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TRANSCRIPT

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# "21st Century Warfare: A Conversation with Jim Taiclet"

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FEATURING

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John J. Hamre: Good morning, friends. Welcome. This is John Hamre. I'm the president here at CSIS. And I want to welcome all of you for what's going to be a very interesting conversation in our Defense Pathfinders Series.

And I'm very pleased to welcome Jim Taiclet, who's with us today. He's the CEO of Lockheed Martin. Jim came to Lockheed Martin after a very distinguished career. He first started off as an Air Force Officer. And after serving in the Air Force, he was a pilot, he got into the cellular communications business, and saw the explosion of cellphone technology and digital technology firsthand. He was at the forefront. He's now the CEO of Lockheed Martin, served on the board, I believe, on Lockheed Martin. And they – when Marillyn Hewson was leaving, they said, well, we've got a pretty good guy on this board. Let's ask him to be the CEO. And he's in that position for the last year.

I wanted you to know that, because it'll help you understand the questions that I will ask of Jim, and sort of the conversation we want to have. I'm going to take him back to his origin. His first passion was serving in the Air Force and his love of the country. And, you know, Jim, you've been the CEO now of Lockheed for about a year. And you have – I always used to say that, you know, the defense industry is really the sixth service. You say the fifth service. We now have an Air Force – we have a Space Force. But it's the sixth service. So would you just share with us, how – as a CEO of a, you know, major, major defense company – how do you look at the security landscape America's facing right now?

James D. Taiclet: Sure, John, thank you. And great to be with you this morning.

I share the perspective of our senior military uniformed and civilian leadership, which is we're back into an area – renewed era of great power competition, predominantly with China and Russia. Also, there's regional competitions and players – hegemonic players like Iran and North Korea that we have to deal with. Those threats are getting increasingly significant and substantial. And all these adversaries are seeking to diminish or even supersede our historical technical dominance in the field of military affairs.

And I think that's a real danger. And what they're trying to do is disrupt – using indirect and direct technical methods – the seams and the weak spots in our national defense fabric, if you will. They're also using the power of their authoritarian governments to create civil-military fusion, meaning whatever commercial industry is creating in their economies and in their societies, they directly port into their military and defense establishment. And we don't want to replicate that system, but I do think we have to recognize it.

So as a result, maintaining an effective deterrent – which I feel Lockheed Martin is in the deterrent business. You know, we are here to provide what our defense establishment needs to deter and prevent war, and if that's not possible to prevail on it. I'm concerned that we will not be able to maintain an effective deterrent with our allies unless we make significant changes in our defense enterprise. I think it's essential and urgent for DOD, for the defense industry, and our allied counterparts to improve the collective effectiveness of our national defense. And I like the way Air Force General C.Q. Brown put it. He said accelerate change or lose. I think it's that urgent.

Mr. Hamre: You know, you've outlined, I think, quite clearly the challenge in front of us. And you've spoken about generally the role that defense industry must play, really, to help us with our collective defense. But how about Lockheed Martin? I mean, just – because you are the CEO of this company, your vision about how Lockheed Martin is going to, you know, basically find its leadership role in this new environment?

Mr. Taiclet: Well, sure, John. In terms of scale and scope, Lockheed Martin is a leader in the defense industry. And I think it's really a responsibility of ours, given that position, to be a catalyst and accelerator for the kind of change we're talking about here.

To drive the change forward internally, and I hope ultimately externally, I kind of created a framework, a concept we call 21st-century warfighting. And what that concept does is it's meant to bring together the technologies in the 21st century that are being developed in the physical world, by the way, in which the defense industry is actually very good at – directed energy, hypersonics, space-based sensors, supersonic stealth aircraft. We're very good in the physical world. But we really need to augment what we're doing and accelerate our ability to drive that technology forward with digital-world technologies.

