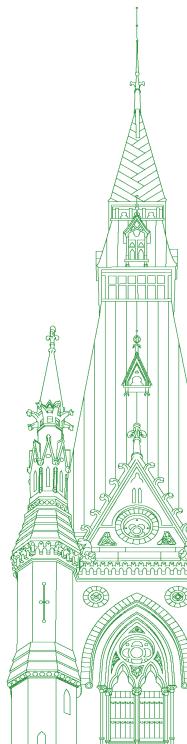44th PARLIAMENT, 1st SESSION

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Chair: The Honourable John McKay

Standing Committee on National Defence

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● (1550)

[*English*]

The Chair (Hon. John McKay (Scarborough—Guildwood, Lib.)): Colleagues, I see that we have quorum. We are already running a bit behind time, and I don't want to further abuse the good graces of our witnesses, so I will call this meeting to order.

I have a minor housekeeping item first, which is that I need Mr. Bezan to move a motion that the study budget on the brief on the Middle East be adopted. The budget is $1,000. It was distributed to members on October 21.

Thank you, Mr. Bezan, for moving that, and thank you, Mr. Collins, for seconding it. Is there any discussion?

(Motion agreed to)

The Chair: Thank you very much. Don't you love democracy in action?

I want to welcome to the committee, from the Calian Group, Mr. Kevin Ford, chief executive officer; and from Mission Control Space Services, Mr. Ewan Reid, chief executive officer.

I'm sure our very esteemed new clerk, Mr. Bourgault, has briefed you on the procedures. Each of you has five minutes.

Let's start with Mr. Ford, and then we'll go to Mr. Reid. We look forward to what you have to say.

Mr. Kevin Ford (Chief Executive Officer, Calian Group Ltd.): Thank you. Good afternoon.

[*Translation*]

Ladies and gentlemen, I am very pleased to be here today to provide my comments.

[*English*]

Thank you for holding hearings on this important topic, and I look forward to today's discussion.

● (1555)

As mentioned, I'm Kevin Ford, CEO of Calian Group. I'm also the vice-chair of Space Canada. Calian, if you don't know, is a Canadian company that designs, builds, tests and installs ground stations; builds custom components for space; provides custom software integration; and delivers 24-7 satellite flight operations. We deliver ground stations for a wide range of satellite applications, including earth observation, synthetic aperture radar and satellite communications. We have manufacturing facilities in Saskatoon and Regina, Saskatchewan; Ottawa, Ontario, and Vaudreuil-Dorion, Quebec.

Calian delivered 35-metre deep space antennas for the European Space Agency as part of the Rosetta mission to fly a probe to a comet hundreds of millions of kilometres from earth and then land on it. For NASA, we've delivered 12-metre antennas for the very long baseline interferometry program to determine earth's place in the galaxy relative to space bodies. For the Canadian Space Agency, we've delivered satellite flight operations to make sure that Canada's satellites are on time and on target for the mission they are delivering. Finally, we've delivered landing stations for Natural Resources Canada.

For cybersecurity, Calian delivers network security, network operations centres and security operations centres and emissions security solutions to protect facilities, networks and infrastructure from unauthorized intrusion. We also deliver realistic and immersive individual and collective training to prepare the men and women of the Canadian Armed Forces for the challenges they face on operations.

Canada was the third spacefaring nation in 1962 and has been a global leader in developing on-earth and in-space technologies. However, Canada is in danger of falling behind partners, allies and adversaries in space. The central challenge facing Canada now is the need to better integrate its commercial space sector into a national vision of what Canada will do in space. The commercial sector represents roughly 85% of the space market today. The commercial sector is primarily driving the newest innovations and latest capabilities. The capabilities that are owned and operated by governments for civil and defence purposes are overwhelmingly developed and delivered by commercial companies. Canada's allies have recognized the need to better integrate their commercial sectors into a national vision. Moreover, they have organized to deliver the most value for their industries and their national interests.

Australia has integrated commercial components into its civilian and defence strategies. The United Kingdom has a national strategy that includes civil, defence and commercial components. The United States has taken a similar approach through a national strategy. The U.S. Space Force has prioritized outreach and collaboration with the commercial sector and established offices for that specific purpose.

In budget 2024, Canada announced the formation of a national space council to better integrate civil, defence and commercial sectors. This is a very positive step. A national space council should move forward with a similar approach to that of our allies, and provide a vision, with priorities, for connecting the commercial sector to national strategic objectives. Canada risks falling behind nations that are taking a deliberate approach to implementing a national vision.

Defence procurement in Canada takes too long and is, frankly, no longer fit for purpose in a digital era. The duration of the process often means that a capability defined in an RFP is no longer the most current by the time it is procured. In space, development cycles are faster than procurement. Without fundamentally changing defence procurement for space programs, Canada risks procuring yesterday's capability tomorrow. Improving dialogue between defence and the commercial sector would be a positive step in accelerating procurement.

The RFP process of procurement, by definition, assumes an outcome, the one defined in the RFP. A better approach for Canada would be to define the problem that Canada is trying to solve and engage with the commercial space sector to discuss how the problem could be solved with existing technologies, or technologies that will be available soon. This approach would dramatically shorten the lag between definition and an in-service solution. The growth of dual-use technologies in space, where there are civil and defence applications for the same technology, means that new technologies are constantly being made available. To maintain a technological edge over adversaries, Canada needs to move faster from concept to in-service capability.

The new defence policy, "Our North, Strong and Free", outlines Canada's priorities for NORAD modernization. Canada's relationship with the United States is its most important relationship, spanning culture, economy and national defence. The NORAD modernization programs are the right ones. Things like cloud-based C2, Arctic satellite communications, over-the-horizon radar, surveillance of space, surveillance from space, and cyber and quantum are essential, but they're simply not moving fast enough. We know that some of these programs are not scheduled to be operational until the mid 2030s. This is simply too long to modernize capabilities that are vital to Canada's contribution to Canada-U.S. relationships.

In conclusion, Canada's space industrial base is the driver of innovation for space in Canada. Government has a vital role to play in managing the civil and defence enterprises, and it should better integrate the commercial sector into a national vision. This means more clearly stating what Canada wants to do, making the commercial sector part of that, and connecting the commercial sector to the defence sector in a more deliberate way.

That concludes my remarks, Mr. Chair.

The Chair: Thank you, Mr. Ford.

Mr. Reid, you have five minutes.

Mr. Ewan Reid (Chief Executive Officer, Mission Control Space Services Inc.): Thank you for the opportunity to appear before this committee. I am Ewan Reid, founder and CEO of Mission Control and a member of the board of directors of Space Canada.

Mission Control is 100% Canadian owned. It is a 10-year-old start-up, headquartered here in Ottawa, that develops advanced technology for space missions. In particular, our solutions are used for operating robotics and advanced payloads in space and AI in space. Our technology will be used to operate three lunar rover missions upcoming in the next 12 months alone, with customers across three continents. To our knowledge, we are the only Canadian-owned company to contribute hardware for a lunar rover mission. We were also the first organization in the world to send deep learning AI to the moon.

Beyond rovers and exploration, our AI technology is also applicable for earth observation and space domain awareness applications. Last year, we uploaded a deep-learning AI algorithm to a European space agency earth observation satellite. Most recently, we've just announced Canada's next giant leap for AI in space, a mission we've dubbed "Persistence". Enabled by a financial contribution from the Canadian Space Agency, the Persistence mission will demonstrate the power of robust and resilient AI for in-orbit processing to preserve bandwidth, enable rapid decision-making and improve our knowledge of earth. This is a huge paradigm shift.

AI has been used for years to process the massive amounts of data that are generated in space, but this has been done here on the ground. Operators spend millions every year to downlink all that data through a ground station, and then intelligent processing is used to produce actionable insights. With Persistence, we want to move that intelligence to the edge, deploying the AI on the spacecraft itself to downlink insights rather than raw data. Not only will this save space operators millions of dollars every year; it will save time that is so critical in defence and security applications. In fact, it even enables using spacecraft in ways that wouldn't be possible without intelligence on board, things like operating spacecraft in close proximity to other spacecraft. Many of these use cases are highly relevant to space defence and are capabilities that Canadian adversaries are working on.

Before we can usher in this new era of AI in space, we need to demonstrate that it will work. This is why the Persistence mission is so important. By conducting a year-long demonstration in orbit, we can prove that AI can be a resilient, trustworthy tool and be positioned to license our platform to capture a share of what is predicted to be a trillion-dollar industry in the coming decades. This market opportunity is key for us. However, to tackle it, we're competing with well-funded, international companies that are moving fast and, most critically, are working closely with their governments.

While we've benefited from significant R and D funding from the Canadian government and have been supported by organizations and programs like NRC IRAP, EDC, BDC and others, Canada remains a challenging environment for companies trying to compete internationally. Canadian firms like mine need more than moderate and intermittent R and D funding. We need the certainty of a long-term plan from and partnership with the government. We need to be able to move from R and D and demonstrations to selling our technology and services to government.

Around the world, leading space nations work hand in glove with their domestic industries. Whether in China or the U.S.A., foreign nations are anchor customers for their space industries, procuring services in ways that companies want to sell them, enabling the industry to be more competitive and to raise capital. Innovation in space, robotics and AI is moving rapidly. Canada and Canadian firms need a way to leverage innovation quickly so the domestic industry can provide for the needs of Canadians in a modern and evolving world, a world with increasing geopolitical tensions, climate change and this rapid technological advancement, particularly in the space domain.

The availability of private investment in Canada is far smaller than in the United States. If Canadian firms could sell more reliably, quickly and efficiently into the government, it would allow the space industrial base to raise capital, continue to advance, demonstrate and commercialize key technologies, and compete internationally. Beyond competing internationally, empowering the domestic industrial base ensures sovereignty over space capabilities. Canada must have the ability to support the full life cycle of space programs, from design and build to launch and operations. Without this, the Canadian Armed Forces and Canadian citizens will be beholden to foreign nations for critical infrastructure that underpins everything from communications and Arctic sovereignty to forest fire monitoring and fisheries.

Canadian firms have been leaders in AI, in space and in robotics, but we are at risk of falling behind without a way to sell these capabilities to the Canadian government at the speed of innovation.

Those close my remarks.

● (1600)

The Chair: Thank you, Mr. Reid.

Mr. Stewart, you have six minutes.

Mr. Don Stewart (Toronto—St. Paul's, CPC): Thank you, Mr. Chair.

Thank you to the witnesses for being here today.

You mentioned our launch capabilities. Can you just describe to me our current launch capabilities in this country?

Mr. Kevin Ford: Currently, there is no launch capability that we have as a sovereign Canada. However, there are programs for mission control launch. One in Halifax is starting a launch capability, and there's another one I'm aware of.

Right now, there's no launch capability, but two are in progress to launch in the short term.

Mr. Don Stewart: Okay.

Forgive me. I'm new to the topic. I've been talking to other people in the space industry this week about the national space council and its makeup. There was some concern about the makeup of the council and how it can get things done.

I wonder if you can shed some light on the makeup of the council and its ability to work within the mandate it has.

Mr. Kevin Ford: Do you want to start? Then I'll give my comments.

Mr. Ewan Reid: We think the announcement of the council is excellent, amazing news. From an industrial perspective, it's critical that the Canadian government take a whole-of-government approach to space. There are so many elements interlinked across government departments that we're going to get the most effective use of industry with a national council, if it's functioning properly.

