

Audio file

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Transcript

Speaker 1

okay for sure All right, folks, can I ask everybody to grab a seat for the last panel discussion here? Thanks very much, everybody. So the last discussion we've got for the day before the fireside chat with Secretary of State Charlotte is on the innovation agenda and the industrial strategy. Very happy to be joined on stage by a range of folks who have a hand in this. It's going to be moderated by Dr. Alex Salt, who is now a senior researcher with the Canadian Global Affairs Institute, previously a postdoctoral fellow with Triple Helix. Next to him, okay, the scramble seating is always fun. We have Dr. Kate Kaminska from Defence Research and Development Canada, Ian Smith from the Faculty of Engineering at the University of Alberta, Laurent Carboneau, the Vice President of Policy and Advocacy of the Council of Canadian Innovators, and Dr. Shannon Quinn from the National Research Council. So, Alex, turn things over to you. Thanks.

Speaker 2

Thanks, Dave, for that very warm introduction. So this panel is all about innovation. And in many ways, in my view, innovation in the Canadian context is as much about sovereignty as anything else, about can we get the country in a position to have the domestic expertise, the industrial capacity, and the technological foundations to equip and sustain the Canadian Armed Forces with the various tasks that they will need to overcome in the growing uncertainty in the world around us. So we have an outstanding, I think, group of individuals representing the full spectrum of innovation from the governmental side to academia, as well as industry. So I'm going to start off with a broader question that I'm going to direct to the panel as a whole. But just to kind of kick us off is, what does the shape of a more effective defense innovation ecosystem look like in this country, right? What are the broad outlines that we need to look for as we take the next steps? Kate, maybe we'll start with you.

Speaker 3

Yeah, sure, of course. And thank you for having me here. While I do come from DRDC, I'm actually here to represent a new entity called Borealis, which stands for the Bureau of Research, Engineering, and Advanced Leadership in Innovation and Science. So really happy to speak to that question from the Borealis perspective. So look, as we've heard today from this room, Canada has a plethora of innovative and competitive firms. We also know we have a very strong academic sector. I think one of the challenges though that we do have is transitioning that research excellence and all that know-how that resides here into defense capability. So I think a more effective ecosystem and I think the gap that we need to bridge is then how do we translate that knowledge and excellence into capability while navigating an arguably fairly fragmented ecosystem. I think we've heard about it today as well, especially small, medium-sized enterprises have a bit of a hard time navigating a complex web of government programming. So in fact, Borealis was stood up to address those two gaps. One of them is to look at that bridging function. So how do we get from, as we like to say, lab to launch pad more quickly? And then second, how do we demystify and hopefully reduce some of that fragmentation and make it easier for small players that arguably have those innovative ideas and technologies to be able to enter the defense market and ultimately deliver capability to our Canadian Armed Forces? So that is really the premise of Borealis.

Speaker 2

Perfect. I think that's a really strong kicking us off. Ian, your thoughts on that?

Speaker 4

So I don't think anyone would. think for a second that we're at a poverty of innovation in Canada. I think there's a few pieces I think about. One is who are the innovators? And I think if we look around the room, we're in a room full of innovators. So defining who is participating within that. So it's not just DRDC, it's not just universities, but it really is the industry that's innovating. And I think just a recognition back into that point. And then the ways that we can support that transition to end user, really through what our own mechanisms and stations are. So the one thing I think about is speed. Everyone's going really fast right now. Everyone's trying to go fast. We see the Defense Innovation Secure Hub proposal come out. We see 160 applications into it. We see two awarded, or we're aware that two are awarded. But within this, what we know is people are trying to go fast. So I think there's an opportunity to take this speed and turn it into velocity, apply direction to this energy. And I think that direction needs to be from the Canadian Armed Forces, from the end user, so that all of our innovators, whether they're researchers at university or innovators within companies, are focusing on what Canada needs now and contributing back into those key sovereign capabilities.

Speaker 2

Great. Laura?

Speaker 5

Yeah, I think a lot of really good points made so far. And I think the point about Canada's research prowess not translated to commercial outcomes, I think is something we talk a lot about in the innovation conversation in Canada. Of course, I think we've heard a lot about it today and just now. I think the thing that I often talk about is like, yes, we can talk about innovation as how are we taking these research breakthroughs, turning them into technology. I think how are we turning them into firms is also the other big part of this. Because I think sometimes we get into the Canadian firm conversation and it's about how can we better support small businesses, which I think, that's great. I think we do want to support small businesses. But to me, the success of a policy and a defense industrial policy, a defense industrial strategy isn't how effective is it at supporting small businesses, it's how effective is it turning small businesses into big business. Because I look around to our sponsors here and thank you, by the way, really appreciate it. I would love for 10 years down the road for there to be this same conference happening in Korea or Estonia or somewhere. And there's a bunch of Canadian companies that have sponsored it because they're exporting into those markets, right? That to me is kind of a part of the success story here. And the reason why I think that's so important is because when we talk about sovereignty, what we're really talking about is our ability to be masters of our own fate. And I think if we don't have the capacity assets that these firms really are, and I think anyone would look around at these firms here and say, those are assets for their countries to have, right? When we talk about key technological or industrial capabilities, the firms that own and deploy those and create them is a bit of an under-discussed part of the fabric. And I think for me is a really, really pivotal one and is a strategy and a policy that doesn't focus on how do we create more of those is to me missing the mark. So I'm happy to see that That's in fact not the case with the government strategy. And there is a plan, or at least an intention, to focus on scaling innovators up. But to me, that's really critical.

