(*in order*) Frank Des Rosiers, Marta Morgan, Marc Fortin, Lawrence Hanson & Kenneth Knox

Panel

What can the federal government do to enhance its contribution to the innovation agenda?

Moderator: Kenneth Knox, Chair, Science, Technology, & Innovation Council (STIC); CEO, Knox-Vannest Inc.
Frank Des Rosiers, ADM, Innovation & Energy Technology, NRCan
Marc Fortin, ADM (Science & Technology), Department of National Defence (DND)
Lawrence Hanson, ADM, Science and Innovation Sector, ISED
Marta Morgan, Associate Deputy Minister, Finance Canada

Knox made it clear to the audience that they were being presented with the individuals who write or approve briefing notes, as well as policy statements, for the federal government, so this was an ideal occasion to offer them observations or new ideas. He then began by asking Morgan to explain the role of the federal government in stimulating and supporting innovation across the economy and society.

Morgan picked up on a central theme from Tom Jenkins' presentation, which is that business competition is crucial to innovation. "One of the first roles of the federal government is ensuring that the business environment, in which businesses and individuals operate, is conducive to growth," she said. "This means that our framework policies are conducive to growth, that we allow for the reallocation of resources of labour and capital across the economy, that we have the flexibility in our economy and that our framework enables that." Another key element is the government's role in supporting

talent as well as the wider ecosystem, such as supporting research through the granting councils at universities and colleges or through the tax system.

Des Rosiers added to Morgan's remarks by discussing more specifically how government acts on this commitment to promote innovation. "Educating that discussion in a very active fashion with all our partners is the commitment that government has made," he said. Referring to Tom Jenkins' description of co-ordination amongst government and others with regard to innovation, Des Rosiers suggested that government can apply a considerable tool set for this process right across the country. Similarly, Jenkins' discussions of the importance of exports is reflected in the need to maintain the large volume of exports that we already handle in areas such as forestry, mining, and agricultural products. Finally, on the question of government procurement, Des Rosiers placed this in the context of government operations, which can be refined and improved to become better.

Fortin noted that some of the government's major investments over the last few years have been on the research side of the equation, in bodies such as the Canada Foundation for Innovation. As laudable as this practice may be, it represents only a necessary and not sufficient condition for innovation. More diversity of investments is required to fully support this process, as reflected by the diversity of an innovation ecosystem. On that same theme, he added that ecosystems thrive on trial and error by various participants. "Are we prepared to take risks and focus on some areas, and adapt our interventions to the need of a given sector?" he asked.

Doug Barber noted that Canada has a sizeable stake in international commerce and he asked the panel for specifics on the amount that Canada receives from world trade as well as what it pays out. Morgan did not have specific figures to offer, but she confirmed the idea that trade is an essential feature of our economy and no less essential to efforts to enhance that economy. "It's a global marketplace that supports our standard of living," she said. "Any part of an innovation agenda must be outward focused, and has to be focused not just on Canada but on the world and our key trading partners."

At Knox's prompting, Dave Watters volunteered some specific numbers for our trade deficit — on the order of $650 million — but he also broke down the components of that deficit. "We actually import more intellectual property — about $12 billion — than we export," he said. "The whole issue is diversification and how much an innovation strategy is linked to going global and therefore exports. There the issue is how we get these small firms comfortable in terms of getting access to these larger markets."

Barber then followed up on his initial question by noting that if we are such an export-dependent country, how conscious are we of that status. Des Rosiers insisted that companies with a vested interest in exports are exceedingly aware of this fact.

Knox suggested to Hanson that although government should not pick winners, in terms of identifying specific industries or sectors to support, it should nevertheless pick the right races. Hanson replied that the caution surrounding winners is well warranted, but Canada's areas of strength remain well known, including ICT clusters, aerospace, life sciences, and energy. "The reality is that we have to drill down and more fully understand where our greatest strengths lie and where we can leverage them," he said. Nor is this a task for the federal government alone, but in conjunction with partners in provincial governments as well as the private sector.

Morgan pointed to the current federal budget, in which the government identifies priorities around innovation that feature some $800 million over four years to clusters and networks, along with considerable investment in clean technology. In this context, the search for winners remains a major challenge. She identified the ability to attract private sector funding as a key indicator of how successful these ventures might become.

Knox then refined his question further, asking if it is a matter of picking races we are already positioned to win or races where we lack the strength to win and require additional resources to do so. Fortin argued that the concept of "picking winners" is an oversimplification, since the process of determining where funds will go is elaborate and multi-faceted. "We need to bring in the ecosystem to work with us, on the understanding of what are the opportunities," he said. "It's up to this system to work together and identify what is to be done."

Hanson reinforced this point, maintaining that time and diversity are required to develop winning initiatives. By way of example he pointed to the emergence of regenerative medicine and stem cell research in Toronto, which was the result of ongoing investments in infrastructure, academic chairs, and a variety of local hospitals. "There are these disparate program elements, but they're not working in isolation from one another," he said. "They're combining to create these critical masses in certain areas."

Crelinsten asked Morgan and Fortin if their confidence of the academic strengths in certain areas warranted letting market factors decide where to go next. "What about asking the private sector, as well as Social Sciences and Humanities academics who study markets, so that we could be driven by the market opportunity? What are the market opportunities in the world for us to do well as exporters?" Fortin agreed that this is the logical next step once the country's capabilities have been built up in key areas.

