the same kind of thinking we used when we created them."