We're very good in some aspects of digital technologies; for example, cybersecurity, secured processing, things like that. But frankly, commercial industry in the free world, in the U.S. and our allies, invests so much more in these digital-world technologies like 5G, artificial intelligence, distributed Cloud computing, autonomy at scale for vehicles.

We really need to try to bring in that investment, that talent, into the defense space. And I intend to at least have a pathfinder, as you called it earlier, in Lockheed Martin to try to build that bridge and bring some of those technologies over more quickly, again, without replicating anything like what people in China and Russia have to do in industry.

So we're already at the forefront of the physical-world technologies, as I said, and we've got some extraordinary skills. But we really need to team up with

commercial industry. And we've had a lot of success so far in actually driving that, but we have a long way to go. That's really the concept. So 21st century warfare is bringing together the physical technologies of the 21st century with the digital-world technologies, and increasing our deterrent capabilities by doing that.

Mr. Hamre: I really want to drill in a little bit more in that. I think it's a very interesting idea. You know, when you think of very large prime contractors like Lockheed Martin, of course, we always think about the big platforms; you know, the F-35. You know, you can take a picture of an airplane. It's hard to take a picture of software, you know. I mean, but I suspect that software is really at the heart of a lot of what you're talking about and about, as you say, this digital design.

You've – first of all, just share with us your – you know, Lockheed Martin is a software company. And then take us into this idea that you're opening up about the way you're going to bridge to other high-technology digital companies to help them with this defense enterprise.

Mr. Taiclet: Certainly, John. So within the platforms – and Lockheed Martin is predominantly a platform company, if you will, and most of our peer group – perhaps all of us – in defense industry is also platform-based, so to speak. But within each platform, there are mission computers. There are communication systems. There are flight-control systems. All of those are based now on software and development.

We are very good, again, within our platform, in writing software. Just as a reference, we have about 60,000 engineers at Lockheed Martin. Ten thousand of those are software engineers. So we write plenty of software. We're driving digital transformation through the whole company on the internal side.

But what is really important for us to do next is to bring network effects to that platform. And network effect basically means that, by enabling platforms with networking technologies, the ones I just laid out, you can actually increase the effectiveness of the system beyond the sum of the parts of the individual platforms' capabilities. And that's really what we're after.

So it's a benefit to be a platform provider at scale in this industry – in our vertical, if you will. Again, we're quite strong at the physical-world technologies to do these kinds of missions. But what we're not as good at is the networking technologies to bring the network effect to our platforms. And that's what we're really trying to do. So we've got many examples of this. We're demonstrating a lot of it with actual combat commands out in USINDOPACOM, for example.

Last year, we were working with them to increase the size and effectiveness of the defense perimeter on aircraft carriers and ships at sea, and we were able to tie together PAC-3 MSE missiles, THAAD missiles, THAAD fire control systems, and Aegis radars, in other words, in order to actually expand the capability of the fleet's self-defense system, because we were networking those independent platforms in a way that gave the Navy a much greater capability to defend itself at sea. And that's just one small example of what we can do in this space, and I think there are many, many more.

Mr. Hamre: You know, you have 10,000 software engineers. You probably have almost that many people just trying to comply with government regulations. And yet, you know, when I talk to people at Silicon Valley, they're not interested in getting involved with government acquisition and so you have to be the bridge. Could you describe your thinking about that?

Mr. Taiclet: Sure. And we're taking a few pages out of the technology playbook – technology industry playbook. One of the tools that is often and commonly used in the technology space – and we use it in defense as well in the physical world – but it's a technology roadmap, and the technology roadmap can be thought of as if you have – in our space, if you have a bunch of independent platforms what's the most logical way to network those platforms two at a time, three at a time, every six months for, say, three to five years to then create a holistic overall capability that you didn't have before? That's what a technology roadmap is designed to do.

So over the past year at our company, in our vertical, if you will, we've defined 14 mission sets that our customers need. Now, usually, as you said, John, the Department of Defense buys things. They fill out a DD 250, take possession, and then they try to integrate it into their system.

