DECEMBER 1, 2018
9:00 AM – 9:45 AM

PANEL 3
A DEFENSE INDUSTRIAL AND INNOVATION BASE FOR THE 21ST CENTURY:
WILL WE HAVE THE TECHNOLOGY TO COMPETE WITH CHINA?

Panelists:
• Mr. Bill Brown, Chairman President and CEO, Harris Corporation
• Congressman Mike Gallagher, U.S. House of Representatives, Wisconsin
• The Honorable Ellen Lord, Under Secretary of Defense for Acquisition and Sustainment
Moderator: Ms. Missy Ryan, *The Washington Post*

Video:
https://www.youtube.com/watch?v=AOCjxgtSYLg&t=0s&list=PLHNOi2zcxo7sBxM7HfhmB_t f6QXeqj48K&index=5

Ryan: Let's get started then. Thank you for being here. My name is Missy Ryan. I write about military issues for the Washington Post. It's my privilege to be here with this distinguished panel, starting at the end with Mr. Bill Brown, chairman and president and CEO of Harris Corporation. The honorable Ellen Lord, Under Secretary of Defense for Acquisition and Sustainment and Representative Mike Gallagher from the US House of Representatives from Wisconsin.

Ryan: So, we're going to open it up with an initial question for all of the panelist, but first I'd like see if we could get one of the slides from the survey up.

Ryan: Great. So, we're actually looking for the China slide if that's possible. If not, I will just describe what the conclusion is. We'd like to reference...the Reagan Foundation recent national defense survey showed that their surveyed listed China's holding of US debt and fears about Beijing becoming a major superpower as among their top concerns related to China, and so because this panel is about the threat posed from China's military rise, I'd like to open it up with the following question for the panelist. Do you agree with the assessment that some experts have put forward that China is on track to reach technological parity in 2020 and technological superiority in 2030, and what are the two of three things that the United States needs to be doing in the near term to ensure that doesn't occur?

Ryan:	So we can start with you, representative.
Gallagher:	Sure. Well thank you for having me on the panel and it's my second time at the Reagan National Defense Forum. I thought I wouldn't be invited back after last years, so this is a real honor. So, yes certainly on the current trajectory because if you look at what China is trying to do with modernizing its defense industrial base. At the core of it is what the Chinese Communist Party calls 'Civil-Military Fusion' and the basic idea is to expand collaboration between civilian and military R&D in order to develop China's indigenous capability, weaning it off foreign dependency, and over time still gain access to foreign innovation through things like Forced Technology Transfer. Sounds pretty basic and obvious, but for the Chinese it's a bit of a departure given their past historical dependency on state owned enterprises which had a reputation for being pretty [clunky 00:02:32], so I actually think if you contrast that...a good example of this by the way, would be the PLA Air force last year contracting with JD.com and SF Express to overhaul their logistics organizations.
Gallagher:	So contrast the direction they're going with 'Civil Military Fusion' with some worrying trends that I think we've seen here domestically. I thought Chairman Dunford was very strong and right to call out certain companies at the Halifax International Security Forum two weeks ago for their reluctance to do business with the Pentagon at the same time they are rushing to do business with China, and this presents a concern because at best I think they could be allowing the CCP to further refine their instruments of authoritarian repression and at worst they could be engaged in technology that will down the road result in the death of US citizens for example, so I think one thing we could start to think about is expanding or bridging that gap by expanding the lens of corporate social responsibility. Right?
Gallagher:	And put aside the more controversial question of working on dual use technology, but some low hanging fruit, like human rights concerns. If for example, you have a company that's working with China on AI facial recognition software that they could use to further enhance control in concentration camps in Xinjiang, then that would be a good opportunity to say "No, let's not do that".
Gallagher:	And then add onto that all of the things that we have done in this year's NDAA to take a harder look at the way Chinese are investing in our economy here, give us greater tools to potentially understand that and push back against that, and certain other things we've done to push back on China abroad. I think there's actually a growing opportunity to get tougher in this space and at the very least halt the slide of our relative capability and hopefully over time reverse the trend we're seeing right now.
Ryan:	Under Secretary.
Lord:	Thank you. First of all, thank you very much for the opportunity to be here at the Reagan National Defense Forum. This is a subject that is incredibly important to me. Building on everything Congressman Gallagher said, I believe we need industrial policy that really gives us acquisition priorities and choices. We know that China is quickly becoming dominant in a few areas and may in other technical areas moving forward. So, what can we do about that? I believe we need to be incredibly vigilant about cyber security. It's a responsibility that we in the government as well as industry has. But how can we begin to measure where we are against the threat?