On that note, we definitely think this is important enough to be chaired at the ministerial level, with at least semi-annual, if not quarterly, meetings. From our perspective, it would be great to have that centralized somewhere like the Privy Council Office, to ensure it has the mandate to oversee space from an entire-government perspective.

Mr. Don Stewart: Does it have an economic lens to look through, so private companies can earn their return on capital and continue to invest?

Mr. Ewan Reid: We were having a discussion before the meeting started about there being such a critical benefit. Look at the idea of increasing defence spending. That can be done with space assets. When they're not being used explicitly for a military or defence application, they can be used to support the common good of all Canadians—monitoring our coastlines, fisheries, forest fires and things like that.

That can be done through intelligent procurement, which provides a commercial benefit to Canadian industry and grows our industrial base. It also achieves the mandate of National Defence.

Mr. Don Stewart: I would imagine that most of the space assets and satellites that go up need to have a dual purpose, because, from a financial standpoint, the computing power capacity up there is such that it lends itself to the greater good of Canadians, not just the military.

● (1605)

Mr. Kevin Ford: I think that's the opportunity.

The power of what's being launched today definitely has the capability to do exactly what you just said—dual use. It can be economically feasible from a government perspective. Also, as my counterpart said, it can have dual-use capability in both defence and commercial applications.

Mr. Don Stewart: We talked about procurement briefly.

Does this help speed things along? Again, private enterprise has a different time horizon than governments might, and different efficiencies and procurement. If there is an overlap of efficiencies, do you find it helps get things done more quickly, or does it leave defence capabilities behind?

Mr. Ewan Reid: Well, if the Canadian government is explicit about its long-term plans, private industry can plan around those. They can build the capacity and services that are required. If they can then sell those to the government and other customers, with the government being an anchor customer, it becomes a sustainable model, rather than the government always needing to procure, buy and own its own assets, which is what drives the very long procurement cycles.

Mr. Don Stewart: Do you find that, with the procurement cycle being so lengthy here, you're more likely to sell to other countries as an anchor client? Then the IP gets lost from Canada, along with all of the associated downstream, positive effects we might have had.

Mr. Kevin Ford: From my viewpoint, a lot of the programs that were identified in NORAD modernization are all the right programs. I don't think it's a matter of not having the right programs. It's a matter, as you said, of getting those in place. There are companies investing billions in launching LEO and MEO satellites.

To your point, in order to be commercially viable, they need to find those first anchor customers. What we're hoping is that, as a Canadian industry, our first anchor customer is the Canadian government.

Mr. Don Stewart: How do you protect Canadian civilians? We were talking about AI in satellites. There are certain things we want to get out of a military application that the public may not be comfortable with. How do you go about protecting the public and communicating, "No, don't worry. The satellite is for military applications. We're not spying on you. We're not targeting you"?

How can you square that away?

Mr. Ewan Reid: We're launching this AI mission in Q2 of next year, and the big thing to note is that there are very specific applications for this deep learning. They do one very specific thing. This is not a large language learning model like ChatGPT. It can't be repurposed to do something else. It's only going up to do the thing it's going up to do. It's going to do that thing better than another implementation of software. By demonstrating that, we can prove it.

The other thing I would say is that, with Canadian safeguards in place, we can make sure the public is protected and safe. If it's not a Canadian capability, the Canadian government and Canadian people have no control over it.

Mr. Don Stewart: The other question that I was thinking about in relation to that is, if you have a dual-purpose space asset, are you not then exposing yourself to certain risks, because, if it's a military asset, our adversaries may find it a worthy target?

Mr. Kevin Ford: This is why I think the space council is so important. If we can basically design in the requirement for both the protecting civilian and defence use cases, it can be done right from the onset. It's hard to do once these things get launched.

I think the key thing is to get that in there now, look at those dual-use opportunities, speed up these programs and then make sure that, as an industry, we hold ourselves accountable to ensure that they cannot be hacked with regard to satellite capability.

The Chair: Thank you, Mr. Ford and Mr. Stewart.

Ms. Lapointe, you have six minutes.

Ms. Viviane Lapointe (Sudbury, Lib.): Thank you.

Mr. Ford, it's my understanding that in July the Canadian Defence Review magazine named you defence executive of the year.

Congratulations on that recognition.

Mr. Kevin Ford: Thank you. I appreciate that.

Ms. Viviane Lapointe: In your interview with the Canadian Defence Review, you said, "We can't take our democracy's continued existence for granted," and you highlighted the need to "invest in our ability to support global reaction forces, whether it be with respect to climate change or hostile adversaries."

Can you expand on these global reaction forces and how space defence capabilities may or may not be affected by these issues?

Mr. Kevin Ford: That's a great question.

To me, historically, when we've talked about defence, we've talked about maritime...land, sea and air capability.

I was in Norway not long ago, at the Joint Warfare Centre, because Calian is now training NATO. I was in Latvia recently. The clear message for all of us is that we have to look at both space and cyber as the new domains in the context of air, land, sea, space and cyber.

From my viewpoint, what I was trying to refer to there was that the problem is only getting more complex in the context of the pace of innovation across all of those domains. When you look now at war or war fighting, you have to address all of those domains to actually be capable. What I was trying to address there is that it's all of them. It's not just any one specific thing. All those things need to be considered now, as you look at a space policy and a defence policy.

● (1610)

Ms. Viviane Lapointe: What emerging threats in the space domain do you believe Canada should prioritize?

How prepared are we to counter challenges such as anti-satellite weapons or space debris, which could impact both military and civilian operations?

Mr. Kevin Ford: I'll give my perspective, and then you may want to jump in.

I think this is where we have to be talking to our allies with regard to how we collectively—whether it's NATO or NORAD—build those capabilities in. I don't think it's a Canada-only solution. I think national defence is well positioned to work with its allies in the context of how we now plan the next generation of defence with regard to satellite and operations.

I think those discussions are happening. Again, my worry is just about the pace at which these are happening. I think that working with our allies on a joint approach is going to be critical to addressing that question.

Mr. Ewan Reid: I would just add that the technological capabilities that enable a lot of things related to this.... If you're going to go up and service a satellite, the technologies for that could also be used to dismantle the satellite, move its orbit or somehow damage it.

Those technologies are by and large very much on the cutting edge, and they're being developed by start-up companies. We'd therefore want that start-up ecosystem to be domestic, so that we can have that sovereign capability of at least certain elements.

That's not to say that we don't work with our partners, as Mr. Ford mentioned, but we do want to make sure that the technologies that are being advanced are not only being done in Silicon Valley and other places around the world, but also here in Canada.

Ms. Viviane Lapointe: In your opening statement, Mr. Reid, you indicated that the space sector is rapidly growing and that the competitive domain with technology development for space applications is advancing exponentially, including with AI.

Your company's SpacefarerAI platform is a driver of the innovative Persistence mission. One thing you talked about in the launch of that project was proving that AI can be trustworthy and can be used in all sorts of upcoming applications.

Can you expand on that notion, especially as it pertains to Canada's national security?

Mr. Ewan Reid: I mentioned earlier the specificity of the kinds of algorithms we're talking about, so this isn't the kind of technology that could be adapted to something else. There's not that kind of big downside risk that we hear about in the media, talking about AI taking over, so to speak.

Rather, it's the idea that with more and more activity going on in space, and space being inherently a difficult place to operate—there's long latency for communication signals, limited bandwidth in communication and limited processing power—the more intelligence that you can put on a spacecraft, the more things you can do.

We're talking about commercial space stations taking over from the International Space Station. How are you going to build those? They'll be built with robotics. Are they going to be automated? They probably have to be.

Again, it's a huge opportunity for Canadian firms, and we need to make sure they are staying here—that they're in Canada to take advantage of that opportunity.

Ms. Viviane Lapointe: Mr. Ford, very quickly, your company has expanded to some NATO nations in Europe, and I would expect that the most pressing regional issue in eastern Europe is Russia's war on Ukraine. Are there space technologies in use against Ukraine that we should be concerned with? Can privately owned and deployed technologies present a grave risk to global security?

Mr. Kevin Ford: We have to be cognizant that, in that dual-use mindset, there is commercial space capability that can be used in both the positive and negative senses in the context of Ukraine or any area. Space-based surveillance is clearly critical. We now hear people talking about weaponizing space, which is something we cannot take for granted. We have to look at a strategy to deal with that.

From my viewpoint, again, when I'm talking with NATO in the different countries, everyone is, frankly, trying to address what the next generation of space looks like. Canada has a unique role at that table, for sure, and offers the capability that we have, because we are uniquely positioned with our manufacturing and engineering capability here in Canada to play the lead role in this as we decide on the next generation of space.

All this is to say that it's absolutely relevant. Canada has a unique place at that table, and I think we just need to make sure that we rise to that challenge.

Thank you.

[*Translation*]

The Chair: Thank you.

Mr. Sauvé, welcome to the committee. You have the floor for six minutes.

● (1615)

Mr. Louis-Philippe Sauvé (LaSalle—Émard—Verdun, BQ): Thank you, Mr. Chair.

Good afternoon, Mr. Ford. I apologize for the somewhat amateurish nature of my questions, as this is my first participation in a parliamentary committee.

My comments will be at the intersection of economic development and national defence.

Tell me about your company first. I thought I heard you say earlier that you have a facility in Vaudreuil-Dorion. Could you tell us a bit more about the number of employees and your company's economic impact in the sector?

[*English*]

Mr. Kevin Ford: The question was with regard to our presence in Quebec and Vaudreuil specifically, if I understand the question.

Right now, that unit is developing a lot of the work that we're doing with NASA with regard to deep space exploration. We've done antennas there. If you ever drive by, we have a 12-metre, full motion antenna by the highway.

Right now it employs about 40 people, and I see a great opportunity for that to expand as we look at some of the bid pipeline we have right now for new space capabilities. It's a key part of our supply chain within the context of space, and we're looking to grow that.

[*Translation*]

Mr. Louis-Philippe Sauvé: Does your company benefit from the aerospace ecosystem in Montreal? We know that Montreal is a hub for the aerospace industry, not only in Canada, but globally. Does the use of public policy to consolidate this ecosystem benefit your company?

[*English*]

Mr. Kevin Ford: I think so. Right now, if you look at our presence in Quebec specifically, we have Vaudreuil, but we also have people in Saint-Hubert as well, at the Canadian Space Agency. I would say that we have not leveraged as a company, frankly. We've been pretty independent, and we're looking at how we do that as we grow.

Right now we're getting the support that we need, but, more importantly, the key element of that, as Mr. Reid mentioned, is access to innovation dollars and continuing to grow our presence there with mandates, ideally from the Canadian government, to develop new space capability out of Quebec.

[*Translation*]

Mr. Louis-Philippe Sauvé: On May 6, Mr. Greenley of MDA Space told the committee that "Canada has fallen behind from a military space capability perspective and is not engaging its industrial base effectively".

Given that, by 2040, the space industry's contribution to the global economy could reach a trillion dollars, aren't you a little concerned about the situation outlined by Mr. Greenley? Are you seeing the same situation?