What we're trying to do is turn that model a little bit on its head and that let's talk about missions and not things in platforms. We already have a lot of platforms out there, whether they're Lockheed Martin or others. If we can create an open system architecture and build a technology roadmap, we'll be able to connect the logical things that make sense to do over a period of time and rapidly increase our capabilities versus a typical procurement where you get requirements. There are RFPs. There are proposals. There are challenges and protests, and five or 10 years later you might have a new capability.

I want to try to bring what we have together in a way with a network effect on a technology roadmap that will then provide capability every six months. That's more the speed of Silicon Valley and less the speed of what we traditionally do as an industry, and that's why we need government and industry to work together on this.

So we got 14 mission areas, we got 14 technologies in the roadmap, and we're linking things together like I described a minute ago. And, first of all, you would find this maybe surprising. The F-22 and the F-35 data links were independently designed because the requirements were different. (Laughter.) They didn't have a direct link. We've created an edge compute node to establish that in the aerospace realm. But we had to create it because it wasn't there. That's another link on the technology roadmap.

Mr. Hamre: Yeah. Yeah. Yeah. You know, sadly, I think our world is we've designed stovepipes all the way down, you know, to the smallest unit and so now it's the integration, as you say, is the hard one.

Jim, let me – one of the most common things I hear in Washington, especially in conversations on defense industry, is that the big giant aerospace defense companies are – they're not agile. They can't move very quickly. They – you know, just the size. It's like dinosaurs, you know. You just kind of move, you know, cumbersomely forward and the real agile people are the little mom and pop shops, you know, that are out there inventing new things. OK. It's a critique I hear all the time. What do you say?

Mr. Taiclet: I would divide innovation into two types. One is technical innovation, which I think the defense industry writ large is actually very good at. You know, when it came to developing vehicles, like, the MRAP was done in a fairly quick amount of time because government was working at the same speed based on the demand as industry could meet that speed and actually deliver product.

Similarly, you know, if you go back to Skunk Works, which is the Lockheed Martin site where we do, largely, ISR reconnaissance type airplanes, all the way back to the U-2 and the SR-71, those were rapidly developed when the need was recognized both by the government customer and by – at one of the defense companies and they were able to match that speed. So, technically, I think we can go as fast as any industry can go.

Where we are not as experienced in the defense industry is in business-model speed and innovation. So how do we actually operate differently in the – regarding the digital world? Because, again, speeds in the digital world are much faster than in the physical world because you don't have to deal with metallurgy, electrical engineering, time and space. You know, software code writing can be upgraded much more quickly than physical structures and physical aircraft can be upgraded. So they move at a faster speed, so we need to learn in the defense industry how to adopt some of the business-model speed innovations from the technology industry.

So what we've been doing at Lockheed Martin is based on my prior experience working in the telecom and technology arena for about 20 years.

We've been holding CEO-level summits with semiconductor companies, distributed cloud-computing companies, mobile phone operators, and, you know, network and computer companies to figure out how we can be more like them and how we can get them on our team. And I've got to tell you that the uptake – these are all U.S. companies, U.S.-based, so they can work with the defense industry closely, if they choose. Every single CEO took that meeting and every single CEO brought their chief engineer and CTO, as we did, and those technical teams are now looking at our road maps figuring out what type of technology that semiconductor company has or that gaming company may have that we could insert into our road map to make us go faster. So that's how we're approaching it here at Lockheed Martin. And once we establish the architecture that I'm trying to put together – and again, it will be open – we'll be able to – we're going to start with Lockheed Martin platforms because we have immediate access to the mission computers and systems. But we do want to bring in our industry peers along with us to be able to accelerate the road map for all the OEMs, for all the companies that we can help our customers with.