Speaker 2

And Shannon.

Speaker 6

Great, thanks. So I'm the Secretary General for the National Research Council of Canada. And we really have two parts to our business. One is the research part, where we have researchers in labs trying to mature technologies, work with businesses who have great

ideas and our academic partners to kind of evolve those technologies into something that has commercial viability. And then we also have a side of our business that does industrial innovation, supports industrial innovation through our IRAP program. And for us, when we think about how do we create a vibrant and sustainable defense industry here in Canada and one that in 10 years will have that nice mix of small, medium, and large enterprises. What we think we need is actually to do a little bit more orchestration is the word that we use. So in our system today, I think we've already heard about how we have very, very strong players across all parts of the ecosystem. But to bring those pieces together in a very kind of deliberate, intentional way is I think what is one of the pieces that as the NRC we hope to bring. Part of the reason we think that we can contribute in this space is because we've been around in this space for a long time. We have connections to about 10,000 innovative small and medium-sized businesses across the country. And so where we're looking for innovative businesses that might have something that could be useful in the defense space, we might actually already have a connection there. Or where we have our CAF partners who are already working with us to develop a technology in one of our research centers, we may actually be able to see that, there's a small business that we already know about who's also working in this space and we can make a pairing. So that's one of the things that we're hoping to bring.

Speaker 2

So underpinning, I think a lot of these has been the speed of change that's happening. Borealis is certainly one of the newer elements in the Canadian defense sector. If I could ask you just to expand a little bit more on your earlier, on your initial answer on terms of outlining sort of what is Borealis to the folks? Because it's something that I get asked a lot. And I think that expanding on just the nitty-gritty details of what you guys are going to be achieving, I think would

Speaker 3

Yeah, for sure. So yes, Borealis is still fairly new. We stood up in September of this year, and in many ways, one of the lines of effort was to define exactly where we can bring the most value. So we want to avoid duplication. We don't want to do what our colleagues in the NRC do. We don't want to do what is already being done out there. So identifying that gap was part of the initial mission. We're also very much taking what I would call the approach. So we didn't want to spend a whole bunch of time designing the perfect plan before we execute it. So rather, we're leaning forward some early initiatives. You have heard my colleague here mention the Defense Innovation Secure Hubs. One of the critical capability gaps that we've identified was that we need a space for government, industry, and academia to come together to actually co-create solutions. So it's a bit of a different

model. it's not kind of throwing things over the fence, here are requirements, here's a procurement, now respond, but rather get into the space where we can have our DODC researchers sit alongside academics, of course industry, and importantly with our CAF partners to A, understand What the requirement is, and the need for secure environments to do that is really important, because obviously in the defense space. many of the problem sets are actually classified, particularly as you get towards the pointy end of the sphere. So we in the past and still have a challenge getting people cleared, getting people to those environments where we can have real discussions about the threat environment. And of course, the more of those types of discussions we can have, the better the industry and academic players are going to be positioned to respond to the needs of the Canadian Armed Forces. So that's the intent behind the dish. And then, of course, we want to create environments where we can test, prototype, and ultimately de-risk technologies before they get into the procurement space. So that is another kind of thrust behind what we're doing with the Defense Innovation Secure Hubs. That is 1 signature initiative under Borealis that we've leaned out on. It's not going to be the only thing that we do. We're also working with our Canadian Armed Forces partners to address some of the urgent and current operational problems. So for example, we're working with the Canadian Army to support Project Minerva, which is the Army's project to quote unquote, flood the army with drones. How do we do that? Well, we need to access the innovation, I'm not going to say ecosystem because I know that's a bad word here. The innovation players to help develop those solutions that really meet the needs of the end users. And we feel that the Dish concept is where we can do that. We're working with the current innovation programs, including Innovative Solutions Canada, IDEAS, but we know that we need new instruments and authorities as well. And this is why we're so excited to be working with our colleagues at the DIA, PSBC, our own internal procurement authorities, ADM Matt at D&D. to figure out a way because ultimately we do want to make that bridge to procurement. So that's in a nutshell the concept right now. It is evolving and we'll continue to refine it with feedback from folks like you in the room. We really want to hear about what you want to see Borealis become. So it's not fully defined yet, but we do know the gap that we want to address. The question now is the how.

Speaker 2

So something I thought was really interesting that you mentioned, we having real discussions that are grounded in tangible outputs and sort of if you're looking, reading through the industrial strategy, there is a bit of an emphasis on building sort of broader, almost communities of practice. Ian, turning to you, How can this sort of community-orientated innovation mindset be more effectively realized, especially from someone from

the academic sector? What role are you guys playing in this, and how can we build better relations amongst the different parts here?