[*English*]

Mr. Kevin Ford: The opportunity in space, if I understand your question properly, is significant in the context of the space economy. It is from the context of dual-use technologies from a defence perspective, and organizations like MDA, Telesat and Calian are playing in that economy.

I believe that Mr. Greenley is right in the context of his comments. As Calian, what I control is what we're dealing with at Calian, and I can tell you right now that we're excited by our space opportunity. We're excited by what we're seeing globally and, really, what I'm hoping and why I wanted to be here today is to echo that we would like to see the pace of our work with government speed up so that we can make sure that we're leading the charge and not following the world on this. Again, I think we have a unique opportunity there to do exactly that.

[*Translation*]

Mr. Louis-Philippe Sauvé: Like me, you read the newspapers and you know that the Canadian economy is suffering from a productivity problem.

Do you see your industry as a new driver of economic productivity, a way to generate value-added products that will not only strengthen the economy of Canada and Quebec, particularly through our aerospace industry, but also improve the country's defence?

If so, how could the government support your industry and help it prosper? That's really what I think committee members should be interested in.

[*English*]

Mr. Kevin Ford: I want to reiterate that I absolutely believe that the space economy can be an economic driver in the context of Canada. I think it can be part, as we said earlier, of that 2% of GDP with regard to defence; I think there's a unique opportunity there. From a productivity perspective, I think we all face, as industry, the question of how to be more productive.

We compete on a global stage, and I would be remiss if I said that we have everything figured out. We need to be more productive. We also need to look at the creation of STEM jobs. We need to look at all the industries that need those technical and engineering skills. Therefore, it can be better, but I think we are very good. I don't want to in any way indicate that I don't think we're ready to take on the global competition we're up against.

Again, with regard to the space council, what an opportunity it is to look at how to engage industry across the domains of government with regard to whether space, defence and civilian-use cases prioritize those, and to make sure we're ready to step up to that challenge. We are ready; we just want to make sure we're aligned with you on those priorities.

If we understand the priorities and the timing, we will be ready. Then we'll work with you on other programs and innovation, the whole kit to get there. However, right now, we want to take a step back to make sure that we're ready to have that discussion with you with a clear mandate on what it is that we need by when.

● (1620)

[Translation]

Mr. Louis-Philippe Sauvé: How much time do I have left?

[English]

The Chair: You have 20 seconds.

[Translation]

Mr. Louis-Philippe Sauvé: Quickly, Mr. Ford, can you tell me how your industry benefits from our integration into the continental space, in terms of defence value chains?

[English]

Mr. Kevin Ford: I would say that I think the more that we can integrate the value chains, as you said, and the understanding of the role that space plays in those value chains.... I would say that most Canadians and a lot of industry.... We have to do a better job of saying what role space has in everything that we do every day, whether it's communications, satellite operations or coastal monitoring. That's where, with regard to a space council, we want to be part of that discussion to make sure that everyone understands the role that space plays in the Canadian economy, as well as why it's so important to not take it for granted and to continue to invest in it, not just for today but for our future.

The Chair: We're going to have to leave it there.

Madam Mathyssen, you have six minutes.

Ms. Lindsay Mathyssen (London—Fanshawe, NDP): Thank you, Mr. Chair.

Thank you to the witnesses today for their appearance.

I want to build upon what was already asked, but I want to put a bit of a different perspective on it. Mr. Stewart has been asking about some of those dual uses and the security issues around there. We know that the government moves fairly slowly, unfortunately, in comparison to something as quick-moving as AI and that technology.

We've heard repeatedly about the waning international co-operation in terms of the space domain. The United Nations was working on agreements around the protocols on the UN committee on the peaceful uses of outer space. That's had trouble. We've talked about the speed of artificial intelligence and the potential security issues.

I want to ask this: How is that all coming together? Do you believe we're making enough space—no pun intended—or making enough room for those internationally recognized guardrails?

In addition, Mr. Reid, you spoke specifically about the limited technologies or the limited capacity of what your technology does. Are there government regulations placed upon the use of AI? What do you face in terms of that? Do we need to do better?

That is a very big question. There is a lot there—I apologize.

Mr. Ewan Reid: I think the topic of regulation is an important one. I think it's not often that you would have witnesses in industry saying that they want government regulation, but I think it is important that industry knows how to operate in what is largely a new ecosystem, a new industry. We need to know about liabilities. We need to know all sorts of different things.

An example would be.... We talked about the conflict, Russia's war in Ukraine. If there is a dual-use technology being used there, that may impact its ability.... It may be a target. It may not be used. How does that affect the civilian piece? We need to understand what the laws are around that, the rules around that.

Similarly, with regard to AI, I would make the case that we need to be involved in AI in space in order to make sure that international norms are set with Canadian values and that we can contribute to Five Eyes nations and our other partners around the world by having a seat at the table. We can do that only by investing and by being part of the development.

Ms. Lindsay Mathyssen: Wouldn't one argue that the government has to put in regulations first, before all of that technology drives it and it's out of control?

Mr. Ewan Reid: Yes, I think in certain cases, absolutely.

There was a question earlier, from one of your committee colleagues, about launching in Canada. We are the only Five Eyes nation that doesn't have domestic launch capability, and now we're working on that, and so that's great, and we're going to get there.

I think, similarly, with AI, we need to understand what regulation is missing, what regulation needs to be put in place, but I don't think that means, "Okay, don't do anything. Let's go off and do a study, and we'll tell you in five years." I think it needs to be looked at at the speed of innovation, as I said earlier.

Ms. Lindsay Mathyssen: Are all of those guardrails being presented internationally in all of the other countries where we are clearly behind? Are there good examples of where they've gone and where we need to go?

● (1625)

Mr. Ewan Reid: I would have to get back to you.

Mr. Kevin Ford: It's a great question. It's always a challenge with innovation, because we'll talk about AI, and two years from now we'll probably be talking about something else—quantum.

Again, with the space council, I think there's a great opportunity for us to have a dialogue with government in the context of exactly what you just said, laying out that framework of how we move forward without pausing. The innovation element of it is a critical enabler, but to your point, we also have to go in eyes wide open with regard to policy.

As industry, and I know as the space council, we're also ready to sit down and talk to government about how we actually do this. The challenge is, as you said, the world is moving forward with this, and we just need to find out our role, to your point.

Ms. Lindsay Mathyssen: One of the dangers that I see in terms of the commercialization of space is simply that there aren't as many dialogues as need to happen in a larger, humanity-first capacity. We have certainly seen the dangers in terms of the United States, SpaceX, that monopolization. How do we ensure that we're not putting that profitability first, beyond what humanity needs, in terms of those peace-building agreements that need to occur within the context of space?

Mr. Ewan Reid: A diverse and broad space industrial base is critical, absolutely. I think if Canada were to find itself in a situation where one or two firms held an almost monopolistic situation, that would be bad for innovation; it would be bad for taxpayer dollars, and it would hamper our ability to set the right guardrails and regulations in place.

Ms. Lindsay Mathyssen: Mr. Ford, I'm a bit concerned in terms of what we've seen regarding Calian. The Canadian Armed Forces have just signed a contract valued at about $1 billion for health care. Calian takes about a 25% cut for every physician and health care provider salaried on that contract. What's occurring in terms of the profits that Calian now experiences with its contracts regarding space?

Mr. Kevin Ford: I would say that, number one, I'm not sure where those numbers come from in the context of a 25% cut. If you look at our actual consolidated results, that includes not just that health contract but all of our innovation and technology and products that we sell globally, not just to the Canadian government. I don't necessarily support that comment.

In the same spirit, the health contract—again, I was just in Kingston today, before I got here—is a critical component to help backstop some of the capacity challenges the military is having right now, and that's the role we've been playing, whether it's in health care or training, primarily.

With regard to the second part of your question, could you state it again, please?

The Chair: She's not going to get a chance to repeat the question, because she's way past her six minutes.

We're now going to go to the second round. I'm sure she'll come back to you on the second round of her questions.

Ms. Gallant, you have five minutes.

Mrs. Cheryl Gallant (Renfrew—Nipissing—Pembroke, CPC): How vulnerable are our satellites if they were to be hijacked or disabled by our adversaries via a cyber-attack?

Mr. Ewan Reid: If they were attacked or disabled, they wouldn't serve the purpose that they were sent out there to do. What's vulnerable is the services that Canadians and the Canadian Armed Forces expect from them, take for granted from them.

Mrs. Cheryl Gallant: The geopositioning...? What sorts of things...?

Mr. Ewan Reid: GPS enables every bank transaction, absolutely. Those are not Canadian satellites. We leverage satellites that were paid for and built by the American military to provide GPS for free to us, that we then leverage, but all of the satellites that Canada has built, the RADARSAT constellation mission and other radar satellites, provide critical information for us in terms of monitoring our earth and climate change and forest fires and all sorts of different applications. When those go away, it's very difficult for us to see what's going on.

Mrs. Cheryl Gallant: Okay, so that's what happens if we're attacked. How vulnerable are Canadian satellites?

Mr. Kevin Ford: I think, from a vulnerability perspective, I would say, like all industries—for satellite, our communications infrastructure, power, any of the critical infrastructure—we have to look at it with the same light. We have to be doing assessments against the vulnerability and the capability for vulnerabilities, and look at how we best position ourselves to protect ourselves against those vulnerabilities.

I see this as no different from how we look at our 5G networks, our banking systems and our energy systems. I think, right now, the challenge, obviously, to space is that they're in space, so these things have to be designed and built in as we launch these new capabilities.

Mrs. Cheryl Gallant: How do we deal with these vulnerabilities? How would we defend our satellites from adversarial spacefaring nations or non-state actors if they were to mount a cyber-attack to deny the use of our satellite infrastructure?

Mr. Kevin Ford: That's in working with organizations like National Defence and cyber with regard to building in capability as we design these satellites. It's something we have to do proactively.

As you know, the cyber landscape continues to get more complicated as we start thinking about AI and cyber and quantum and cyber. Let's agree that this is a challenge we need to be working on proactively with industry, the government and National Defence at the table—and our allies, frankly.

● (1630)

Mrs. Cheryl Gallant: How confident are you in our armed forces' cyber-defence infrastructure if an aggressive state or non-state actor were to target our satellites and the infrastructure that supports them?

Mr. Kevin Ford: I would prefer to let National Defence answer that question, to be honest. I think it's in a better position, because I don't understand all the elements of what DND is doing today to protect those satellites. I think DND is probably....

Do you have a position on that?

Mr. Ewan Reid: No. I don't have a position. I would add that part of the reason Mr. Ford and I wouldn't be in a position to answer that question is that we don't have the top secret level clearance we would need to understand what all of the threats are, which is part of the challenge with innovation, because our companies could potentially be providing solutions to help mitigate against those threats.

We don't always know those threats, because they're classified. We can't get that classification level until we're under contract with the Canadian government to provide something, but we can't get under contract to provide something to the Canadian government until we know what we're going to develop to fix the threats. There's a bit of a chicken-and-egg scenario.

I don't think either of us could answer about the threat level.

Mrs. Cheryl Gallant: Okay, so you don't even know if you're confident in our defence infrastructure.

Are there any capabilities, aside from the threat of cyber-attacks and anti-satellite weapons, at their disposal to deny or disrupt the usage of our satellites? Are there any other things that I haven't mentioned?