Lord: I would hypothesize that it would be a good idea to have cyber security standards. Just like we have ISO standards for quality, what does good cyber hygiene mean? We need to set up standards and then measure ourselves against them. Secondly, I believe that we need to take responsibility for the provenance of our hardware and software. We need to make sure that we understand two, three, four, five, six levels down in the integrated supply chain where that software and hardware came from. We're beginning to use some of the authorities Congress has given us to have lists that allow us to avoid bad actors and understand who they are.

Lord: Finally, I think we need to be extremely vigilant about new emerging technologies that will dominate both the commercial side of industry as well as our defense capability. 5G is a very, very, good example of it. We need to really go back to our national defense strategy and not only think about line of effort number one, lethality, but line of effort number two, strengthening our partnerships and alliances and reach out and work with our partners and allies to make sure that we are sharing those practices, that we're working together to really counter this threat we have from China stealing our intellectual property, and really invading our networks.

Lord: So, I would just close this answer in saying that Australia, New Zealand have partnered with us to ban companies like Huawei and ZTE to really protect what we have moving forward in terms of 5G capability. We now see our European partners beginning to open up the dialogue with us and we have some short term opportunities to make sure we really preserve our future, not only or economic security, but for national security by making sure that we really support US companies who are putting the R&D dollars into the technological capability to develop the new 5G protocols, so I think we need to focus on our future and make sure we are working very, very, closely with allies and partners on critical technology such as 5G.

Ryan: Great. Thank you and Bill.

Brown: So thank you and good morning everybody. It's a pleasure to be up here on stage with Congressman and Under Secretary Lord. I'm gonna build off of... I'm representing the industrial base. I'm gonna build off of the comment that Ellen started off with and that around cyber, because I think there's three things that we need to do, and the first thing comes with protecting the IP that we have today. It's no secret that China is very, very, good at cyber espionage. They're stealing our trade secrets, our product capabilities, and we've got to defend against that.

Brown: It's really [cross 00:08:04] government. It's in the industrial base as well. It's implementing this standard through the industrial base and not just with the primes, the largest suppliers, but also with the smallest ones, where I think that vulnerability is gonna be the most prevalent.

Brown: We are setting standards across a defense base in terms of how do you measure and assess cyber security standards across the defense industrial base and that is something is happening. We all in the [DIB 00:08:29], we've got a very good sense of how we share information and thread intelligence around the industrial base. We've got insider threat capabilities that we've built over the last five or six years and the DOD is not contemplating making cyber as a fourth pillar of sourcing which I think is an important step to take. So, number one really is about protecting the IP that we have today.

Brown: The second, and it's no surprise coming from the industrial base, is we have to continue to invest. Consistently, reliably. 30 CR's over the last decade is not the way the Chinese invest in technology. They're thinking out multiple decades and we're thinking out on average 127 days in a CR, and that's not really a way to invest. The lack of certainty is really kryptonite for the business community. You can't plan. You can't invest. You can't hire, and it's even more important for the smallest suppliers who can't ride through the sequester. Between the top of the mark and the bottom mark in sequester, DOD budgets fell by 25%. 17,000 defense suppliers left the market. They shifted capacity. So, we think about vulnerabilities today to shocks. It comes because of the fact that we had a lot of people leave the market over the last eight years and that's due to a lack of consistent funding in the budget.