Freedman asked Fortin and Des Rosiers about the constraints that are imposed on their own respective abilities to operate. Des Rosiers pointed to access to capital as a major restriction, since many NRCan undertakings are capital-intensive and the shortage of

venture capital is especially well known. He added that finding adequate talent and optimizing the outcome of investments also pose ongoing challenges. More specifically, as the country's largest funder of energy R&D, their own regulations prohibit them from using their own energy labs for work they support. "Which is kind of dumb," he concluded. "If we receive funding from the US Department of Energy, no problem. If we receive funding from an outside firm, no problem. But bizarrely enough, when we're the instigator and we're the ones trying to encourage collaboration, we forbid ourselves from doing this — by sheer stupidity, if I may be so candid. This is the kind of stuff we're trying to fix."

Knox agreed. "We do constrain ourselves, as a federal ecosystem, with rules," he said. "And they're made for all the right reasons. We've got a fiscal year-end, but we've got academic programs that go beyond fiscal year-end. We've got to have more flexibility in how we do human resources. All those things." Fortin noted that many of these rules have been in place for a long time and are well defended by interests such as unions, making it tough to change them.

Knox then asked Des Rosiers for an update on clean technologies, one of the sectors highlighted by the latest budget. He explained that the potential in huge markets like India and China is considerable, as is the current stage of development for these industries in Canada. So too are the government mechanisms in place to drive some of these innovative technologies into the marketplace. "This is one of those happy spaces in terms of terms of collaboration, where firms, universities, provinces, and the feds all seek out the promised opportunity and work with us to do something about it," he explained.

Des Rosiers also pointed to a lesser-reported aspect of the Paris climate summit, which was a commitment to double the funding to energy R&D over the next five years, as well as ensuring that private sector investors participate more fully in such work. This initiative also includes agreement to encourage such work across international borders. He noted that such promised collaboration in this field is highly encouraging.

Morgan added that improvements to regulatory frameworks can further enhance Canada's appeal as a place to invest in new areas such as clean technology. Hanson added that there is no narrowly defined clean technology sector but instead clean technology dimensions to existing sectors, such as energy, forestry, mining, fisheries, or agriculture.

Marc Dietrich returned the discussion to the topic of procurement, such that government would look not only at the price of particular goods and services but also their respective environmental footprints, as well as the footprint of products it induces government suppliers to use. He asked if this kind of information had been mooted for government

procurement, in much the same way that food products now have comprehensive nutrition labels.

Des Rosiers responded that this kind of analysis is already under way, with a full life-cycle consideration of goods and services used by government. The US government has already laid out its own specific requirements in this regard and Canada is examining a similar strategy.

Conor Meade, an economist with The Evidence Network, asked what success would look like for an innovation agenda. "What are the short-term indicators that are going to be on our dashboard in the next one to five years to indicate that we're on the right path?"

Morgan identified three types of economic growth: a larger labour force, better prices for our products, or improvements to productivity. "We have been relying on the first two for quite a long time in Canada and they are no longer as available to us as they have been," she said. Demographic shifts are working against increases in the number of workers and international trade prices remain highly volatile. "We have to increase our productivity and innovation has to be core to that. And I mean innovation in its broadest sense: innovation in research, innovation in new technologies, innovations in marketing, innovations in business strategy. In the shorter term, we'd like to see more companies with innovation at the core of their business strategy. We'd like to see more growing companies, more high-growth companies. It's such a multi-faceted issue that we need to look for success across the whole range of the ecosystem."

Knox then asked Hanson if the government has an idea of what the indicators on this dashboard would look like. Hanson replied that the new government has already announced that it wants just these kinds of indicators to drive action. Knox took this and other responses from the panel as evidence that there is an opportunity for input into federal government measurements around innovation.

Watters asked the panel how they will approach the process of inviting such input in the form of public consultations. Morgan pointed to an advisory committee on growth that has already been struck, which will be outlining the key elements of a long-term growth strategy for the government. Hanson echoed this sentiment, insisting that a commitment to a broadly based consultation process is in place. Knox took this response to mean that the ministers themselves want to be engaged in these processes.

A final question from Knox returned again to the subject of procurement, seeking a sense of whether the government is employing the optimal extent of its buying power to encourage innovation. Fortin cited the Ebola vaccine as an outstanding example of an investment by the Ministry of Defence many years earlier. At the time it was seen as a

long term planning measure, looking ahead to the possibility that members of the Canadian Armed Forces might be called upon to serve in Africa in areas where Ebola is endemic. Although this was not going to a large-scale purchase by government, it was enough to warrant supporting the process to develop such a vaccine, which subsequently arrived at just the right time to help during a serious outbreak of the disease in Africa. Similarly, the Light Armoured Vehicle is being sold around the world after being developed for the Canadian military to purchase first.

Knox presented the counter-example of government resisting offers from solar panel manufacturers to install their product on the roofs of government buildings. Fortin acknowledged such problems, but noted that government purchasing does not contribute to the competition that Tom Jenkins had earlier identified as the essential precursor to innovation. "I think it's a red herring to see procurement as a solution," he said. "It is among the instruments that you can use, but it has to be used wisely." Knox persisted, passing along the observations of people who have told him that Canada needs its own equivalent of the American DARPA program that yields so much cutting-edge technology. Fortin insisted that Canada has such a program, although it does not go by that name. "We are investing in basic research and investing in crazy ideas," he said.

A question posted on-line asked about what metrics the government should apply to its way forward. Hanson responded that the best measurements will focus on our areas of strength where we stand to make the greatest gains. Morgan asked to make a finer distinction between metrics and processes, a distinction that will depend on what kind of outcome is being sought. "We want collaboration among the players in the innovation ecosystem, which means we want adjustments from the private sector if we're on the commercialization end of the spectrum. We want to make sure that there's some tangible manifestation of market potential. We want to build on our strengths." Hanson pointed out that this approach is already being exercised in the aerospace industry, which seeks to advance the capability of firms that are already actively engaged in this work. Crelinsten cautioned that these analyses might be troublesome if they demonstrate that Canada has some strength in an area that no one wants.