Speaker 4

So I think if I look around the room, I think everyone's dealt with academics in different ways, either as a student or back collaborating. And you know that you deal with a whole spectrum of people. So what we've done at the university is we established Canada's first defense innovation center at a university. We put it through our formal government's processes. So it is an official part of the University of Alberta. And this is through academics who bought in and want to contribute to national defense. So this is really a pull from the bottom up or a push from the bottom up. Through this, that idea of providing direction to the speed, the velocity we need, we also see through this idea of having the ability of a secure channel of communication. So we've recently launched a program called Defense because we also like very long acronyms, the dual use ecosystem for future engineering, national defense and sovereignty. But this idea was funded by the government of Alberta. So again, talking back to our provincial partners, a \$21 million investment in establishing secure research facilities where we can collaborate with the Canadian Armed Forces. Because at the end of the day, there are two pieces that we get out when you collaborate with the university. You get some great research outputs. We prioritize returning IP back to industry because when we return IP back to industry, it gets to end users a lot faster than if you keep it at a university. And then the other piece is we get to train the next generation of innovators, the next people that will join the workforce that will be your innovators and your companies. And isn't it great to think that these students will get to work on these through their masters, their PhDs, so that when they join you, they're not starting at zero. You're not having to teach them the industry. You're not having to teach them security classifications, requirements, what the controlled goods program is or what the contract security program is because they're familiar with it. They know what the water is that they swim in. So through Defense, that's what we're trying to do. But I want to add one more piece. And that is, if we think to Ukraine, who's innovating? Soldiers are innovating. So we want to collaborate with soldiers to help them have the skills to innovate when they are under fire, when they're under stress, and when they are without the ability for a university to come and help. So that's why we're starting to do short courses with the Army. That's why we're working to grow these collaboration agreements. And that's why for the last four years, we've sent students out for Canadian students at sea where they can do a hackathon with the Navy. So I think a lot of this is I think about what the ecosystem is just for Spence. It's the ability to take initiative from the different stations we have to start to build our own mechanisms so that we can be better and credible partners for the industry and for the end user.

Speaker 2

So I think, especially in the academic space, a lot of innovators have feet in both the civilian sector and the defense side, creating dual use technologies. Speaking more from an industry side, Laurent, if you could maybe offer some thoughts on how you feel the new industrial strategy is going to make a positive impact in the dual-use space, or is there still work that needs to be done?

Speaker 5

Well, as you say, it's new. So I think a lot of R&D to go. Like I said, I think there is a lot of intention put into what are the pillars here that we're actually working towards. I think recognizing that building Canadian defense champions is an important part of the strategy and is a useful thing. On the dual use piece, I think it's a term of art that has been, I think, much abused in the last year or so, and I think folks in this room probably have heard it more times in the last year than probably to this point in their lives. Correct me if I'm wrong. But it's certainly been used a lot. But I think it speaks to a bit of a reality we have in Canada, which is that we don't have a really huge depth of, as I was pointing to our sponsors here, we don't have a huge depth of really large defense companies. And I think the reality we're facing is that dual use is the place to start if you're a company that is in a space where potentially you could be with commercial clients. I think, and certainly this is another thing I've come to appreciate in the last year, is that, and I certainly don't, excuse myself here is that the new fiscal reality has created a defense tourism industry, right? And I certainly don't think I'm innocent there in a sense. But I think that kind of comes with the responsibility that you have to be real about if you want to be a dual use innovator. You can't just be like, oh, well, we do quantum sensing or we do whatever. That's going to be easy. I think you have to take a really serious view. And we were talking about some of the requirements up front for actually participating in defense procurements, the clearances, the controlled goods pieces, like all of that, the checklists. These are really serious considerations that if you're an innovator running a small to medium-sized enterprise, you need to be very serious about like, this isn't something I'm going to be doing off the side of my desk. If I want to be building a defense program in my company, this is not something I can have someone kind of take on part-time. It's going to demand a lot of my time. It's going to demand a lot of my staff's time. It's going to demand a lot of interfacing with government where we're not iterating on a product or looking for other customers. You're in it for the long haul. And I do think obviously to some extent we can streamline and we certainly should, and we should find ways that we can kind of co-create, co-iterate, find, co-develop the requirements, all these things absolutely to the good. But I just think that there has to be an appreciation that if you're going to be doing this, you need to be doing

this, right? And it's not something that you're going to be able to just kind of dip in and out of. And when we're talking about dual use, to me, like dual use is not, you can slalom. It's that you have to, if you want to do both, do both, but you are not going to be dipping around.

Speaker 2

I really appreciate that analogy. We should have more skiing.

Speaker 5

I'm always sounding for more skiing.

Speaker 2

Shannon, similar to Kate, I think we've got a lot of folks in the industry in the room. I think, could you expand a bit more on how you, the more specific role you see the NRC playing in supporting the industrial strategy and where perhaps you see you guys playing the most impactful role in that endeavor?

Speaker 6

I think maybe at a high level, what I would say is that when kind of we engage across these small and medium-sized businesses, albeit often on the civilian side, what we see is that they need more than funding. So yes, they need funding and yes, they want funding. But in order to actually get to an optimized product that's going to serve the needs of their end user, in the case of Defence, our Canadian Armed Forces, they need access to large scale testing equipment. They need pathways to be able to certify and validate and prove out their technologies. Sometimes they need access to a scientific expert to just kind of get them over that challenge that they're facing. Sometimes they need access to their end user in a way that they can brainstorm also with some experts. And so all of those things are things that the NRC hopes to bring. So the NRC has large scale national size testing infrastructure that we make available to industry and our academic partners. We have research centers with experts in quantum, in advanced manufacturing, in drones, in biotechnology, amongst other things. We have our relationships with our industry partners and some mechanisms to get some funding into their hands so that they can get a start. And the trick then is to bring that all together in kind of a very deliberate and intentional way.