Brown: And the third thing is, we've got to develop an ability to more rapidly field capability to the war fighter. DOD is making a lot of progress in this area. Congress is supporting those initiatives. We have the RCO's. We have the Army Futures Command. We're contemplating changes in space. All about giving more capability faster to the war fighter and that's going to be very, very essential in how we compete against China.

Ryan: Great. Well you all raised some great topics that we're gonna try to explore in a little bit of Q & A up here on the panel before we open it up to audience Q & A, and I was asked to mention that the audience can submit questions via the RNDF app which is www.rndf2018.org and that people viewing across the country online can submit questions via Twitter at hashtag RNDF.

Ryan: So, to start off the discussion, we're gonna kick it off with Under Secretary Lord. Can you tell us how the Pentagon is reshaping its acquisition and budget priorities to respond to China's military rise and what are the specific investments that you're making in the next five to ten years to maintain the US military edge?

Lord: Absolutely. Everything we are doing in the Pentagon falls under the umbrella of the national defense strategy and we call out very clearly, nine different technologies areas that we're pursuing. We're going about pursuing those more efficiently we believe, because of the restructuring we did bifurcating ATNL into research, and engineering, and acquisition, and sustainment.

Lord: So we have R & E focusing on those nine areas with areas like hyper-sonics being of particular interests.AI autonomy, what we're doing on the acquisition and sustainment side is making sure that we tailor our acquisition practices to allow us to move forward as Secretary Mattis would say, "at the speed of relevance".

Lord: So when you think about something like hyper-sonics, we need to fund that within DOD from a development, manufacturing, a policy point of view, because industry is not going to do that. However, commercial industry is moving forward very, very rapidly in areas like autonomy and artificial intelligence where China's leaping ahead of us in certain areas, so what we are doing is coming up with acquisition authorities and contract vehicles to allow us to be very, very fast followers, and that's something that I am particularly committed to.

Lord: Just yesterday, I was out here meeting with some small companies and trying to understand what we can do so that we don't get ensnared in this very, very, slow process. So, two things I will mention. One is where enacting the middle tier acquisition

where we can bypass through formal JROC requirements process and get capability out to the field within five years. It allows us to take commercial technology or existing defense technology, make a small tweak. So, for an incremental investment, we can really get a step function change in capability that addresses war fighting gaps.

Lord: We're also coming up with flexible mechanisms to buy launch as a service for instance. We're doing that with large satellites right now. There's a gap in terms of capability for small satellites, and to Bill's point, industry needs certainty. I see my overarching objective as two-fold. One, I need to get war fighting capability down range as quickly and affordably as possible. However, at the same time, it's my responsibility to make sure we have a healthy defense industrial base, and the nature of that's changing. It has to be a healthy ongoing concern where Wall Street wants to invest.

Lord: Part of the way we can do that is be more flexible and fast in how we contract. So, I want to make sure that we make it easy to buy launch as a service for instance.

Ryan: Okay, and I have a follow-up question for you. Do you have the resources that you need in order to maintain the edge that we're discussing? Sort of in the medium term and this is a subject that we're gonna ask Representative Gallagher about in a minute. It came up in the morning panel as well.

Lord: Well, the timing of this question is really interesting, as we are right in the middle of developing the PBR which will be, which is, strategy driven budget.We have finished basically the 733 billion dollar budget. We're working on a version for 700 billion, but we know China as the adversary is all in government focused industry efforts. We need to make sure that we have the resources to do the same thing. We definitely have the intellectual capability. We have the strength of our allies and partners, but we need the fundamental funding to bring that all together to translate that into war fighting capability.

Ryan: Okay, and Representative Gallagher as I said, we heard this morning and I was struck by something that Senator King said about US defense spending as a share of GDP lower than it had been and obviously we know about the unpredictability that has characterized the US budgeting cycle in recent years, so how does that whole phenomenon impact our ability to compete effectively with China and what are the prospects for returning, and I know you have your crystal ball here, so I'll ask you to gaze into that. What are the prospects for returning to a regular budget cycle and if that doesn't happen what can be done?