Mr. Kevin Ford: Right now, the ones you've talked about, both on cyber.... Any kind of taking over a satellite or taking out a satellite, which is also a challenge...we have to recognize that those are challenges and threats. Building resilience into our networks, like we do on the ground and we do in space, is going to be critical to help counter that threat.

Again, it means working with the government, National Defence and our allies on how to best do that. There's no easy answer to that question, for sure, but I'm confident that with planning, we can get there.

Mrs. Cheryl Gallant: Has the CSE ever established regular communications with your company or organization, warning you of any significant cyber-threats or vulnerabilities?

Mr. Kevin Ford: Did you say the CSE?

Mrs. Cheryl Gallant: Yes.

Mr. Kevin Ford: I'm not aware of us having direct communication with the CSE on that today.

Mrs. Cheryl Gallant: Do you have any regular communications with any of the cybersecurity organizations within government, such as CSIS, for example?

Mr. Kevin Ford: As Calian, we provide cyber services, so in that context, yes, we have discussions with the government on cyber. In the context of the use cases or anything that we're committed or under contract to do, there are discussions around the cyber requirement for those.

There's ongoing dialogue, but it's generally specific to a topic or a contract that we have today.

Mrs. Cheryl Gallant: Thank you.

The Chair: Mr. Collins, you have five minutes.

Mr. Chad Collins (Hamilton East—Stoney Creek, Lib.): Thanks, Mr. Chair.

Welcome to our witnesses.

Mr. Ford, I'll start with you. At the beginning of this study, I asked witnesses about the politics of space in terms of the relationship between some of our commercial sector suppliers and those we rely on. You've emphasized that our allies have integrated their commercial sector into their defence strategy. I think you've both touched on the whole issue of the increasing reliance on the private sector. There are tremendous benefits that come from that in terms of cost savings. It drives innovation. I think it's important that we have those partnerships with the private sector.

If I look, though, at the issue of Mr. Musk and the politics of some of the positions he has, whether they're related to Taiwan or to Russia...some in the media, some in government positions, some in the U.S.... A NASA administrator just called for an investigation into the claims that Mr. Musk has been in regular contact with Mr. Putin since 2022. It's a sticky situation. There's the increasing reliance of the government on the private sector, and when the private sector has these political positions that may not jive with the government, there's an issue. There are security issues there.

Can I get your response on how governments, whether they're Canada's or allies' governments, deal with an increasing reliance on the private sector, when the private sector entity may have different positions from ours from a security perspective or otherwise?

Mr. Kevin Ford: That's a great question.

In my viewpoint, number one, I think it speaks to the requirement to make sure we have a sovereign capability with regard to Canada. Number two is that I think the parameters of that relationship have to be very well documented up front and understood going into this, so we don't get into a situation in which we're talking about a use case where something has happened and we say we don't understand why this is happening. That relationship with industry being well documented up front with regard to how we're going to work together, not just today but for many years, is critical at the outset of the meeting, not 10 years into the relationship.

With that, regular governance around the relationship with regard to how things are being run is critical. There is a check-in with regard to what is being done and if you are aligned with regard to the service you're getting per the instructions for the agreement on the contract.

● (1635)

Mr. Chad Collins: Mr. Reid, the same question goes to you.

I also forgot to mention that Mr. Bezos has been called out this past weekend for not providing an editorial opinion as it relates to endorsing a candidate in the U.S. election. Some are claiming that it's tied to his space activity with Blue Origin and former president Trump.

Can you comment on those sticky situations that exist as it relates to the politics of space?

Mr. Ewan Reid: I'm also not going to state a position about my political leanings in this room.

As Mr. Ford said, I think that potentially there are ways where we can build in elements of a contract and requirements around control flow within an organization. Mr. Musk seems to maintain a lot of control over, say, Starlink—he's going to turn it off, turn it on.

I think there are ways that if a Canadian company was providing a communications service or a robotic service or something else in space, and the government was procuring that as one of the customers, again, ideally as a service, I think there are ways the contract can say that we have the ability to make these decisions—not you as an executive, not you as a board or an individual person. Again, there are also differences between Canadian publicly traded companies like Calian and Mr. Ford, and SpaceX, where this is completely privately owned, we don't know who the investors are, and we don't know what that control looks like.

I would certainly echo Mr. Ford's comment that it's a further argument to have domestic space capabilities. Otherwise, then, we are also beholden to Mr. Musk if we want to launch Canadian satellites. We currently are, as he essentially has a monopoly, so let's find a Canadian rocket company that's going to launch from Canadian soil with Canadian defence satellites and at least set ourselves apart from that question.

Mr. Chad Collins: That's a great suggestion.

Mr. Ford, very quickly—I think I have less than a minute— you've talked about procurement a number of times, and we just went through a very exhausting procurement study. You've talked about some of the things our allies are doing to improve that situation.

Is there anything to learn from them as it relates to procurement related to space?

Mr. Kevin Ford: That's a great question.

For me, I think the key thing as a customer is if we can continue to work with the government on the requirement and what it is you're trying to accomplish, then let us come and tell you the best way to do that based on current innovation and looking ahead. I think, for me, it's having that opportunity to become a customer and having the requirements, and not feeling the pressure, frankly, to define the solution. I think industry is more than capable of defining the solution. What we need to do is work with you on what the challenge is that we're trying to resolve, then come back to you with ideas on how to do that. Fundamentally, without putting the pressure on government to feel like you have to tell us how you're going to build or design the house, we can work with you once you actually have a clear statement of requirement, to speed up that process.

The Chair: Thank you.

[*Translation*]

Mr. Sauvé, you have the floor for two and a half minutes.

Mr. Louis-Philippe Sauvé: Thank you, Mr. Chair.

Gentlemen, it's too bad we only have a few minutes to talk again, as I had a lot of ideas while I was listening to you.

Earlier, I mentioned that the city of Montreal was a hub for the aerospace industry. I also remembered that Montreal was an artificial intelligence hub. So I would like to use the two minutes we have left together to reflect with you out loud, for the benefit of the government, on the development of an aerospace development strategy.

How could the government develop an industrial strategy that benefits not only from the presence of the aerospace industry and artificial intelligence in Montreal, but also from that city's French character? This element could enable us to have closer relations with our European partners and their businesses.

I'd like to hear from both of you.

[*English*]

Mr. Kevin Ford: From my viewpoint, this is the opportunity and why I'm excited to be here today. We have a moment right now. The government's talked about its commitment to AI, space, the national space council, aerospace and defence spending.

I think there's a unique opportunity right now to work with industry in a consolidated fashion to look at how we best leverage this amazing country we live in and the skill set that exists across this country. I have people in Saskatoon, Ontario and Quebec. I am ready to basically invest in making sure that they're ready to go to help meet these challenges.

From my viewpoint, your question's a good one, and I'm excited to be here. I think we have a unique opportunity, because all of these things are coming at us at the same time. We're excited about the space council if it can work on addressing this issue. How do we look at all of those things you mentioned, like AI, space and defence, and take a concrete step ahead in a consolidated fashion so that, as industry, we're not trying to ascertain what the priority of the day is?

● (1640)

The Chair: Thank you.

You have two and a half minutes, Madam Mathyssen.

Ms. Lindsay Mathyssen: I have to pick up where I left off in terms of an explanation and whether or not you agree with the percentages and, if you want to put forward those numbers to the committee, that would be great in terms of those profit margins. I am concerned about how that relates to the space-related contracts that you now hold, and that was my secondary question.

However, to maybe work it into the two and a half minutes that I have, we were talking about the monopolization of space and the separation from where government needs to go. We heard in our outsourcing study here in this committee that there were a lot of programs that were designed specifically by Calian for the furtherance of outsourced programs, and it was a design of their own. In terms of that monopolization of one company, how does the Canadian government further protect against that monopolization, specifically as it exists where we're constantly outsourcing to specific companies that are then writing their own contracts to further their own profit margins?

Mr. Kevin Ford: I would say that we do not write our own contracts to further our profit margins. We run many contracts, and we do that in the spirit of the contract that we're given.

The procurement process is quite clear with regard to companies not participating in requirements that they're going to compete on later on, and we've backed out of many RFPs where we did not bid because the team was involved with requirements.

The way this works right now from our viewpoint is that the system works in that contract. It does not allow the monopolization and, in the same spirit, it puts specific barriers in place so that, if you are working on the requirements, you are not allowed to bid on the follow-on piece. From my viewpoint, we have not had that issue.

Ms. Lindsay Mathyssen: I may be ruled out of order. We'll see.

I would argue that the Liberal government announced a $144-million contract to expand health services to be responsive to women and gender-diverse military personnel, then one week after that budget, your company posted a call for applications for OB/GYNs on the new women's initiative. Then you posted an application under job responsibilities: listing, review, update and rewrite the Canadian Forces' women's health program.

Just in response to the question to which I asked for your response, that's where that comes from.

I did want to ask another question—

The Chair: Thank you for your question. That's it for your two and a half minutes.

You have five minutes, Mr. Bezan.

Mr. James Bezan (Selkirk—Interlake—Eastman, CPC): Thank you, Mr. Chair.

I welcome both our witnesses. Thanks for being here.

Mr. Ford, you come with a unique perspective. You have 14 years now at Calian and 14 years in the Department of National Defence and materiel. With that perspective, when you're talking about the RFPs getting outdated too fast, how do we fix this? How do we make this work, to do things like NORAD modernization and put the Canadian mark in space from a national defence perspective?

Mr. Kevin Ford: To be honest with you, private industry has a lot of the same issues. I don't think there's a need for government. There's always so much to get done, and there are only so many resources and so much time to do it. From my viewpoint, number one, just prioritize the things that need to happen in some logical order here.

Right now, I think we have to recognize that, with capacity challenges, there's only so much you can do in parallel, so what are the things we need to move forward to the front of the line? Get focused on those, get those done, and then move to the next wave and then to the next wave.

As industry, I think we are ready to go with regard to having those discussions. We are cognizant that the Department of National Defence is under incredible pressure with regard to the reality of the pace of operations, whether it's climate change or Ukraine. I think, from my viewpoint, if we can look at what's on the table, prioritize that first wave, get the right resources in behind it and procurement and commitment to make dates with regard to what needs to get done by when, that's a starting point. Right now, there's just—

● (1645)

Mr. James Bezan: If you look at GPU and where all the investments are and all the different projects and explorations that are taking place on different procurements, NORAD modernization, I think, would rise to the top of that, as would making sure those over-the-horizon radar systems are put in place, as well as the High Arctic over-the-horizon radar's position.

You're saying that by the time we release the RFPs, they're already out of date, so do we employ AI to do procurement and write these RFPs? What needs to change?

Mr. Kevin Ford: From my viewpoint, if we look at the NORAD modernization programs, again, with our allies in the U.S. specifically, sitting down and looking at what initial capabilities we need to get up sooner, and the prioritization of those, would be a start.

The procurement process itself is how we actually get that in place as soon as possible. That, I know, is not always easy, because of the procurement rules, but I—

Mr. James Bezan: From a Canadian perspective on your Canadian industry, I know that maybe you're not based in the radar system itself that might be used in over-the-horizon radar, but what about commonalities? The U.S. is moving ahead. Canada seems to be lagging behind. What about off-the-shelf solutions? This is very developmental in a lot of cases, but what about making use of the same types of programs and infrastructure the U.S. is using?