Speaker 3

Yeah, I wanted to chime in to say that the NRC is a critical partner in Borealis. So I don't want to give the impression that Borealis is a DRDC thing or a D&D thing. In fact, it's a

whole of government thing. And the NRC brings absolutely critical capabilities that complement perhaps some of the capability shortfalls that we have, for example, at DRDC. This is why it's so important for us to leverage the whole federal ecosystem. So NRC is a partner, CSC is a partner, the service is a partner, and of course, ISED is a critical partner being the owner of much of this excellent programming that we have on the federal side. One example I'd like to hone in on, because the word has been said twice, quantum. I think, you know, I'm a physicist, so I have a soft spot for quantum and photonics. But we have an incredible advantage in Canada when it comes to quantum and quantum talent and quantum companies and quantum startups to the point where our friends down south are really eyeing our small companies, small quantum companies, and actively, actually, in some cases, trying to buy them up. So, again, through collaboration with our federal partners, including the NRC, ISC, one of the things that we've mobilized early on under the DIS is some interventions to ensure that we can keep some of these small quantum startups in Canada, and NRC is playing an incredible role in that, providing technical diligence on some of these companies, which I think are absolutely needed. And we'll continue to work with NRC and ISED as a critical partner. So again, I think we're at a moment where we see the federal family really coming together, realizing some of the risks and trying to maintain our advantage in critical areas where we do have an advantage. And it's not going to be across the board. This is why I think we have to get better at picking winners. Not everybody is going to win the dish, be the sovereign capability. We really have to identify, okay, what are our critical niche areas and double down on that. And I think quantum, if I can say, it's one of those things, like we're really strong as a nation when it comes to talent and capability in that space.

Speaker 4

Ian, did you- Yeah, so building on this idea of collaboration across the system, when I look at the state of the defense industry in Canada, the report came out, still the majority are small to mid-sized businesses, still the majority of the equipment we need is incredibly expensive. And does everyone need one of one? Does Canada need one? Do you as a company, if you're making IMUs, need to have one semiconductor foundry? Do you need all of that equipment? Probably not. So what does it look like if we start to think about these core facilities outside of an academic research context, outside of an individual city context, but into a national context where we can collaborate across the systems? So we work a lot with TRDC. I think we work on four different sites. We work a lot at the military bases. We work there. But where do people work with us? So again, going back to the program we're building, this idea of secure spaces, today we have \$160 million of semiconductor fabrication equipment at the university for industry. Industry is their manufacturing, not for research, not for fun, but they're there to build and to sell. Now, is it

feasible for the 90 plus companies that work out of the space to all have \$160 million of semiconductor manufacturing? Absolutely not. So these are roles universities can play to steward the equipment, to utilize it well, and to open it up for industry to advance their technologies. So I really want to advocate for universities to do more of this collaboratively, to grow the ecosystem broadly for everyone to use, and then to collaborate across with our federal and provincial government partners in order to have it well stewarded, accessed, and utilized.

Speaker 2

Maybe talking about the idea of growth, I mean, there's, I think, a recurring theme in Canadian innovation policy that we're really going to generate an IP. It's the scaling that becomes a bit of a challenge. Laurent, from, again, more of an industry take, do you see the industrial strategy as something that's going to drive innovation and by extension, like scaling in this country? Or is it going to remain in industry's hands to sort of take the wheel here?

Speaker 5

I'll push back on one small thing, which I don't think we're actually very good at generating IP. We're good at generating research, we're good at publishing. Our IP generation is not so good if you look at globally. I think it depends on which measure you take. Let's say patents per million population, we're something around like 130. Look at the Nordics, it's more like 600, 650, 700, depending on which country. Korea is like 1300. So we're not so good at generating IP. We should be a lot better. And I think that it's encouraging to me that the disk actually does see that as a problem to solve. and takes that seriously. How that will be operationalized, of course, million dollar question. I think that Canadian industrial policy has a somewhat tragic history of nice ideas, good goals to some extent, but suffering from execution and from lack of follow through. So I, and we of course saw the AI strategy announced last week. I think It's hard for me to judge exactly what that's going to look like. I do think the build, partner, buy framework, I think some of the pieces, I found myself nodding when I was reading through it. I was like, yeah, this seems sensible. I think there are some good goals here, which to be honest, if you don't have real goals that you can measure against, like you don't really have a strategy, you just have a Christmas list that you're writing to Santa Claus, you're not going to get very far with that. And from what I've seen of the this, and I appreciate it's really this, I think there's a lot of good ingredients. How is that going to turn into action? I think this has been a useful venue for me to see there's a lot of conversation going on between government, a lot of thinking by government folks who are being very thoughtful about how can we actually turn this into real action. But to me, are we seeing this turn into real opportunities for defense companies or folks who

are wanting to make that serious commitment to get in there and become real dual use innovators? remains to be seen, right? I think very, very early days, ingredients are there, intent is there, metrics are there. I think whether we can actually turn that into real action, we will have to revisit that a little bit down the road, but strong sort of set of foundations compared to many other strategies I've seen come and go over the years.