Gallagher: Well first, I hate to admit when Senator King is right. I see him back there judging me with furling his mustache. But listen, I haven't met anybody, I have a lot of my colleagues on the Armed Services Committee and in Congress in the audience, who thinks that three of the last nine years operating under a CR, 11th hour deals, massive omnibus bills that no one reads at the last second is a "good way to run a railroad", as the old saying goes.

PART 1 OF 3 ENDS [00:16:04]

Gallagher: -is a good way to run a railroad, as the old saying goes. And so, I do think as we continue to fight each year for adequate funding, we do need to simultaneously look at deep structural reform in terms of how we do budgeting in congress. And maybe I'll come

back to that. But I found myself reading the National Defense Strategy Commission Report, and I think they do a great job, as was alluded to in the first panel of laying out the devastating consequences of the Budget Control Act and corresponding defense sequestration, but there's fundamentally no new information contained in that.

Gallagher: I found myself nodding and cheering as I read in the same way I did when I read the 2014 Defense Panel Report, and the 2010 QDR Independent Panel Report. It's like we're stuck in increasingly depressing defense commission Groundhog Day. And I think part of that reflects, as my colleagues and only friend in congress Liz Cheney alluded to, to communicate adequately. To adequately communicate the benefits of U.S. privacy and correspondingly the costs of dis-investing in that, or what the costs of a multipolar or a bipolar world would look like, or even in the Pacific dominated by China.

Gallagher: And I understand as a Marine the sort of "can do" spirit of the military which says, "Even when faced with declining resources or a more threatening operating environment or an ever more onerous set of missions that, well, we can get it done, we can do more with less." But the problem with that approach is that it sort of masks the risk inherent in it. And I understand that the Pentagon has made this argument that they don't want to broadcast limits to our adversaries, but I would submit that when we have ship collisions, when we have aviation mishaps, our adversaries are getting the signal loud and clear, they can read through the lines in a way that perhaps the American public can't.

Gallagher: And so, I just bring that up to say it's one thing for me as a lawmaker, a very junior lawmaker, to stand up there and say, "We need a higher top line." And the fact that we're even contemplating a $33 billion dollar cut from an already inadequate top line, shows you how far we failed to make the case to the American public. But we're going to need in almost scenario to build a political coalition to continue the rebuild in modernization, we're going to need that signal being sent from the very top of the Pentagon. And I don't like begging, but I'm not above it, so I just would say help me help you.

Gallagher: And I actually think, this is the final thing I'd say, we can discuss my heretical views on congressional process reform that my colleagues in the front will surely make fun of me for, things like biannual budgeting and the Defense Strategy Commission recommended trying to get a five year budget, which is unrealistic but I would support it. I actually think in addition to the polling you did for this, there was a really interesting survey released by the Chicago Council last year, which examined American attitudes towards "America first."

Gallagher: And they actually dig into the data, they paint an interesting picture, which is to say even among core Trump supporters you find support for what we in this room would call "Extended deterrents." Using the military to respond to humanitarian crises, WMD threats, and defense of our sallies, our NATO allies not withstanding controversies we've had in the last two years. I actually think there's an opportunity with the American people, we just need to find a way to make that argument better, otherwise we're going to be back in Groundhog Day over and over again. And I'm getting old, I don't want to be.

Ryan: Well, let's hope not. I'm going to try to get another survey slide up on ... If I could ... Exactly, number two, which shows us about Americans views rating the United States on

space technology, AI, and cyber security, and that sort of tees up the follow-up question I had for you, representative congressman. How should the U.S. ... And I know this is a topic that you've spoken about a lot before, how should the United States address industrial espionage and other actions that China has embraced in an attempt to leapfrog the United State sin terms of military technology? And this is some of what both of you alluded to in your earlier comments.

