Canada's Innovation Agenda
Building on our Natural Resources Advantage
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Panel Discussion

Tradition meets tech — new solutions in the natural resources sector

Moderator:

Mark Dietrich, President & CEO, Compute Canada

Panelists:

David Boulard, President, Ensyn Technologies Inc.
Kevin Kuchta, Director of Product Development, Qwantech
Alison Sunstrum, Co-CEO, GrowSafe Systems Ltd.

Dietrich premised the discussion on each individual's description of their business and the role that innovation plays in its success, with the ultimate aim of identifying recommendations for how innovation more generally can help resource-based enterprises.

Sunstrom introduced GrowSafe as a combination of engineering, computing capability, and animal science to devise new ways of improving animal welfare, farm profitability, and a reduced environmental footprint. "Those three things to us mean sustainability," she said, referring to a data platform that has called for a significant amount of R&D. She described their operation as an application for the Internet of Things, which represents a new convergence of technology and opportunity to embed communications capability in objects.

Kuchta described Qwantech's software products that provide the mining industry with the ability to assess how various assets are performing. This means taking the industry's accepted metrics and incorporating them into a much more ambitious system that will make this information even more useful. The greatest challenge facing this small company is in fact its size, he argued, and the fact that such innovation might be expected of much larger, better known players such as SAP.

Boulard introduced his company's biofuel production technology, which has reached the demonstration phase and is being used to run a hospital off the energy produced from cellulosic fibre. He acknowledged that is remains difficult to market an alternative fuel source in a world that runs on established lines of fossil fuels, simply because there is perceived to be a risk attached to this choice.

Dietrich then posed three questions to each of the panelists:
— are there parts of the Canadian innovation system that have helped you?
— are there pieces that you definitely wish existed in the Canadian innovation system?
— are there other parts of the world that have practices we should adopt?

Kuchta cited IRAP and SR&ED as two primary aspects of the innovation system that have benefited Qwantech. His company has had the experience of introducing products to clients, who then ask for something more sophisticated, which can be an exceedingly research-intensive way of doing business. Instead, they try to provide open-ended tools that allow these same clients to create what they need, which has been a costly but necessary undertaking for a small firm.

Sunstrum identified those same two programs as being similarly valuable to GrowSafe. The company was unable to find a Canadian market initially and therefore quickly learned how to export and compete internationally. She acknowledges that they used to apologize for the somewhat isolated setting where they operate, but she says that has now become a point of pride. "In Canada we need to understand that innovation occurs

everywhere, not just in Toronto and Calgary," she insisted. She added that the personal costs associated with the entrepreneurial lifestyle are nothing less than daunting, especially in terms of financing risks and investing huge amounts of time; if we want to have more of this kind of activity, she argued that this process must be made somewhat easier.

"If you're trying to do anything novel in Canada, it's tough," said Sunstrum. "You go into a grant application or you go into any process and the people you're talking to likely don't have an understanding of what you're trying to say." More specifically, she would like to see the grant application process simplified with a single point of entry that would send the request off to all possible sources of support. "You come find me instead of me having to spend so much time going to find you."

With regard to examples from other countries, she explained that GrowSafe technology is being employed in every major agricultural university. "Our collaborations in other countries are way more effective than they are here. We have good collaborations in Canada, but our tech transfer is about 20 years behind what I've experienced in the United States. That's protection of my IP: I can walk into UC Davis and acquire a collaborative research and development agreement within six weeks — no problem." She also pointed to small countries like New Zealand, Holland, and Finland, all of which manage to do substantial international trade in agricultural commodities. "I love those countries because they make it easy for me to collaborate."

Boulard expressed the same enthusiasm for IRAP and SR&ED, which have helped to build up Ensyn, but he saw much more that could be done. "One of the biggest things that we desperately need is procurement," he said. "It's incredible that given the purchasing power of the government of Canada, when we're in a traditional fuel marketplace, that to get my product into any government facility is extremely difficult." By contrast, he pointed to the United States, where a renewable fuel standard has created a valuable, stable market for biofuels.

Dietrich returned to the question raised by John McDougall in the previous presentation, namely whether Canada's research and innovation system is meeting the needs of the natural resources sector. Kuchta recalled his own experience with universities, which were often invited to take part in mining projects but lacked the internal expertise to manage those projects; Qwantech found itself brought into such projects in order to fulfill this role. Sunstrum, for her part, pointed to a lack of funding that made it impossible to establish short, medium, and long-term research programs. "There's some great research being done, but it's likely going to be dropped before it gets to market because we don't have the funding heart to take it all the way through," she said. Sunstrum also bemoaned the loss of scientists and graduate students from Canada, something else that is tied to a lack of funding. "We also need to understand that tech transfer is not a one-way street from universities; it also comes up in the private sector,

and our company is an example." Boulard added that sorting out IP ownership has been a problem that has kept Ensyn back.

Kuchta noted that his company's product was originally designed for health care, but migrating it into that market turned out to be exceedingly difficult, even when the product was demonstrably functional. The mining industry, on the other hand, was willing to assume sufficient risk to try out the product after seeing a demonstration. Sunstrum's experience was similar, forcing them to make changes to the product at their own expense in order to retain access to markets and stay ahead of any competition. This is also essential to providing solutions that are easy for customers to understand and use, but which have opened up opportunities to improve the product in ways that return even more value to those same customers.

Boulard suggested that what has made the difference to Ensyn has been finding champions who know what the company is doing and help it reach the market. These champions can be technology partners who work with them to deliver Ensyn products into the existing marketplace. Nevertheless, such partners are still incapable of procurement, which remains a stumbling block for the widespread use of alternative fuels.

Kamiel Gabriel of the University of Ontario Institute of Technology asked Sunstrum how the technology transfer process with Canadian universities could be revised to match the efficiency she has encountered in the United States. She suggested that an easier point of entry, such as the principal investigator, would be best, since they will have the clearest understanding of the work. "My solution covers computer applications, modelling, mathematics, and animal science. I can't get the university departments to talk, let along try to develop an IP relationship." Part of the problem surrounds metrics, she added, whereby researchers collaborate with her firm but pursue their part of the work independently and often at a very different pace; she admitted that she has become better at setting up university research contracts that have specific objectives and milestones much more definitively in order to avoid such problems.

Perry Mangione of the National Research Council asked Sunstrum what she liked about dealing with New Zealand, the Netherlands and Finland, so that Canada might emulate this behaviour. Sunstrum indicated that she appreciated the willingness of these countries to fund their activities, as well as the speed with which these governments act on requests. "That's one big fall-down in Canada — the speed of technology transfer — trying to develop contracts with PIs who don't have real relationships with their tech transfer departments. The universities have to be told how to partner." Kuchta added that Dubai offered his firm an office and students to work in that office and a hospital for research, along with funding.

Jeffrey Crelinsten asked Boulard about his company's work with Natural Resources Canada. Bollard indicated that this was not a funding arrangement but collaboration on areas of common interest, including engines and different types of fuels.