Mr. Hamre: Well, and I think there's a lot we can learn from, you know, from that dynamic industry, the software industry. But also, you know, you can't hit control-alt-delete when you're flying an airplane, you know, and so the engineering discipline that you guys bring to weapons systems has to be part of the mix. So I think it's a unique combination to have you leading this kind of an effort, bringing them in in ways where they probably wouldn't come otherwise.

Mr. Taiclet: Right, John. And I really want to emphasize this: Commercial technologies do not have the requirements and the needs that our defense enterprise needs. I think Lockheed Martin's very good at two things: one is the hardening the cybersecurity, the redundancy; you know, meeting those standards. We are not going to compromise on those standards as we drive down these technology road maps, first of all. Second of all, one of our other core competencies is dealing with the federal acquisition regulation, DCMA, all the audits, because one of the things I've learned on some of our CEO summit calls is, those companies do not want to directly deal with all of that. They want a bridge not only to an effective product at the end of the day that they participated in with us, they also want a bridge so that they don't have to deal with government contracting at the extent and levels that we have to. So we're actually trying to bring the best of what we have in our industry, meld it with the best of what the digital world industry leaders can bring in a way that we can do business with them.

Now, what's going to make it interesting for us, I'll say, as Lockheed Martin, is we're going to have to figure out how to translate an upgrade that we can do every six months into revenue for our company. And the Silicon Valley companies are going to say, look, I've got a patent; I license that patent;

you've got to pay me a subscription; that's how I do business. And we're going to have to figure how to translate that cost that we incur on a licensing basis to a DD250 sale of an aircraft or an upgrade of a modernization program. So we're working on that internally, but that's going to be one of those bridges that has to be built, John.

Mr. Hamre: I couldn't agree more, you know, because in the world of government procurement you live in a world of cost, whereas the private sector lives in a world of price.

Mr. Taiclet: Yes. That's right.

Mr. Hamre: And so they have prices and you have costs that you have to document to the government. That's going to be one of the great friction spots, pulling it together. But again, I think your leadership on it's going to make a big difference.

Mr. Taiclet: And frankly, you just illuminated: We're going to need some help from our customers to do this, and we've begun to offer some forums for our senior customers and their teams to actually make sure that we're staying on the right road for them.

I mentioned these technology roadmaps. And we've had, you know, new people coming into senior government in the Department of Defense. I met with many of those individuals as they've been entering their roles, and offering to take either them personally or their senior technical people through our draft roadmaps. We've got three done so far – I think done enough to show a customer, actually. So surface warfare is one. Counter air is another. And integrated air and missile defense is a third.

And these are done at a staff level, at a very high security clearance level. They're only discussed in SCIFs. And we've got the wiring diagrams on these roadmaps to actually be pretty compelling, we think. But we want to test those with customers. We want to road test them before we start investing our own dollars independently, which we are going to be doing by the way. And so that's one offer we've got out to some of our senior customers. And we're getting uptake on that, which is great. You know, test drive our technology roadmap and make sure the linkages we think make sense in the next six, 12, 18 months make sense to you. That's one thing we're doing.

The other thing that I've offered – we've offered is something that worked really well in the telecom business for us, which is something called joint process mapping. In other words, take a process, contracting, procurement, sustainment upgrade. The U.S. government has a process that it's going to follow, and each defense prime has a process it follows. Those processes don't necessarily ever correlate. And so what we did in the telecom space

was – at the time our biggest customer – was we said we're going to lock, you know, eight or 10 engineers from each side in a room, businesspeople. And you're going to map your process on the wall, and we're going to map our process, and see where the white spaces are, where the duplication is, where all the delays are coming through.

And we were able to take out, in a very substantial piece of business and activity, it was about 50 percent of the cycle time and about 25 percent of the cost of doing it. Which if you apply that in even pockets of the defense budget, it would be tremendous savings and tremendous speed increase. We've got mixed, you know, feedback on that as far as, you know, getting in that room and really sharing transparently both processes, and trying to make sure they work better together. But we're going to keep trying.