Gallagher: Sure. I guess I would salute the leadership of Chairman Thornberry and all of my colleagues in the Armed Services Committee and the Senate Armed services Committee in the audience for what we've done in this year's NDA, I actually think there was some very positive steps forward. Perhaps the biggest example of that was building on a lot of the work that Mike Brown did, I saw him in the audience, who we're exceptionally lucky to be having heading up DIU. It's not DIUX, it's DIU, everybody, get onboard.

Gallagher: We completely revamped the committee on foreign investment in the United States to expand authorities for reviewing investment in the United States and taking a look at things like real estate transactions next to military facilities. And I think that was a contentious process, it was a hard process but we got to a good outcome, and I hope that that will prove positive over the long term. We've prohibited DOD from contracting services from ZT and WWAY, that was a very interesting discussion at the White House, and we did things like creating mechanism for the Pentagon to communicate with federally funded research facilities to ensure that there aren't concerns presented by the PRCs 1,000 Talents program, for example, or any university that houses a Confucius institute now has more restrictive conditions for receiving DOD funding.

Gallagher: We've actually been pretty active in this space, and we're interested over the course of the next year as we go through NDAA and having a collaborative discussion and dialogue with the Pentagon about what did we get right, what did we get wrong, do we need to continue looking into this? And I think we're just sort of beginning to wake up into this space. And then combine with what we're doing on the international scene, simple things like requiring the White House to make a determination as to whether Russia has been in material breech to the INF and whether we need to comply with it, which it looks like they're going to formalize at some point soon. That will expand the sort of weapons we have in our toolkit to confront China in the Pacific. I think it's actually a success story.

Ryan: Are we responding fast enough? Has the horse left the barn?

Gallagher: No, right? I think we sort of are where we were in the late 40s, vis-a-vie, the Soviet Union where we're starting to wake up top this being the next generational challenge, but it's going to require us to modernize all of the instruments of U.S. national power, get people to talk to each other. And so, I think in large part because of the work of this gentleman on the front row, we've gotten the conceptual piece right. It's a big shift to say that China and Russia are the pacing threats, but it's going to require a couple decades to make sure that we're actually ... We're executing that strategy and resourcing it appropriately.

Ryan: Great. Well, Bill, I'm eager to hear your perspective as the industry representative on thee issues. And what I'd like you to do, if possible, is tell us what areas of technology or which weapons programs have the best chance of restoring and maintaining that

strategic edge that we're talking about. And so, that's one question. And then secondly, what are the two or three things that we're not investing in that we should be?

Brown: I got that question. Thank you for that, thank you. I see a lot of military people in the audience. Ellen referenced earlier the 9 or 10 top technology priorities, which I think is very important to focus on because they're there for a reason, they were studied, researched, as to whether we have a gap today or will have in the future, and it's important that we resource and staff against those priorities. I think a different way to frame the problem is we need to have the technologies that make sure we can get to the fight, like stealth, like electronic warfare, like satellite overhead architecture, like PNT, resile communications.

Brown: Look, in the future, every airp;lane, every soldier will be a sensor that will need to be connected, that has to be a resilient network, not jammable. That is critical for delivering capability to the fight. And the second is bringing device of capabilities once we're actually in the fight itself. And those are some of the things that Ellen is talking about in terms of hypersonics and AI, and quantum's going to be an important part of it, so really all of these different dimensions, all these technologies are going to be critically important. The key issue is making sure we have the proper resourcing and funding against them.

Brown: It's one thing to put a list of priorities out in one year, and then the subsequent year change them. We need to stick with the 10 that we've got, they're going to evolve a little bit as the threat environment changes, but making sure that we invest, we resource them, we solve this particular problem. In terms of what we're missing, it's hard to say that we're really missing anything, that's a very long and exhaustive list, and we're going to struggle with just making sure we properly resource them. The key thing is really about resourcing against those long term technology priorities.