Speaker 2

Speaking of foundations, Shannon, I think you mentioned earlier these drone innovation hubs, right? I think these are a really intriguing sort of tangible first step in terms of generating tangible outputs. What comes next, though, for you guys after you get these stood up and up and running? What's next for you guys?

Speaker 6

Maybe I can start by saying, so the NRC has been doing drone research since in 2012 in a formal way. And so we have researchers with capabilities. We have some facilities. What these drone innovation hubs now are intended to do is to put in place some of these facilities that are going to create that pathway for validation, for certification, so to speak, certainly the airborne drones as an example. If you want to have a place in Canada where companies can go and show that the drones can perform in complex, turbulent wind conditions, we'll have facilities that can create those spaces in a replicable way so that you can actually do some real certification. So it's essentially now taking taking the moment now because we know from our research that we do have companies here in Canada that are on the verge of having that product that will be useful in a theater environment potentially. And it's to give them that next step to be able to prove it out, demonstrate it, have a certification type pathway so that they can get it into the market. So those facilities now are in development. We're doing our best to expedite those so that they'll be available to businesses and academia to be able to use in the very near future.

Speaker 5

Just to jump back in, I think the point around this infrastructure piece is really important, and to come back to something that's been sort of said earlier in earlier conversations is, at the end of the day, we can have the best infrastructure, the best resources, we can even have great innovative companies. If there's not a customer, all of this becomes somewhat moot. So I do think, to me, if we're talking about what's the success of this look like, I think, yes, setting up the infrastructure, setting us up for success, all to the good, right? If we have a Olympic training program that produces great athletes, that's wonderful. But if they're not actually going to the games, we're not winning any medals. So I do think the contract vehicles piece, can the government actually learn to buy? at a pace that

approaches something like a commercial scale, especially because we have to think about this, right? We don't have the advantages of a really deeply rooted huge defense industrial complex in the same way that other peer countries or partner countries do. So we need to adapt for that reality. We can't behave exactly like other countries and expect to get the same results. They have a different environment. We have different conditions. We need to have different policies. We have this conversation a lot in different contexts in the innovation space, but what works in one place doesn't work in another because the conditions are just different. You can't assume the same institutional architecture. You can't assume the same uptake. So in some sense, we have to design for Canada, right? And I think in some sense, looking at, okay, how are we scaling innovators, great, but then how are we actually driving demand, right, is the really, really critical question here. We haven't really touched on too much. So I just wanted to make sure that we did put our finger on that because it's really, nothing else really works if we don't get that piece right.

Speaker 2

Yeah, please.

Speaker 3

Yeah, if I can jump in. I agree. I think we need to provide that demand signal along with that pathway to procurement. I think what we've heard about on an earlier panel with the folks from the DIA is that we're very much heading in that direction through the upcoming legislation. That's going to open up some pathways, particularly interesting on the R&D side, because one of the things that I'm sure you're all tracking, we've had the paradigm over the years where innovation kind of happened in this silo and forced development happened in this silo, and we were really hoping that somehow the two shall meet. Right now we're being a lot more intentional about integrating innovation into those cycles from the outset. That is why we're very keen on engaging with with the CAF through the defense innovation secure hubs, making sure they're there at the outset so we don't develop something and hope there will be a customer at the end, but rather they're there from the outset to provide that demand signal. I think the point made about the defense market in Canada, yeah, it's not that big. It's not going to sustain companies. So we absolutely have to provide a pathway to exporting. And we also have to provide a signal to capital markets that we are interested in technology, perhaps through that first contract. So somebody earlier brought up BDC. I think that is something that we... increasingly are thinking about at the federal level, which is new. Before, we never thought about, okay, let's engage with venture capital. That was a big no. But now we're actually thinking, hey, maybe we can use these defense innovation secure hubs. And once we validated technology through there and there's a clear pull from the operational community, being the CAF, well, surely that

provides some kind of a signal that it's a worthwhile technology, whether it's for our market or the market. But I think we're increasingly trying to make that link. BDC is great. They're the first kind of venture partner, but there are also others that I think we can increasingly talk to.

Speaker 2

I should have some more questions, but I would just take a quick moment just to open it to the floor. I'm sure we might have a couple interesting thoughts from the audience if anybody wants to chime in. We have microphones at either side. There's been a slight change from the earlier panels. It's the theme of adaptation. We'll all get through this together.

Speaker 1

Can you hear me?

Speaker 2

Yep.

Speaker 1

Okay, great. I'm dealing with a small company out of Calgary that is looking at end-to-end network encryption using quantum. And they've been trying to file patents. They just filed 27 patents. They had to go to the US to file them because the Canadian system was, the system we had here was really expensive to do patents and they're just a startup. So I'm just wondering if someone could comment or maybe you don't know on that whole patent process in Canada and how we can facilitate that for startups. Thanks.

Speaker 2

I can jump on one quick thing.