Now, along with all of this, John, we know we have to be efficient. We want to go faster. We want to be more effective. But we know we have to be efficient. So the other thing that we did in the telecom industry was we would do what in our business we call operational analysis. We would model networks and how they might perform and what assets might be needed to get to your technology plan as a – as a telecom provider. We do that extremely well in the defense industry, in places like CSIS, at Lockheed Martin. We've got operational analysis or wargaming or modeling capabilities that are really, really first-rate. We do share those with our government customers and military customers today.

But what we don't have as much of and we don't do in parallel is a dynamic cost analysis, right? So what is the efficiency of that technology roadmap or that OA that you did, that operational analysis that says: Here's how I can be more capable of my mission, but at what cost? And so we need to do these dynamically together and figure out that – just like a network design, there's a cheaper way of doing it that gets you 95 percent of what you want. Do you want to consider that? Or do we have to do – or, we agree to do the 100 percent solution, which is going to cost you 40 percent more?

There should be tradeoffs there. And if you build the joint process, a technology roadmap, and a dynamic cost model, which you've changed something on the roadmap, you then change something in the cost automatically, you can wargame efficiency in addition to wargaming just capability. And that's something that I haven't really seen done in an integrated fashion so far in the defense enterprise. I think somebody should do it.

Mr. Hamre: Well, it's – this is going to take very strong leadership over at DOD because the big bureaucracy that manages acquisition, they don't – this isn't how they've been trained. So it's going to take leadership at the very top.

Jim, could I shift and take you inside Lockheed Martin a bit, just to ask, boy, you're looking – you're looking for premier talent, but you're competing against a software industry that is booming. You know, I mean, it's – you know, these are dynamic, creative people. You're after them. Silicon Valley's after them. How are you doing? How are you doing in recruiting the talent you need for that?

Mr. Taiclet: You know, it's essential for us be successful in talent acquisition or recruiting and retention, because once you train people in cyber, for example, they're very lucrative to be poached from you as well.

So we use a multipronged approach here. The first prong really is general support for STEM education, you know, all the way to the high-school level and beyond, generally in areas around our major facilities, plants, engineering centers and such. So we'll work with high schools, community colleges, universities, in those areas predominantly, where it may not be, you know, the Ivy League standard, so to speak, but you're going to get some great engineers out of those facilities. You're going to get great software and data scientists. But you want them to learn about our industry, and certainly our company is our goal early on in their progression, in their careers.

So we've got major facilities all over the country, places like Alabama, you know, upstate New York, central California, Texas, Florida, where, if you look at the landscape of education in those areas, you can find some real gems, like Penn State, for example, great engineering school; we recruit a lot from there. Another one is the University of Central Florida, you know. And we get, I think, more engineers out of UCF than any place in the country.

So we're going where the talent is that is proximate to where our work locations are and really trying to accelerate and see the talent in general and recruit them specifically.

We also have special emphasis on historically Black colleges and universities, which also tend to be in some of these other rural states at some level.

Mr. Hamre: Less privileged areas, yeah.

Mr. Taiclet: Exactly. So we've got, I'd say, a very comprehensive recruiting approach all the way from high school up to the Ph.D. level, frankly. And a lot of it happens to be in areas where, again, in many states we have facilities and people need jobs. And we're welcomed there. And people recognize, because their uncle worked at Lockheed Martin, at the plant in Fort Worth, for example, they know the company. They know the reputation, the quality of the business and all that. So we've got people, A, interested, that know

about us, and are getting a great education in some of these places. So that's really part of our emphasis.