Mr. Kevin Ford: To your point, there are satellite networks being launched today that are opportunities. The government's made an investment in Lightspeed with Telesat. I think we could look at those opportunities with things that are already committed and how to, again, from a dual-use perspective, actually use those with regard to that versus creating something net new, and look at our allies with regard to what's in place.

If the urgency is now, which I think it is, it's a matter of what we can use that is either up in space or about to be ready in space to handle some urgent operational requirements, and then, in the longer term, build in the other capabilities for additional launch capability and other new satellites that are going to be required in the longer term.

Mr. James Bezan: If we're looking at longer term, especially from the standpoint of what's important in Arctic sovereignty and protecting the threats that are coming at us over the top of the globe, what role can Canadian industry play in making sure that we have the right assets and infrastructure in space?

Is it more low-earth orbit satellites? Is it more ground-based north warning systems? Is that going to be archaic within the next year or two, never mind today? What about the complete amalgamation of various platforms, whether they're unmanned or not?

Mr. Kevin Ford: From an opportunity perspective, this is the opportunity, because we have opportunity to create all of it. We have companies like Calian that can do a lot of the ground infrastructure, and companies like MDA and Telesat that can build the pieces. You've got companies like Mr. Reid's company that can actually bring an AI component to it. That's the opportunity. All of it's relevant in the Canadian industry construct. There's really nothing we can't take on and build with the right framework and governance around it.

Mr. Reid may want to comment on that with regard to the capability.

Mr. Ewan Reid: By having an understanding of what the Canadian government's and the Canadian Armed Forces' needs are in the longer term and having that stated, industry can position itself by going out as a start-up. We can raise capital and say, "Look, we know the government needs this, so we're going to go out and raise that capital and we're going to build that capability," and then ideally find a way to sell it to the government, so that we're not waiting for an RFP in a very long time frame but are launching a capability and saying that it's up there. One of our many customers could then be the Canadian government, procuring that particular service.

In the case of my company, maybe it's an onboard AI that's telling you right now that there's a dark ship and this is where it is, or this is where a forest fire is, or whatever the application is. Maybe we have other customers as well, and maybe other government departments.

The Chair: Unfortunately, we'll have to leave it there. I apologize again.

Madam Lambropoulos, you have five minutes.

Ms. Emmanuella Lambropoulos (Saint-Laurent, Lib.): Thank you, Chair.

Thank you, Mr. Ford and Mr. Reid, for being with us today.

I'm going to ask two questions, and each one is for each of you to answer. We can start with Mr. Ford and then move on to Mr. Reid.

In your view, how can the Government of Canada help promote Canadian companies outside of Canada? What opportunities do you think are already there that we're missing out on when it comes to being able to promote you outside?

Mr. Kevin Ford: I would love to see the opportunity to have the government promote Canadian industry. The best way to do that is to buy the solutions here in Canada and then become advocates and become the customer that says, "We're not talking about concept. Here's the reality of what they've done for the Canadian government."

From my viewpoint, it's a matter of buying local and then looking at how you then help us on the global stage with regard to becoming that customer reference that so many customers look for to say that it's not just vapourware; it's actually something that's operational today.

● (1650)

Mr. Ewan Reid: From my perspective, one of the many great things about Canada and our Canadian government is that we do have a fair system, and that's awesome. We sometimes apply that broadly, when we're thinking about the international context. In my opinion, the Canadian government can pick favourites in terms of picking Canada over foreign companies. That's how it can support Canadian industry. We see that in other nations, where a nation will work with its domestic industry and will be going out to meetings. They will be going to business development meetings and partnering with the industry to help the industry sell to other governments.

In Canada, we have a tendency to say, "Well, that's not fair. We're picking a favourite here." The thing is, if that Canadian company is the only Canadian company doing it, it's already maybe selling it to the government, as Mr. Ford said. Why not then take it a step further? Go out and meet with other countries and say, "Hey, we can provide this to you. You're a partner. You're an ally. You need this capability as well."

That would be really good. From my perspective, I feel like we're not really seeing that.

Ms. Emmanuella Lambropoulos: I have a follow-up question to that question. Have either of you been invited by NATO to one of their...? It showcases sometimes some of the technologies that are being made in different countries. Have you been invited to those, and what was your experience, if so?

Mr. Kevin Ford: From my viewpoint, we have been in contact with NATO for programs like the DIANA innovation program. Around space specifically, I'd have to check, but I don't think so, yet. Right now, it's been more around some of the AI capabilities that are required in theatre.

We have had discussions with other organizations, like the European Space Agency. It's a customer for us today, for example. We do have a presence in that region with satellite companies. Many of the companies are based in that area. We have a presence there as far as customers are concerned, but as far as NATO, specifically, I don't think we've had a detailed discussion, yet, on that topic.

Ms. Emmanuella Lambropoulos: Thank you.

I have a last question. Would you say that the biggest barrier to getting contracts with the federal government is the lack of communication between industry and the government, or would you say there are other obstacles that are bigger, and which ones are those? If they're not bigger, which other obstacles that you haven't already mentioned would you want to mention here today?

Mr. Ewan Reid: Intellectual property can be a pain point, and that can come in different ways. We have experienced situations in which we have contracts in place with the Canadian government. There are various encumbrances placed on intellectual property that make it hard for us to commercialize that further or even raise external investment, because there's this encumbrance on the intellectual property. That's another consideration.

Mr. Kevin Ford: I don't think so right now. I've been in government as well. I've been on both sides of the fence. I know how hard it is to write RFPs and get through the process.

I want to echo that the procurement process should support a timely delivery of innovation. We all have to collectively look at what role we can do better and what role can industry do better in the context of that goal. I think it's critical.

Right now, we've talked about this. I've been doing this a long time. We've been talking about this for 30-40 years. It's been around defence. What are we doing to give us timely access to innovation? That is something we all have to keep talking about with government and industry—how to find mechanisms to do exactly that.

Thank you.

Ms. Emmanuella Lambropoulos: Thank you to both of you.

The Chair: Thank you, Ms. Lambropoulos.

There's been a really good conversation, and I'm sorry to have to bring it to an end.

Before I do, the U.S. Department of Defense occasionally takes a position in a company just because it wants to see how the technology is going to develop. I'm given to understand that the Canadian Department of National Defence cannot do the same thing.

Do you think that's a problem?

Mr. Ewan Reid: It would be interesting if government could take a more flexible and active kind of investment approach in critical technologies. We've benefited from significant R and D funding through contributions, but I feel there are times where that could move more quickly. The evolving and changing needs of the Canadian Forces could potentially be met by coming to industry and saying, "We need this, and we need it right now," and working with industry in a different way from, say, traditional procurement. It could be an equity investment. It could be something else where money is flowing and the capability is being developed. Subsequently, it's provided to the Canadian government, but without that long pull of procurement.

● (1655)

Mr. Kevin Ford: For a publicly traded company, that's a challenge for us. I do believe in the spirit of that with regard to investing in innovation and investing in Canadian companies that are here. It's not that there's no investment. There is investment in Canadian companies. There is investment between different programs. It's just a matter of ensuring that we can continue to compete against other nations that are continuing not only to invest but to pick up their pace of investment in areas such as space.

I want to reiterate that we are getting support from the government. We just need to continue to find those priorities and the pace of innovation with regard to ensuring we meet the future needs of the government.

The Chair: Thank you again, both of you. It's been a really interesting conversation.

With that, we will suspend and resume with our next panel as soon as possible.

● (1655)

_____(Pause)_____

● (1700)

The Chair: Colleagues, it's five o'clock. I call the meeting back to order.

We have two witnesses with us for our second hour. From Galaxia Mission Systems, we have Mr. Gharagozli, chief executive officer. From Global Spatial Technology Solutions, Inc., all the way from Boston, we have Mr. Kolacz. Thank you both for joining us.

Each of you has five minutes for opening statements. Then, colleagues, I think we will have to shrink the time for questions a bit, because I don't think we'll get through in a timely fashion.

Maybe, since Mr. Kolacz is farthest away, we'll call on him for his opening statement.

I'll try not to interrupt you, but if you could keep it to five minutes, that would be helpful.

Thank you.

Mr. Richard Kolacz (Chief Executive Officer, Global Spatial Technology Solutions Inc.): Good afternoon, everyone. Thank you for the opportunity to present at this committee.

My name is Richard Kolacz. I am the founder and CEO of GSTS, which is a maritime artificial intelligence company that relies on data from various space assets to develop solutions that support global maritime risk and threat assessment, as well as the optimization of the global supply chain.

Our goal is to become the Nav Canada of the oceans, ensuring maritime safety, security and supply chain resilience for Canada and the world, since 90% of the world trade moves by ship.

My primary activity in space was leading a team that developed the world's first dedicated global maritime monitoring satellite network, which was designed and built in Canada in response to U.S. national security presidential directive 41. This directive, issued after 9/11, was to develop an unclassified system to monitor all the ships in the world all the time, to detect risks and threats from sea.

Upon being invited to the committee, the first question I asked myself was, what is the committee looking for?

As you know, the study mandate issues are as follows.

Number one is to identify the current state of Canadian defence capabilities and programs. As I have been out of uniform for a while, it was clear to me that these could best be detailed by members of the Canadian Forces.

Number two is to identify the international agreements and partnerships related to space defence. Again, this is a question best answered by those in government negotiating said agreements.

Number three is to identify the impact of advancements in space on Canada's sovereignty and national security. This is a question to which I felt I could contribute. Here are my views on the third point.

The assets in space are indispensable to our national security, commerce and sovereignty, and our reliance on them will continue to grow. Space assets are used from coast to coast to coast to support communications and manage resources. Satellites are used to monitor the weather and the environment and to detect threats. GPS signals are used for all financial transport and location services.

New developments in space technology, reducing costs and increasing capability mean that there will be many more commercial assets in space, providing much more capability that Canada will definitely use for commercial, civil and defence applications.

Space is critical for Canada's economy, sovereignty and security. My comments will focus on the protection of these and upcoming assets.

What form should this protection take?

Defence against physical harm or destruction of space assets is one element. If such an event were to occur, we are likely escalating to a very bad situation very quickly, and there will be many issues to address.

The other defence to consider is a defence against non-physical interference in the data from satellites or the control of the satellites themselves—cyber and data manipulation attacks. These attacks are ongoing all the time. We see the impacts across multiple sectors in Canada.

To me, the occurrence of this type of activity, which is ongoing today, is much more probable than the act of intentional physical damage. The damage from these events can be as severe as physical asset destruction and would have a major impact on our economy and sovereignty.

My inclination would be to focus on protection solutions to deal with these issues.

How should one do this?

This can be completed through improved satellite data encryption solutions, such as quantum key encryption, which is being developed in Canada today. Asset protection can also be supported through the use of AI signal and data monitoring to determine if attacks are under way, indicating that alternate systems should be used or flagging the data as compromised. At GSTS, we do this to detect vessel pattern of life anomalies, which indicate a risk or threat.

Space defence is a multi-layered, complex activity. It needs to cover a range of threats, from physical destruction to the much more subtle disinformation and deception tactics. It is not possible to cover all aspects by oneself.