Speaker 5

Good to see you, Dan, by the way. I think CPO has, and good folks, they work hard, I think definitely suffers from a bit of a service standard issue compared to some other patent offices. And I look at the USPTO as like an office that is not just pretty good on the, it's not perfect, pretty good on the customer service side, but I think it's government sees it very clearly as an instrument of strategic leverage and strategic power. They're looking at how can we do more for innovators that are participating in standard setting processes, for instance. That's one of the programs they now have. They understand how this stuff is all really connected. So to your point around there's pieces with Nu to make it easier to do

business with CPO, I think provisional patents is one piece that's been talked about and I certainly think is a why not kind of situation. just getting the backlog and processing times down. But I think, to be honest, CIPO and the whole IP landscape is something that we should be looking at as part of our innovation strategies much more broadly. I think the crucial reality is that you can't sell something you don't own, or at least you can't do it for very long. So if we don't have the infrastructure that's right for actually owning the things we invent and produce, then it's not the right infrastructure, right? So I take your question as indicative of there's a lot of problems to solve, but it's much broader than that. And we do think about this as a really strategic asset.

Speaker 7

All right, thanks. So in the capital domain, there continues to be a challenge, right, in getting banks to engage, although they publicly come out and say, hey, we're in the game. The reality is they really lack the insight and understanding, much like, by the way, a lot of innovators do of what it is to be in defense. I mean, it's one thing to operate a drone in windy conditions and a test range. It's another thing to do it in contested environments with adversaries and weapon heads and all that stuff on top of them. So it's a step change and we need to facilitate that. I'm just wondering what you could do in the context of, and I know this is a broad question, but when you look at the capital pot, it's the same issue, right? We need to progress them to actually realizing the vision that the Department of National Defense and the Prime Minister are trying to create and let's build the country and get on with it. And so there's a push there, but there's also a need to actually be there and help them. And I'm looking at where does that operational knowledge come from? It's in the Department of National Defense, but it's limited because it's actually working on the operational environment as well. So we have some challenges on that. I just wonder what your thoughts are and how we might facilitate that around Borealis, around the other things. And certainly from industry, I'm not trying to present the problem. We're looking at trying to solve the problem too, right? Thanks.

Speaker 2

Yeah.

Speaker 3

I can take a crack at that. I think one example that I can give, which I think has been quite successful, though you can tell me otherwise, is something that we've been running through our ideas program over the number of years. We open up our Suffield Research Center every year or so in the summer for companies who work on drones to test them. in that environment. If you've been to Suffield, it's a very unique site that offers things that

other government facilities might not. You can actually shoot things down. You can actually have munitions. This is fairly unique. So we want to, under Borealis, we're thinking about how to scale that model. How can we do more of that? Because it really presents a unique opportunity for companies to come in get direct feedback on their particular innovation from the CAF, so from the end users, and then improve their product as a result to hopefully better match the requirements of the CAF. So I think we need to be doing more of that. We're certainly at DRDC thinking about how can we open up our facilities to a greater extent to enable that testing, that evaluation, that co-creation. And you're absolutely right. We need the operators, the end users there, and we need to provide those contested environments. Sometimes things need to explode. It's not easy to do that everywhere, but we do have some unique sites like that in Canada that can be leveraged to a greater extent. So we're certainly looking at that part going forward.

Speaker 8

Hi there. Just a quick question for the, at the strategic level, grand strategy perhaps. We've heard a lot in the media recently about all the initiatives happening in Eastern Canada. And it would be an understatement to say that some of the growing discontent or existing discontent in the West is probably well founded with regards to Frankly, and I live in Toronto, so this is, but my company or part of my company is in Medicine Hat, Alberta, by the way, right beside Suffield, the reason it's there. What, you know, I know this is more of an RDA question, but for DRDC and everyone else, NRC included, there is a very vocal concern right now as we speak in Alberta and Saskatchewan, I would argue, about being ignored by the center, whether it's DISH, whether it's unmanned vehicles, and it's real, and I'm not here to complain. Do you have in your mandate an RDA-like driver that says you're going to develop across Canada and ensure that access, I mean, we're sitting all here in Ottawa, we have DefSec just came to Alberta, that didn't just happen by coincidence, that was pent-up demand. NRC is largely an Eastern organization. The Canadian Space Agency is also referred to as the Quebec Space Agency. And I say that just to be a little spicy. But if you look at actual investment in the West, it's underserved, where you have a lot of SMEs. So just what are you folks going to be doing to address at a time of peril for the Canadian Federation, you know, the fair share.

Speaker 2

Shannon, did you also have your, yeah, maybe Shannon?

Speaker 6

Great. Well, maybe I'll just speak to this point about the NRC and kind of where we're focused. And maybe I'll start by saying we have 24 research locations in 10 provinces. And

so speaking to Alberta, we have a nanotechnology site on the campus of the University of Alberta, Saskatchewan. We have a very active biotechnology research center with a focus on agrifood and sustainable food production, including for the north, which has some very interesting defense applications as well. And you asked about kind of mandate and requirements. What I would say for the NRC is that what we find is that to be a very successful innovation organization, it's incumbent upon us to take advantage of the talent that we see all across the country and the capacity all across the country. And so from that perspective, we actually do very intentionally try to have our various capabilities spread out across the country so that we can take advantage of this. On the IRAP side, which is the program that engages with small and medium-sized enterprises, we've got actually 128 nodes all across the country for this exact reason, so that we can actually be in the locations because these innovative businesses, they're not all in big cities even. They're out close to mining sites. They're out in our agricultural sectors, and we want to be where they are, and so we are. And I would say, too, I mean, some of the talk kind of around some of the defense innovation has been around drones and quantum. But I would also say that there's a very, very keen interest that we are seeing from our Canadian Armed Forces around biotechnologies for defense purposes. The reason I mention that in particular right now is because there's actually quite a strong concentration of both businesses and researchers and academics out in the west in this particular area, both in Alberta and BC in particular. So maybe it's a long way to say that we're committed to innovation across the country because we see innovation happening across the country.