The other part of it is in-house specialized training, because, you know, you can hire an undergrad software engineer with a degree but they don't necessarily have the cyber skills specifically that we need. And so that's one example. We have a cyber training program. We also – in-house. We also have created – and this is our chief engineer Rod Makoske's idea, which is a great one – we have the Lockheed Martin Artificial Intelligence Center. It's a place where we are taking some of our brightest people early and mid-career, and late career even, and training them in the skills of artificial intelligence, which is obviously a pretty new discipline. We're doing that in-house. And then we also work with other partners on upscaling our own people.

The good thing about where our locations tend to be is they're not necessarily in Palo Alto, for example, where there's direct competition. If you want to live in central Texas, you know, we can compete if you want to live there, you know, with salaries, benefits, all that. If you want to live in Manhattan or Palo Alto, we're going to have a tougher time.

So we're going to compete everywhere, but we're very successful, again, largely in the places that we have facilities. And we also, you know, give people the ongoing training and upscale them and try to keep them. Now, we do get poached now and then, and we've just got to keep refilling the pipeline.

The other part of this job – I talked about working with some of the leaders in the technology space, information-technology space. They are getting plenty of good people. Some of those folks, as I said, either location-wise or just their interest, they're going to go to those companies.

So one way for us to get access to those skills is to partner with those companies, right. So we don't have to write all the AI software that we'll ever need. We'll need to do what's inherent to Lockheed Martin and platforms. But we can partner with others who are recruiting some of these fantastic people. So it's an indirect way of getting that talent and applying that talent to our issues and our programs.

So we've got a, again, multipronged approach. It is very competitive, especially on these skill sets that you talk about, though.

Mr. Hamre: And if you'll forgive me for a little editorial comment here, I have the privilege of working around remarkable young people. They know they're going to be successful in life because they're skilled; they're talented. But they want their lives to be meaningful. They want to have meaning in their

lives. And, boy, defense industry can compete very effectively there, because they know that what you're doing is really important. So I'm optimistic for you.

Let me ask – you know, obviously, China is a pacing challenge for us now, and it really is kind of the – you know, the design criteria we're thinking about. But you know, the administration has talked about other challenges that we're facing. You know, we've got human security issues. We've got hybrid warfare questions. We've got nontraditional threats. Is Lockheed interested in those issues too?

Mr. Taiclet: Very interested, John. So there's some things that we are doing today with the capabilities we have. For example, cybersecurity, I mentioned secure processing; so, in other words, chips that cannot be spoofed or interrupted as far as data flow and the processing of information. And also, resilient communications. We're actually very good at that, but at much smaller scale than, say, the cellphone network. So there's a lot that we actually already share through, you know, partnerships with companies that we collaborate with on cyber and communications security, et cetera. There are industry groups. And we actually work with government on reporting if we see something based on our cyber defenses, we'll let, you know, the U.S. government know that and our industry colleague groups know that. So there's actually a(n) interactive web of companies without the U.S. government involvement that collaborate on these issues. So we're doing that today and we have skillsets in those areas today that we can help on a much more broader front.

But what I think is really interesting for us is how can we apply these sort of 21st-century warfare concepts to issues like human trafficking, climate change, et cetera. And one idea so far that I'm really energized about and that we've actually started pursuing inside of Lockheed Martin is I asked our team, you know, firefighting is becoming a national priority in this country for a couple reasons. One is the damage and human cost of out-of-control wildfires and forest fires, especially in the Western U.S. And secondly, the contribution to adverse climate effects of the fires burning in the first place, and then eliminating that forestry to absorb carbon in the second place. So this is kind of a collision of, you know, human security, economic security, and climate security.

You know, we can actually help solve this problem with the same approach I just talked to you about, right? So instead of worrying about in this particular instance an attack on Guam or whatever it may be, we're being attacked by nature. And so why don't we marshal Lockheed Martin assets and capabilities and offer our customer, which is the U.S. government and our – you know, our population, a solution to this? Because right now it's a fragmented solution. States and counties have a few assets – helicopters,

firefighters, teams – but it's not integrated. It should be integrated. There should be a technology roadmap for firefighting.