Canada frequently does well by focusing on a specific capability, developing a niche expertise and offering that to our allies as part of a comprehensive, multi-layered space defence system shared amongst all. AI-based analysis of satellite-generated anomalies is a low-cost, high-value capability that Canada could offer as a meaningful contribution to a collaborative space defence network.

Thank you.

● (1705)

The Chair: Mr. Gharagozli.

Mr. Arad Gharagozli (Chief Executive Officer, GALAXIA Mission Systems): Good afternoon, Mr. Chairman and honourable members of the committee. Thank you for the opportunity to speak about the critical topic of space within Canada's defence domain.

My name is Arad Gharagozli, and I'm the founder and CEO of Galaxia Mission Systems, a Canadian manufacturer of intelligent satellites. We are headquartered in our beautiful Nova Scotia. At Galaxia, we are building advanced space-intelligence platforms designed for both defence and commercial uses. Our satellites process data directly in orbit and are blended with artificial intelligence to provide real-time insight and autonomous monitoring of the earth. Our approach is transforming space intelligence and driving innovation that benefits both national security and critical infrastructure. Space technology is critical to our national defence. Space assets enable intelligence-gathering, communication and precision navigation, which are all vital for protecting sovereignty, enhancing our war-fighting capabilities and securing Canada's critical infrastructure.

The deployment of space-based technologies is happening faster than ever, but traditional, long-cycle space missions cannot meet the fast-paced demands of modern defence needs. To remain competitive, Canada must adopt more agile and responsive space capabilities and minimize the time between identifying a gap to deploying solutions into orbit. The rise of new space businesses is key to meeting these challenges. Smaller, more agile businesses can deliver novel solutions and services faster and more cost-effectively, allowing Canada to respond rapidly to evolving defence needs.

The U.S. space priorities framework underscores the need for resilient and responsive space capabilities, which parallels Canada's growing need to enhance its space operations. The framework stresses that, as space becomes a contested domain, it's about protecting space assets, fostering innovation and strengthening national defence through public and private collaboration. Canada must do the same by developing independent launch capabilities, investing in new space companies and ensuring seamless integration between Canada's defence and private sectors. This means using domestic procurement vehicles to propel national companies, which will expand Canada's space capabilities, grow our expert portfolio and create space sector jobs here at home.

The Canadian Space Agency has been a vital leader in this area, supporting innovative solutions in the scientific and commercial space markets during early stages of research and development. Many of these applications expand into the defence market with strong dual-use capabilities. We must expand our support to the Canadian Space Agency to ensure it remains competitive in responding to our domestic space growth needs.

We must also modernize defence procurement programs to accommodate the new space economy in its supply chain, specifically in the form of prime contractors. This means increasing the frequency of projects in contract formats, ensuring the long-term evolution of the industry, job security and innovation sustainability. Establishing the national space council is a positive step, as was creating the 3 Canadian Space Division, but we have more work to do.

Current long-term, bureaucratic procurement processes create barriers for new Canadian space companies, restricting innovation and slowing progress. Streamlined procurement mechanisms will enable the private sector to engage with government projects and contribute cutting-edge technologies. A space-independent Canada with robust defence capabilities is essential for our long-term security and economic growth. By embracing new and emerging space companies, we will build a strong space sector right here in Canada, supporting both the commercial and space sectors. This can be achieved if our public procurement process is ready to adopt the new ways of innovating that our allies already have. Accelerating the growth of our new domestic space companies, adopting updated defence procurement policies and streamlining communication channels will also allow a flow of information to identify gaps and allow the private sector to respond swiftly.

Lastly, space is complex and costly. We must increase support to the Canadian Space Agency to ensure that research and development in essential space capabilities continue to grow. The day we build a space-independent Canada by maximizing the use of our domestic talents and skills to push the boundaries of what's possible in space is the day Canada will become a future-ready nation with strong defensive and commercial capabilities that will reach beyond our borders.

Thank you.

● (1710)

The Chair: Colleagues, I don't think we're going to make it through with full rounds, so we'll shrink the first round to five minutes and go from there.

Mr. Stewart, you have five minutes.

Mr. Don Stewart: Thank you, Mr. Chair.

Thank you to the witnesses here today.

Are DND and government procurements frustrating?

Don't everyone laugh at once.

Voices: Oh, oh!

Mr. Arad Gharagozli: Again, I'm speaking for a company the size of Galaxia. We were established about five years ago.

It's not so much that it's frustrating. It's just that methods of procurement are fairly outdated. Look at similar types of procurement processes down in the United States. They have a very specific process in place to deal with new space companies outside of normal procurement processes.

In that sense, I think we need to modernize those processes to make sure we can respond to projects where it's not necessarily taking two years just to go through a contracting phase. For example, an end-to-end project of three years from awarding until deployment to space could be faster.

Mr. Don Stewart: Do you think that's something that's specific to software, or space assets or...? I'm just thinking that in your industry, the replacement cycle, the evolution of the products must be so fast—we heard this on another committee earlier—that by the time you get something out the door, it may be redundant or need to be upgraded, etc.

Is that, for you, as a business...? It kind of runs down into wasted time and energy if things can be sped up from a two-year process to a year and a half, even by that much.

Mr. Arad Gharagozli: Again, for a company our size, time is of the essence. It's very difficult for a new space company to last about a year or a year and a half, to go through a contracting phase and to keep its talents and skills in place.

Mr. Don Stewart: What kind of intelligence is it that you gather with your software in nanosatellites?

Mr. Arad Gharagozli: We manufacture spacecrafts with software capabilities. Our spacecrafts are capable of autonomously scanning for any sort of anomaly.

As I mentioned, we have some applications in critical infrastructure, gas line monitoring and things like that. However, in defence, we have many maritime, land-based and air-based systems.

Mr. Don Stewart: Specifically in a military application, can you give us an example?

Mr. Arad Gharagozli: For instance, we can look over a vast area of land and look for any sort of construction that is happening over a continent.

Mr. Don Stewart: Do you contract your services out to foreign nations?

Mr. Arad Gharagozli: Not now; not yet.

Mr. Don Stewart: Okay.

What actually classifies as a nanosatellite? What size of vehicle are we talking about?

Mr. Arad Gharagozli: It's the standard of spacecrafts that are usually under 25 kilograms. It can go anywhere from one kilo to 25 kilos. It's just the size and weight of them that classifies them as nanosatellites.

Mr. Don Stewart: Do they launch on missions with other payload?

Mr. Arad Gharagozli: Usually, yes. Because of their size, they are usually launched as a secondary payload on, let's say, the Falcon 9 mission. It's called a "rideshare mission", so they go up as a rideshare mission.

Mr. Don Stewart: Is that all being launched from the United States at the moment?

Mr. Arad Gharagozli: There are several launch vehicles that do that. A lot of our launches happen through SpaceX.

Mr. Don Stewart: We talked earlier about having guardrails on our applications and about how we're thinking about military and civilian applications for space assets.

I wanted to ask you this. If our adversaries, like Russia and China, have no guardrails in the way we would have guardrails, do you think it makes sense for us to restrict our applications, to put us at a disadvantage versus our adversaries?

● (1715)

Mr. Arad Gharagozli: That's a tough question.

We see that with their launch vehicle capabilities as well, the type of fuel that is being used, the type of re-orbiting methods and protocols that are used. For example, for China, I would say that there is less oversight on that. It really hinders the progress once you have these kinds of guardrails in place. Yes, it does slow down the progress.

Mr. Don Stewart: Do they have similar assets in space to what your company is producing?

Mr. Arad Gharagozli: I'm not aware of anything specific.

Mr. Don Stewart: Is your company producing something truly unique?

Mr. Arad Gharagozli: No. I'm just not personally aware of that system existing.

Mr. Don Stewart: Okay.

Do you think that, in space, the biggest risk we have right now is space to ground, ground to space, or space to space, in terms of the risks that we have to our military or civilian spacecrafts?

Mr. Arad Gharagozli: Is that on the offensive side or in terms of the passive risk?

Mr. Don Stewart: That's on the offensive side.

Mr. Arad Gharagozli: Well, on the offensive side, I would say probably ground to space and space to space are the largest.

The Chair: Thank you, Mr. Stewart.

Mr. Powlowski, you have five minutes, please.

Mr. Marcus Powlowski (Thunder Bay—Rainy River, Lib.): I'm new to this committee, but it seems to me that when we're talking about defence, particularly with Arctic sovereignty, any way you slice it and dice it, it would seem that to protect the Arctic, given the vast size of our northern regions, any attempt to monitor our borders is going to involve a lot of use of satellites. Everything from monitoring the weather to communications seems to go through satellite.

Mr. Kolacz talked about cybersecurity in talking about what is seemingly anti-satellite weaponry, which I gather some countries are developing. Have you been contemplating what, if anything, you can do in terms of protection from anti-satellite weapons? It would seem to me that our defence is very much wrapped up in our satellite communications.

What, if anything, can we do to ensure that we're not totally dependent on satellites and to protect against the possibility that some other country, by taking out our satellites, could severely undermine all of our defences, particularly in the north?

Mr. Richard Kolacz: Would you like me to comment on that?

Mr. Marcus Powlowski: It could be either or both of you.

Go ahead, Arad, if you want to start.

Mr. Arad Gharagozli: I think the risk of space assets being attacked cannot be negated. One of the ways we can get ahead of that is with launch responsive systems. These are the types of satellites that are ready to be launched and that have an ecosystem around them. It's not just the spacecraft itself. It's the launch vehicle that is ready to be launched, and it's the launch operation and CONOPS. These are satellites that can be up in orbit for under a month or two at times, or even less than that. One way we can get ahead of that is to have these launch responsive capabilities in place, just in case something happens, and then we have the mechanisms to be able to re-enter more spacecrafts and to add more assets to that. That's one thing I would add.

I'll pass it back to Richard.

Mr. Richard Kolacz: Thank you.

Yes, that is a correct statement. However, what is the probability of somebody physically taking out a satellite? It is much less than somebody taking over a satellite electronically or disrupting the flow of information.

We currently monitor the Arctic every minute by taking a look at images and signals from a vast array of satellites. Removing all of those commercial satellites, which provide now probably over 80% of the surveillance and communications capability, is a huge challenge. Taking out certain satellites that provide strategic capability is a different thing. It is really about what the likelihood is of an event occurring and about what the impact of that event is.

Again, the activity that is going on today, which we witness across various nations, is that somebody is disrupting the flow of information. It's not a hostile act of war, but it's enough to disrupt the economy, and economic defence is national defence. It's a question of how one manages that capability.

● (1720)

Mr. Marcus Powlowski: I take it, from what you're saying, that there might be certain value in numbers, in terms of satellites. We have enough satellites up there that taking out one or two, or a handful, of satellites wouldn't make us vulnerable, and there are enough other alternatives. Is that part of what our defence is?

Mr. Richard Kolacz: It depends on what those satellites are doing. Certain satellites are very specific for detecting nuclear launches, issuing nuclear launch codes—not for us, but for our allies. Those are very specific, but if you take one of those out, we're in a totally different world. The loss of communications, navigation satellites, surveillance satellites that are up there right now.... The numbers of them provide a redundant or a certain amount of capability in itself. Having a coalition, a vast amount of capability, is a defence mechanism in itself, as opposed to having one asset.

Mr. Marcus Powlowski: Is that what modern intelligence networks try to do? Do they try to ascertain which satellites are doing what? If they want to take out a satellite, they would know that. Is that something that espionage and counter-espionage do nowadays?