Speaker 2

What about Kate then Ian?

Speaker 3

Similarly to Shannon, yeah, I want to say that absolutely we want to take advantage of where the best innovation resides. So that means across the country and each region has its strength. So while we started the Defense Innovation Secure Hub in Atlantic Canada, absolutely we're looking to expand. The whole point of it is that we want to grow a national network of these sites across the country. to be able to source the best innovations wherever they might reside. So absolutely, looking at geographical distribution is part of the strategic considerations for where we're going to place the next round of defense innovation secure hubs. Because we are just at the beginning, if you can believe it. I know we started in September. We had a call for proposals. Results are not yet announced, but soon to be. So we're excited about building this network and really working coast to coast to coast. And I want to mention the third coast because in one of the previous sessions, a gentleman mentioned, why aren't we talking about the Arctic? Well, we actually, in fact,

are thinking about the Arctic very much so as a strategic environment. It's not a sovereign capability, not a sovereign technology area, but certainly a region of strategic importance that we will be looking to move into as we grow the Defense Innovations Hub network across the country.

Speaker 2

Ian.

Speaker 4

I feel like as the Albertan on the stage, I need to say something. But from my side of the North Saskatchewan, as we think about that system, is really what does the local ecosystem connected to the Canadian Armed Forces look like, and how does that impact the way we innovate? Again, I say we need to take agency from where we are to build the systems that we need to be successful. So we can't just wait for Ottawa to work through these things. As Spence said, I'm also really optimistic. I think that the DIA, I think the DIS are both going in the right direction. But what can we do to go faster? So we're going to be shifting from third division to first division. We're seeing how that structure will change. And just on a small note, what does that open up to for French language training in Edmonton? That's really interesting. There's ways to innovate in French language training. But now if we go back to technologies, we're all thinking about that. How do we employ the forces in ways that are wise? Because every person we take off of their desk is going away from their core capability. But I think a lot of the people that are in that transition office, people that are on a medical category, what are the ways that they can input and impact the way we're innovating? Wouldn't it be amazing to think if you had a project at the University of Alberta that artillery officer is going to come down and give advice on the way that we're collaborating on a project that would impact you? Would that be great for him to think that even though he's not going and working on the guns, he's able to come and impact what the future guns look like? And I think if we look at this from like a personnel perspective and the way that we from our places can steward the Canadian Armed Forces, I hope that they can innovate in that same area that they sleep, which again is like across Canada. How do we steward their time? How do we grow the ecosystem around where the assets are so that we can innovate, so that we can maintain in situ? And then have that done through, I mean, I think going back to maybe the paper that you worked on with Dave, How do we do that through contracting authorities that allow the risk to be pushed down and the contracts to be pushed down into those bases so that they can be the ones who are working to develop across the country those new companies, those new systems, and providing that consistent demand signal back into the system.

Speaker 9

Good afternoon, James Paul from David Pratt and Associates. I'm interested in the panel's thoughts on the challenge I see of how you match the encouragement of the innovation agenda by Canadian innovators against the requirements of the various procurements that are underway, and that includes whether it's material or infrastructure. So what I'm getting at is, you know, we talk about wanting to see innovation. At the same time, we want to accelerate procurements, increase the number and dollar volume substantially. So in order for innovators to really present their ideas, procurement specialists are typically working with a set of requirements that are designed to match the project and the program and all of the requirements owners within the CAF and so on have worked very hard to try and define their need very closely, right? So when an innovator comes along and proposes an innovation against the way procurements work. And even if we want to fast track and limit the number of bidders, still ultimately you have to score that proposal against the procurement, right? So innovation also often means that the requirement to show that you've done it before, you don't get a lot of points on that. The requirement to show that you're cost effective, innovation often costs a bit more. And against the understandable risk aversion mentality, which I agree is a comment I made earlier, would be nice to see if there was a little more room for that. But nobody wants to make a mistake and everybody wants to get it right. In general, the public, we as taxpayers aren't very receptive to the idea of mistakes being made. You take for those who are Ottawa local, and I won't, but the auto LRT is a good example where, you know, after we bought a train that was the first ever use of its design that was greener and more efficient and more flexible and more capacity than the others, and then there were issues, everybody said, what, we bought a train that nobody had ever used before? Well, we didn't want the old train. We wanted the new innovation. So anyway, just as an example, so I'm just curious in your thoughts of innovation is great, but unless in the cycle you allow innovators to engage with requirements definers, which adds time to procurement, doesn't accelerate it, how do you ever get that match between innovating and meeting the requirements and winning the actual project?