And so what we're embarking on is to figure out how to put together really three things.

One is sensing. So we've got satellite capabilities, as you well know, that could sense the initiation of a forest fire, maybe even figure out the weather patterns that would be conducive to a fire even before it starts. Start thinking about, then, through AI especially – and when you include that – network those sensors together with AI in a way that's predictive of, A, the forest fires starting in the first place. And secondly, once, you know – you know we have missile launch-detection satellites. Well, when a fire starts, infrared heat is generated. We can see that. And so if we dedicated satellites to forest-fire prevention and detection, that would be the first step.

The second thing is, then, you know, you tie it with that AI into what we elegantly call a cognitive mission manager, meaning I don't need people to say there's going to be a fire in this spot in two hours. That's going to be generated. There will be decision-makers informed that they need to prepare for this and there will be – just like if you're in a fighter squadron in the Air Force, you're going to get a tasking, a recommended tasking for deploying assets. So let's talk about the assets.

So first thing is sensing and predicting. Second thing is command and control. And the third thing is having assets at the ready to deploy against the fires and not trying to figure it out as you go or ask – call a governor in a different state to see if he can send some people over.

I think we need to do this at a national level and that we would have a firefighting force with – we have got a helicopter that happens to be at Lockheed Martin called the Firehawk which can transport firefighters. It can also drop water and other retardants on fires. And it can also create a sensor network that's lower to the ground than the satellites, for example, to do micro-sensing and then feed that into the AI engine. And we've also got C-130s that can also do this at a much larger scale.

So my challenge to our team is I go: We should be able to do a product and present it to our customer, whether it's the Interior Department or the Commerce Department, and offer them firefighting as a service. We could own the assets, we can make the helicopters, we can make the C-130s, we can send up the satellite, and sell it by the month, or sell it by the fire. But there should be a national solution that's more creative than what we have today. And why aren't we leading the charge on this?

And so my team is now scrambling to figure out how to do this, and who to sell it to, and if we're ever going to make money at it. (Laughter.) But we're willing to invest, John, in human problem solving and defense problem solving. And the system – the acquisition system – you know, whether it's for, you know, government, for commercial use – commercial or civil use, or it's for defense uses, it really inhibits our ability to make upfront investments, like buying the helicopters and the C-130s and putting the satellites up, because they have a really hard time with the 10-year subscription that we would need to finance that.

So we're going to need, again, help from our customers. But I'm kind of whipping my team, in a way, to say: Let's put ideas like them in front of them and see if we can have a conversation at the right level to figure out if we can invest in our – use our company's abilities and our access to capital markets to invest ahead of need for something that's urgent, which is in this case firefighting. It happens to be nondefense, but we have all the assets. We have the cognitive mission manager that we're developing with one of our technology partners where you can apply this kind of solution.

So that's the exciting part, I think, of running Lockheed Martin now, is change is needed. We can be a catalyst for that. But we've got a lot of change internally to do on how we think of business model innovation, those kind of things.

Mr. Hamre: Well, that's exciting – very exciting. But we're also going to have to really tackle my old community, the financial management community, that thinks that the government has to buy stuff. And it has to – you know, it has to get a price that's, you know, right inside a two-year appropriation window. You know, these sorts of things. Very rigid. This is going to take new thinking on our part. So I'd like to follow up with you on it. It's a fascinating issue.

Let me –

Mr. Taiclet: Well, John, this has happened before, and it worked, OK? So you referred to my last industry. So the telecommunications industry was populated by – you know, basically the United States has AT&T offshoots, right? So in the – you know, two or three decades ago big mass of AT&T was divided up into regions, and there was the long-distance business, then they created a cellphone business. So we were dealing with that as a customer base. And the founder of American Tower and a few other small companies at the time, they figured out that, gee, because there are so many now of these disaggregated companies, they're going to need assets that they can't afford to buy up front. So we can go to capital markets, get investment dollars, build or buy and convert the assets to sharable digital infrastructure.