Mr. Richard Kolacz: I can't comment on what they do nowadays. What I can say is that information can come from a vast number of sources. Some satellites can specifically look for very specific signals, and those would be a high-value target. That is correct.

The Chair: Thank you, Mr. Powlowski.

I think you're reading a few too many espionage novels.

Mr. Sauvé will ask his questions in French. Before I ask him to speak, can you make sure that you're able to receive the translation?

Mr. Richard Kolacz: Correct.

[*Translation*]

The Chair: Mr. Sauvé, you have the floor for five minutes.

Mr. Louis-Philippe Sauvé: Thank you, Mr. Chair.

Mr. Gharagozli, I don't think it will surprise anyone here that I am very interested in the issue of sovereignty. I'm not talking about Quebec's sovereignty, but about Canada's.

In your remarks, you mentioned the need for the country to have launch bases for satellite systems. I will leave it to my official opposition colleagues to ask questions related to national security, since my concern is more about the economy.

In Quebec, we have regions on the verge of decline that need help to ensure their economic development. Since I'm not an insider

at all, here is what I want to know. What is the cost of building a launch base? How is it funded? How many jobs does it create? Finally, what are the ideal locations to build the bases in Canada, and preferably in Quebec?

[*English*]

Mr. Arad Gharagozli: I am from Nova Scotia. Maritime Launch Services is an example, and it is working to build that sort of capability in Nova Scotia. What it boils down to is very simple: We are very lucky to have three coasts around our nation. Just imagine if we did not have that opportunity, if Canada were a landlocked nation, how much burden that would cost us in this day and age.

With the way that space is moving forward, at some point we're probably moving to a position at which rockets might even carry cargo around, let alone putting spacecraft into orbit. It is very important for us to have that capability and not rely on other nations to get us into that medium, space, that we do not have currently.

As I mentioned, a lot of our launch capabilities right now rely on either other nations launching from the U.S. or companies launching out of India or out of Europe, so we need to bring that back home. I cannot make any specific comments about other locations that exist—that's outside of my expertise when it comes to choosing launch locations—but it is very tricky to find those locations where you are able to build a spaceport.

As far as the capability goes, that's something we—

[*Translation*]

Mr. Louis-Philippe Sauvé: How many jobs does that generate? Does the operation of this type of facility create a lot of jobs? I imagine these are high value-added jobs, with above-average wages.

[*English*]

Mr. Arad Gharagozli: Operating a spaceport is a very complex task. You have people...anywhere from underground firefighters and technicians, all the way to engineers and flight operations teams. This is, again, a very complex project, but, as you can imagine, I really draw the similarities to having a naval port in your city or province: It will bring a lot of jobs, no matter where that system is. If you have travelled to, let's say, Florida, and if you've seen the spaceport, there is an entire economy built around that. That is something that is going to happen, but....

● (1725)

[*Translation*]

Mr. Louis-Philippe Sauvé: So there is a need for port facilities, but not necessarily rail facilities.

[*English*]

Mr. Richard Kolacz: Yes.

Mr. Louis-Philippe Sauvé: I'm going to jump right into the other questions.

Mr. Kolacz, you talked about the potential dangers associated with satellite facilities, such as attacks on them. Again, I'm not an insider, so I'd like to know more. I'm also not asking you to give us instructions, of course, but I'd like to know how satellite facilities are attacked and how we can protect ourselves from that.

We've all seen James Bond movies, like *GoldenEye*. Should we be concerned about nuclear explosions aimed at destroying all electromagnetic facilities?

I would like to hear your comments on that.

Mr. Richard Kolacz: Again, there are people in our defence department who can comment on that. The act of physically, intentionally destroying a satellite, I believe, constitutes an act of war, so the likelihood of that event occurring and how it can be achieved are fairly significant things. You can intentionally destroy a satellite: There are ways to do that. There are things like electromagnetic pulse that can damage satellites, and then there are the more subtle activities that can take place to disrupt your satellite, trying to alter its performance without your being aware of it. It's really a subject that is best discussed by people in the military, and even then, a lot of those capabilities—I'm no longer in uniform—cannot be discussed publicly.

The Chair: Thank you, Mr. Sauvé.

Madam Mathyssen, you have five minutes, please.

Ms. Lindsay Mathyssen: Mr. Gharagozli, there was a project that was funded by the Canadian Space Agency and developed by the Dalhousie Space Systems Lab. This was a specific project. Is there a way for the Canadian government to replicate this lab-based system? How specific was this to Dalhousie? Is this something that we can fund into greater existence, as it were, throughout our university system, so that we're investing in that education piece that we saw from Dalhousie?

Mr. Arad Gharagozli: That was purely a Canadian Space Agency project. At the time, it was called the Canadian CubeSat project, CCP, which now has rolled into Cubics, I believe. It's a CSA-funded project that goes out to universities, and Dalhousie University was one of the 15 universities that received that. Each province received one funding of that. I cannot stress enough how important that project was to generating a lot of talent, specifically in engineering students, who graduated through that program working on those kinds of projects, and who came out with very strong backgrounds and started funnelling into our current space.

I would say that for Galaxia, almost 90% of our employees right now are the graduates who were part of that. Thanks to that project, they came out with very strong backgrounds in space.

Ms. Lindsay Mathyssen: This exists in other universities as well, across Canada.

Mr. Arad Gharagozli: It exists, yes. Dalhousie Space Systems Lab was just that organization. I actually started that when I was at Dalhousie. It was just the name of the organization, but the project itself that really propelled DSS was the Canadian CubeSat project, now called Cubics.

Ms. Lindsay Mathyssen: Is that receiving funding continuously now, or...?

Mr. Arad Gharagozli: I believe it still has funding, but again, honestly, it cannot get enough funding.

Ms. Lindsay Mathyssen: All right. Thank you so much.

I want to go back to what we discussed in a previous panel. There was a conversation about SMEs within the Canadian industry and the difficulty that they have in terms of a chicken-or-egg process whereby companies don't know what the Canadian government needs because they don't have security clearances, but they can't determine how they can best serve the needs of the Canadian government without those security clearances.

Can you talk about that from your company's perspective? Then I'll move to Mr. Kolacz to answer the same question.

● (1730)

Mr. Arad Gharagozli: Yes, I would echo exactly the same things. It is a persistent issue, I would say, across the board for companies. Specifically, I'm talking about space.

As I mentioned, new space companies are very good at inventing things. We have a very low overhead. We are very agile. We can build things very fast. However, if you don't know what needs to happen, then you are just chasing nothing.

The second issue with regard to that is that once you have these capabilities, you really need easy ways to be able to sell this to the Canadian government, to build a case that you can go international with it and make it an export product. That doesn't exist right now. Again, the models of that already exist in the U.S. for the DOD and even the Space Force.

Ms. Lindsay Mathyssen: I will go to you in a moment, Mr. Kolacz, for the other response.

You said that the Americans get around this. How do they do that?

Mr. Arad Gharagozli: I'm not saying that they specifically get around it, but they have built very specific mechanisms to work directly with SMEs, as opposed to, for example, Raytheon, Boeing and Lockheed Martin. They have their own kind of thing going on, but—

Ms. Lindsay Mathyssen: They have specific security issues as well, maybe even bigger, but they don't deal in the semantics that we do. Is that...?

Mr. Arad Gharagozli: I would say so. However, again, they have different mechanisms in place that are more fitted for SMEs than for bigger corporations.

Ms. Lindsay Mathyssen: Mr. Kolacz.

Mr. Richard Kolacz: From our perspective.... The reason I decided not to continue building satellites was to focus on developing applications that extract the intelligence from those satellites. Classified programs represent a small percentage of the overall space activity that goes on. The largest country, the United States, does a lot of work in that area. However, if you come from that domain, you actually sort of know the things they are looking for, apart from something very specific. You know you're looking for threat detection; you know you're looking for communications capability.

In our domain, which is focusing on developing applications using the assets, 80% of the capabilities that are available now are offered by commercial satellites. At one time, they would have been considered classified, so our focus is a bit different. We are able to provide and develop capabilities, because we know what's coming and what's up there, and we are able to satisfy a large portion of the capability.

I launched those satellites because the United States wanted an unclassified solution for tracking the ships so that it could use its funding to develop the classified system. Canada's developing an unclassified system took a lot of burden off of the classified assets that would have—

The Chair: We're going to have to leave the answer there. I'm sure that Mr. Poilievre can help out with some classifications.

Voices: Oh, oh!

The Chair: Mrs. Gallant, you have four minutes.

Mrs. Cheryl Gallant: This question is posed to both of our witnesses.

Does your technology have an automatic mechanism to report anomalies, uninterrupted, that are potential threats to NORAD? If your technology detects an anomaly—a maritime anomaly, for example—is there an automatic mechanism to send that directly to NORAD, so that it appears on their screen?

Mr. Richard Kolacz: From our capability at the moment, we are providing information. DND is using our system right now. I do not believe it is forwarding it on to NORAD. It could very easily be done, basically by giving them a password and logging into the system, detecting threats, unclassified, based on the pattern of live analytics of a vessel, for example, entering the Canadian EEZ.

Mrs. Cheryl Gallant: NORAD would have to log in. There's no way for them not to have to just go surfing for one of these anomalies.

Mr. Richard Kolacz: No. This system is operating today.

In fact, when the war with Ukraine started, I listened to the Minister of Defence say they'd like to know where all of the Russian vessels are and what they're doing, and how many years it'll take to do that. I directed my team to start providing that information immediately, free of charge, to the Government of Canada. We've been doing that for the last three years, saying, "We have that information right now, and here are the vessels and here are the threats." That technology is available right now.

● (1735)

Mrs. Cheryl Gallant: Is it able to detect these shadow vessels that are transporting Russian oil to buyers?

Mr. Richard Kolacz: Yes, it can.

Mrs. Cheryl Gallant: In the event that Canada were to be engaged in hostilities with a foreign actor, how can your product or service be of use to defend Canada and assist our armed forces in successfully performing their mission in combat, besides what you've already mentioned?

Mr. Richard Kolacz: The primary one is being able to detect vessels that are a risk or a threat, or whether those are vessels running an embargo. Ships are using it today when they go to an operating area, to identify a vessel that may be smuggling drugs, weapons or people. That pattern of life analytics that we are doing with our system today using unclassified space assets is in operation today. In fact, we've been deployed on Canadian warships operating in international operational capabilities, as well as to organizations ashore.

Mrs. Cheryl Gallant: Have you been impacted by a cyber-attack?

Mr. Richard Kolacz: I'm sorry. Did you ask if we have been?

Mrs. Cheryl Gallant: Yes. Have you been impacted by it?

Mr. Richard Kolacz: To date, we have not.

Mrs. Cheryl Gallant: Okay.

These questions also apply to your company.

Do you have a means of signalling automatically to NORAD or Canadian defence any anomalies that you detect?

Mr. Arad Gharagozli: The way we are designing our spacecraft and all the environment around it is very software driven in a sense. That means we can take any sort of information and relay it into any C3 software. It could be posted into that or any other platforms that our clients would use. It is portable for sure.

Mrs. Cheryl Gallant: If it were a notification, would it help to be automatic? Would it not be useful?