Speaker 4

I think, going back to what I was just saying, and I'm not the procurement expert, and lots of those here, both from the earned experience and the offices they hold, But I believe it starts with a statement of capability deficiency, I think is usually where that starts. But what if it wasn't that? And I'll use an example to tell a story, because I hang out with Spence too much. We work with a chemical company. This isn't a project we worked on them with, but they came to CanSec with a 65-year-old Alberta company, oil and gas, pulp

and paper, all of these other spaces. They saw a bunch of guys cleaning a tank turret. They said, what are you cleaning with? They saw the stuff we picked up at Canadian Tire. I don't think that's good. How long does that take? Five days and three guys. What a ***** job. You wonder why people don't want to stay in uniform, taking that much time out of your regular operations to maintain something. They went and innovated the chemistry that they took from pulp and paper. One guy, two hours. That wasn't done at a federal scale. That wasn't done at a big procurement. There wasn't a statement of capability deficiency for that. It was the ability of industry to identify a problem and then apply a solution from the adjacent sector. And I think this happens at the base level. I think this even happens at the unit level. So if Service Battalion Edmonton says, hey, this really sucks. Does anyone locally have the ability to help? I'm going to say the answer is probably yes. If we give the opportunities to identify the problems that we haven't identified as problems and then take it down to that lower unit level, if not the base level where we can have that opportunity for failure be mitigated because of the level that it's at. It's not a fighter jet. It's something that service battalion's using.

Speaker 2

Oh, actually, sorry. Yeah, sorry.

Speaker 5

Yeah, just to pick up on that. I think that was a spectacular statement of exactly the kind of problem-based, outcome-based approach that I think works a lot better. For these kinds of procurements and how to procure innovation generally is like you start from what's the need here, what's the problem we're trying to solve versus like, here's my 36 pages of exactly where all the rivets are going to go. I know we don't use rivets anymore. So please deliver all these rivets. That doesn't work. And I think the point around tolerance for failure, and I'll pick up a little bit on the point made or the question earlier about the regional element of this, I think if you, once again, the history of industrial policy in Canada is mostly tragedy. I think where typically things have gone off the rails is a lack of patience for and understanding of the reality that things don't always work on the first go. And we are going to have to accept that some things are going to fail. And we're also going to have to accept that some things are going to be or feel unfair. And that's a very hard thing to say in a big federation. But I think if you look at once again, the impulse to make sure everyone gets their piece of the pie, and I'll point to the global innovation clusters, formerly the super clusters, as a good example of this. That was an interesting policy idea that recognized a real truth about innovation policy, which is that a lot of innovation happens in concentrated areas. So what if we took five of those and split this relatively modest sum of money five different ways, and let everyone go forth. And the results have been

underwhelming, right? And they've actually changed their approach entirely and they're no longer really focused on geographically constrained clusters and now just little granting councils that are focused on specific economic sectors. So that to me doesn't feel like success, right? And I think if we insist on this, like there's the observation or aphorism, I'm not sure if it's literally true that in an American fighter jet, there is something made in every congressional district in the country. And I think that's okay for America because they have an unlimited appetite for spending on things and they have the exorbitant privilege of having the global reserve currency, all these things. I don't think Canadians are willing to do that, right? I think Canadians want to see things that are cost effective and that work. And I think if we want to build an export industry, we're not going to just be able to clobber large American or large Korean or large European pools of capital over the head with redundancy. It's just going to have to be, we have to have the best product at best price. And I think if we're taking a kind of regional fairness approach, and once again, I think this is important for the government of Canada to be aware of, but trying to do everything with every policy instrument is a recipe for they don't do any of them. So that's what I'm concerned about there.

Speaker 2

I think we have time for maybe one last quick question, sir. So the floor is yours.

Speaker 10

Just a follow-up to what Kate said about Suffield and Shannon, what you said about climate testing and certification of drones. Ukrainian forces do not actually deploy all of the technology they're being given by the West because deployment also puts the service officers at risk. So they want to know that when they're given something, it will actually work on the battlefield. So the question is, who is leading here or who are you looking to to ensure that when manufacturers come to Suffield or to the NRC, that you're actually testing them or testing the technology with the real challenges of the battlefield. And I'll just give you 4 examples. Shannon, you talked about climate. The biggest challenge now for operating UGVs and UESs is electronic warfare that keeps progressing at a galloping pace with every week, every month it changes. Second challenge. The second challenge is the actual terrain. The terrain with craters, with overgrown brush, with forests that have been destroyed by artillery fire poses a big challenge in terms of a UGV moving anywhere, let alone to the target where it needs to move. Third challenge. Designing the actual replacement parts for any UGV or UAS that breaks down, they have to be repaired by people who are not technicians, the service officers on the front line. So who will test for whether those design, the design of the repair can be handled? Fourth challenge, language. language of training, and language of how to operate these devices. These are

four challenges. Who's taking the lead here to make sure that those four challenges are actually being addressed in the certification and testing process?

Speaker 2

I think we have time for a quick response if anybody wants to take that.

Speaker 3

You can take a quick crack. So first I'll say that actually in the last two iterations of the UAV and counter UAV sandbox in Staffield, we did invite our Ukrainian partners to be there to provide exactly the type of feedback that you mentioned. And we'll continue to do so because we see great value from that. And in terms of who is doing which of those tasks exactly. It's not all in the R&D space. Obviously we have to work with the operational commands and so it's a shared responsibility. So there is no quick and easy answer to that particular question. But absolutely learning from our Ukrainian friends is top of mind and we try to do it as best we can.

Speaker 2

Perfect. So on that note, we will, if you please join me in thanking our panel and That's it for us.

Speaker 1

We're just going to need a couple of minutes to let Secretary of State Fuhrer get here and get hooked up, and then we'll get back going with the last discussion of the day. So give us about 5 or 10.