And that actually accelerated the adoption of 3-, 4-, and 5G in the United States, and ultimately around the world, because you change the whole fabric of the original business model, which was each cellphone company owned and operated its own transmission sites for its own use, and you didn't have any shared commercial infrastructure. And over about 20 years, we changed that whole industry. I hope we can do it faster here, but this has been done before.

Mr. Hamre: Well, it has. It's just that the – you know, the government has scoring rules that really discriminated against capital investments, and then paying for them with services. I mean, and so we've got a government issue that – but I'm – this is a – I flew several kamikaze missions, you know, and died every time, on this. I'm willing to do it again. I look forward to talking with you about that.

Mr. Taiclet: Well, I'll be in the command center of the carrier and we're going to try to work this through.

Mr. Hamre: Send me off.

Mr. Taiclet: No matter what happens we'll send you off down to do that mission. But we're going to have to – we're going to have to do a lot of the translation even in the meantime. And that's the interesting business model issue for Lockheed Martin and maybe some of our peer group companies, is how do we take on some of that financial risk ourselves, knowing that these are needs that are important and, you know, the defense budget may not be able to support those needs immediately. But over some period of time, perhaps they could. So we're going to try to work our way through this. But significant change, I do think, is needed – both in our industry and both in the government.

Mr. Hamre: Yep. And I even have a suggestion I'm going to give you when we go offline.

But one last question, if I may. And that is, you know, I'm a – I was the comptroller of DOD. I always like talking about money. Tell me about how you're looking at defense budgets and the concerns you have about that.

Mr. Taiclet: Well, you know, we recognize that there are many competing interests for federal dollars these days, and especially with the COVID pandemic upon us still.

Mr. Hamre: Yeah. Yeah. Yeah.

Mr. Taiclet: But on the other hand, the threats to our national security are increasing rather than decreasing. We talked about that earlier. And our adversaries

are investing heavily in trying to overtake our technological advantage. And that's just all reality.

I know that Secretary Austin, Deputy Secretary Hicks have basically both pointed out that, you know, the budget should meet the mission and the requirements set and they're going to work within their construct of governance to do that. We're hopeful that they're successful. Congress, at the end of the day, obviously, will set those budgets through the appropriations process. That's the part we can't control.

What we can control is whatever that budget is, John, at the end of the day in '23 and '24 and '25, how can we provide more mission capability to our customers under whatever budget line that happens to be? And I think the only way to do it in a way – in a way that's not just incremental is to – is to embark on some of these larger changes that I've been talking about. In other words, how do we implement this 21st-century warfare concept where you don't necessarily need to buy a next-generation plane but if you can network, say, the F-35 together along with the capabilities it already has internally to the aircraft you're going to get a 25 or 30 percent mission capability boost by doing that? And that's going to be a lot cheaper and a lot faster than designing the next iteration – which we should be doing, but the next-iteration aircraft, if it's NGAD or others, won't be here in the next two or three years no matter what. But can – we can actually add capability, I think, every six months, and in a two- or three-year timeframe it's going to be meaningful.

That's the approach I think we need to take because there are competing requirements for federal dollars. The defense budget's not going to balloon ahead of us. We're going to have to be more efficient as an industry and as a customer base, I hope, to deliver the capabilities that we need.

Mr. Hamre: Jim, you are a pathfinder. This has been a very interesting conversation, and you've opened up lots of interesting ideas I look forward to exploring personally and then also hopefully we'll do some of this at CSIS. Thank you for taking the time to be with us today.

I know we've got countless questions that people have been sending in to us. We'll try to get those to you and then you can decide which ones you want to answer. But thank you for taking the time being with us, Jim.

Mr. Taiclet: It was my pleasure, John. Thanks for having me.

Mr. Hamre: Thank you. Pathfinder Jim Taiclet. Thank you.