Mr. Arad Gharagozli: Yes, it is automatic. I'm just saying that the destination is up to the client, where it needs to go. It can be implemented so that it can automatically be a text message to your phone if you want.

Mrs. Cheryl Gallant: Okay.

The defence organizations would have to subscribe to that service.

Do they?

Mr. Arad Gharagozli: Currently?

Mrs. Cheryl Gallant: Yes.

Mr. Arad Gharagozli: No.

Mrs. Cheryl Gallant: Even the Canadian defence organizations?

Mr. Arad Gharagozli: Yes.

Mrs. Cheryl Gallant: CAF doesn't utilize your capabilities?

Mr. Arad Gharagozli: Not right now.

The Chair: Mrs. Lalonde, you have four minutes.

Mrs. Marie-France Lalonde (Orléans, Lib.): Thank you very much.

I want to say thanks to both of you for being here.

I'm going to try to summarize one thing that I would like to hear from you, and I hope you can give us some guidelines.

We've talked a lot about space and what's in space, 80% commerce, a lot of commerce aspect versus defence component—dual use. I think my colleague was making reference to an international governance body. Are we too late?

Canada is championing many initiatives through yourself, industries. I'm wondering, on a larger scale, what the role of Canada could be in helping develop some international governance in the space component. Is it a NATO? Where would you see this in our role as Canadians?

Mr. Arad Gharagozli: I would say space by nature is a very peaceful environment. The Canadian Space Agency is doing a splendid job with that currently. The president is Lisa Campbell. Those are the conversations that the Canadian Space Agency is usually having with our counterparts in the European Space Agency, with NASA and with other nations. We are having those conversations, and again, especially with the G7 countries. We are definitely having those conversations.

Mrs. Marie-France Lalonde: Mr. Kolacz.

Mr. Richard Kolacz: From my perspective, there are a number of policies that Canada has in place: privacy policies, AI policies, Remote Sensing Space Systems Act policies. We comply with those as well as with European policies related to artificial intelligence, the distribution of information and what kind of information.

What we see at the moment is that Canada is active in those areas. It does provide the guardrails, the policy, and the privacy framework to ensure that the information is distributed in such a way it that aligns with Canadian objectives.

Mrs. Marie-France Lalonde: From my understanding, you wouldn't see a bigger international governance body that would help structure what our G7 partners and allies are doing overall in the space component.

Mr. Richard Kolacz: Again, we focus on the intelligence derived from those space assets, and what we see is there is a harmonization. There is nothing that is drastically different. There are elements that are slightly different, but we see that Canada is harmonized with the rest of the world in terms of developing those policies and regulations.

● (1740)

Mrs. Marie-France Lalonde: Okay, and I'm going to leave you both with this. Is there anything that you could recommend to this committee that would help us develop some recommendations for the government?

Mr. Kolacz.

Mr. Richard Kolacz: Again, given that we are an organization that derives intelligence from the assets that are up there, what I have found working with the Space Agency and the defence depart-

ment is that projects that allow us to demonstrate the validity of what we do are extremely useful. They're worth 10 times the amount of money we get. We're developing new capabilities to manage vessels, for example, to support supply chain resilience and identify risks.

We've been funded under a number of different programs—Ocean Supercluster, SDTC, DRDC, IDEaS—so on the ability to validate the technology, it was the same when we worked with the Space Agency. Every time they launched a satellite, there was room for a new technology. That is invaluable, and it gives us a competitive edge, actually, over some of the other people.

We would all like to see more money, but the opportunity will be demonstrating the world's first air traffic control system for ships using satellite technology along the St. Lawrence Seaway, from the North Atlantic approaches all the way into the Great Lakes. The ability to validate and show that capability to the rest of the world is hugely important to us, and we would like to see those programs continuing.

The Chair: You have a minute and a half, Monsieur Sauvé.

[*Translation*]

Mr. Louis-Philippe Sauvé: Thank you, Mr. Chair.

Mr. Kolacz, your company operates in the marine sector. During this study, there has been a lot of talk about dual-use technologies. One issue that is particularly close to my heart is that of fisheries. Much has been made in the media about the use of marine animals for espionage by the Russian Federation.

Could you explain to the committee how military technologies that are developed can also be used for other purposes, such as the protection of right whales or other marine mammals?

[*English*]

Mr. Richard Kolacz: Yes. We actually had a project with the Canadian Space Agency whereby we used optical satellites to do facial recognition on the North Atlantic right whale, which is a protected species that swims off the coast of the St. Lawrence. Why is that important? It's because when you detect a North Atlantic right whale, your ship is supposed to slow down and move over. It's like having a moose on the road when you're driving from Montreal to Ottawa. There's the impact on all of the other vehicles, which means that you can slow down the speed of your ship. You're going to save fuel, but more importantly, you're going to save emissions. Up to 200 million tonnes a year can be saved on emissions by using Google Maps for ships. That's an example of using an optical image. It's not a military capability, but it's a high-resolution capability that can be used to support dual use of systems.

We don't use any classified asset information, obviously, but it's an example of the type of technology that can be used, and it's a major part.

I should say that we've just moved our corporate headquarters to Montreal as well. Our development team is in Halifax, and we're working closely with the fantastic support that we have from the Quebec government, developing our AI capability and rolling it out to the rest of the world.

The Chair: Thank you, Mr. Sauvé.

You have a minute and a half, Ms. Mathyssen.

Ms. Lindsay Mathyssen: To continue to build off what Madame Lalonde was talking about in terms of the international bodies and the understanding of what space has been, there is a great concern in terms of the weaponization of space, absolutely.

I certainly am concerned about the commercialization of space, so as an academic, and connecting that research, can you talk about what the Canadian government needs to do through potentially the international bodies, whatever we set up, to protect the idea that space is peaceful but to allow room for the academic research side of things.

Mr. Arad Gharagozli: As I mentioned, like it or not, we will have some defence capabilities and operations happening in space, but the majority of that is on the commercial side. What happens is that a very small segment of that commercial side is dedicated to the academic sector.

Again, I will circle back to the fact that space is expensive. If we want to see innovation and if we want to see growth in Canada, we need to invest back into the academic sector as well to make sure they have enough funding and there is enough research going around that can propel the cutting-edge technologies we were talking about when it comes to quantum communication, synthetic aperture radar and communication systems, and things like that.

● (1745)

Ms. Lindsay Mathyssen: Do you think we do a good job balancing that?

The Chair: Thank you, Ms. Mathyssen.

Mr. Bezan, you have four minutes.

Mr. James Bezan: Thank you, Mr. Chair.

Thank you to our witnesses.

To go back to the nanosatellites, you're miniaturizing everything, and definitely technology is advancing. What's the lifespan of a nanosatellite, knowing that you'll have a smaller battery and everything else that will limit life expectancy?

Mr. Arad Gharagozli: Most nanosatellites can survive the low-earth orbit, which is about 500 kilometres to 600 kilometres, for three to four years, but it's usually less than that. It depends on whether the spacecraft comes back to earth to de-orbit. If it stays up there, again, you're dealing with the very harsh environment of space, primarily the radiation environment, so two to three years is a fair assumption.

However, in terms of the approach that we are taking and that a lot of other new space companies are taking to this, the rate at which the technology is evolving here on earth doesn't really justify us launching a satellite that will stay up there for 20 years. We are still doing that, but again, even with your phone, when you compare that with your phone of two years ago, you can see it's much faster. You have better cameras and things like that.

You have the exact same thing in space. If you can reduce the cost of your spacecraft so that you can launch more frequently and have better capabilities more frequently.... Some companies have that approach.

Mr. James Bezan: [*Technical difficulty—Editor*] the BlackBerry's not going to work anymore?

Mr. Arad Gharagozli: They tried that. It didn't work.

Mr. James Bezan: Do they just stay up there as space junk, then, or do you actually have them burn up in the atmosphere?

Mr. Arad Gharagozli: We have a mandate to bring those back, or at least we have procedures and protocols in place to ensure that they will come back and not generate space junk. A lot of low-earth orbit spacecraft do come back just because of their relativity to earth. Being closer, the gravity force is stronger on them, so they do come back over time. Usually it's somewhere between five and 10 years. It could be a bit longer.

Some spacecraft have forced de-orbiting mechanisms in place so that you can bring them back immediately. A lot of newer missions, especially going out of the U.S., Canada and Europe, do have very robust plans in place to ensure that we don't create more space junk.

Mr. James Bezan: If you look at this in terms of what our adversaries would do, how would they make use of a nanosatellite against Canada?

Mr. Arad Gharagozli: I would say that it's a very similar situation. When it comes to nanosatellites, again, as the technology evolves, we can pack more technologies into smaller form factors. We can still detect a lot of these objects in low-earth orbit using Doppler radars or other types of SSAs that we have or that our allies have.

Again, the boundaries of space are really not there. You can really go over any country you want. You can pretty much observe whatever you want. It's just our responsibility to keep it clean and make sure we play safe.

Mr. James Bezan: Even with a nanosatellite being as small as it is, then, you can still pack on the optics you need in order to do satellite surveillance, reconnaissance and intelligence-gathering.

Mr. Arad Gharagozli: I would say so.

Mr. James Bezan: Okay.

Would you agree with that, Mr. Kolacz?

Mr. Richard Kolacz: There are physical limitations on the aperture side. It's physics. The optical resolution of the radar resolution you can get diminishes with size of the aperture that you have, so you certainly can't get submeter or multi-centimetre resolution. You can't pick up signals information. There's a limitation. Of course, one way is to simply have a lot of them. You can overwhelm defences, whatever those defence systems are, much like we see in the use of drones in Ukraine and Russia at the moment.

There is a physical limitation to the aperture size that you can put on a small platform. It has a limitation, but you can then use those for detecting 80% of what you want to detect and use the very large-aperture, larger satellites, such as RADARSAT, to detect much, much smaller devices.

Mr. James Bezan: Are we done?

The Chair: Yes.

I have one final question. How does my ship disappear from your system, Mr. Kolacz?

● (1750)

Mr. Richard Kolacz: Well, it won't. What you will do, first of all, is turn off your transponder, which sends a flag to us immediately that you're doing something suspicious. Now we can task a radar, optical or unclassified RF SIGINT satellite to pick up any of the transmissions and look for you via radar—night or day, through clouds—or optically.

You will never disappear.

The Chair: That's a shame. That's also interesting.

What if I'm a Russian submarine?

Mr. Richard Kolacz: If you go under the water, that's a different story.

The Chair: At some point, you would lose them, but all submarines have to come up for air at one point or another.

Mr. Richard Kolacz: No, the nuclear submarines don't have to come up for air, but there are other things to look for that go beyond this discussion.

The Chair: This is, in some respects, a foolproof system—at any point, any government can find any ship, in any place.

Mr. Richard Kolacz: Absolutely.

The Chair: That's interesting.

Thank you.

That was an interesting discussion again, for the second hour. I really appreciate both of you for sharing with us your information and knowledge.

Colleagues, with that, we'll bring it to an end.

On Thursday morning, our first hour is on this study. The second hour is with our Finnish friends, but we are physically moving from one room to another in order to accommodate the Finns and also the foreign affairs committee, which is going to follow on our questioning. It's not complicated, but I'm alerting you to the change.

With that, again, thank you.

The meeting is adjourned.