Brown: And just going back to the question of speed, how is the defense industry seeking to be as agile and nimble as it needs to be in order to deliver these improvements and these ways of protecting against espionage and infiltration that needs to occur? Look, we're all trying to be more agile and nimble, and I think there's three things that we at least at Harris are doing, and I think most of the players in the industry are working on as well. Number one is adopting more commercial processes, commercial development, technology development, business processes, like agile software development. Agile's been around forever in the commercial space, called Dev Ops within the defense space, we're adopting it, it allows you to code, test, deploy, on a very frequent basis not once a year or every couple of years in the waterfall method, but you can almost do a daily or hourly delivering new software capability out to the war fighter. And it's things like that. Number one, adopting some of the commercial processes, alow people to go very, very quickly.

Brown: The second is adopting commercial technology, components themselves. We see it pretty prevalent what's happening in our space business, but more importantly, we see it as over the last decade in our radio business, we're one of the top providers of tactical radios to the U.S DOD. 90 percent of what goes into our radio comes off of commercial technologies, so 90 percent. It allows you to stay up with the capability in what's in that communication device based on what's happening in the commercial sector. And because what we do is we invest our own IRAD dollars to develop that technology, we naturally build some headroom into its development so that as the need of the war

fighter changes over time ... And it's software driven, it's a software defined radio, you can onboard ... You could onboard new capabilities much like your iPhone. And that's helping us to be very nimble and resilient and move very, very quickly. Those are two of the key things that we're doing from the commercial perspective. That's my view.

Ryan: Let's talk about space. And this is a question for any of the panelists or all of you. Tell us what the United States is doing to dominate space and make sure that China's attempts to advance quickly in that area don't create problems for us.

Gallagher: Well, we've had an interesting debate on the Armed Services Committee about space force and how we might fund that effort. I think there is a consensus recognition on both sides of the aisle ... You guys can shake your head if I'm wrong ... That we need to be doing more in space, that there's ample opportunity to streamline a lot of the different processes we have ... That was not a shake, that was very ambiguous. Jimmy Panetta, my nemesis. But we're trying to figure out what the best approach forward. When it comes to cyberspace I think there is more of an urgency on the commission. I was actually confused by the polling that you put up there, it's really not intuitive to me that the Democrats would be less concerned about cyberspace than the Republicans, because I see a shared recognition that this is the sort of next domain of geopolitical competition.

Gallagher: That's why I was glad that we commissioned what's called a cyber solarium review, in last year's NDAA I was honored to be appointed to it with my colleague Jim Langevon, who's here somewhere, and we have about a year to conduct a review of our cyber policy, develop different strategies going forward, deterrent strategies to sort of explore how escalation works in cyberspace. And so, I'm confident that a year from now I will come back here having solved this entire problem, and that's where we are.

Lord: From a department point of view we've stood up Cyber Com, and we're very excited about both the offensive and defensive authorities that we have. We are learning from standing up Cyber Com and that it probably took too long to get organized, and we're working very, very closely with the administration and congress to stand up the space force. One of the things we're doing is looking at the complexity of space, which is so co-mingled with all of the other dimensions of land or sea or air. And we're going through, and we've done a pretty careful inventory of what all the different services are doing, because it has been rather distributed, and we're trying to make sure that we are being efficient and effective sharing all of that. But an enormous amount of energy and talent going into it, so it's a domain that we are focused on.

Ryan: And just to help the audience understand, how would a standalone space force help achieve that goal of competing with China in that area?

Lord: Our idea's really all about focus, so that we space ... Obviously, everything up there interacts with ground control stations and it's all a bit co-mingled right now, but we want to make sure we access the threat and that we come up with a strategy to dominate in space and make sure we have both the offensive and defensive capabilities. Instead of having such a federated series of efforts going on, a space force would allow us the focus and I think the clarity.

Brown: From my perspective from the industry side on space, I think we have a leadership position today in our space architecture, I think it's pretty far ahead of where our peers

happen to be. We know we've got a resiliency issue with a large sophisticated multi billion dollar architecture that's there. There's a drive towards disaggregation into hosted payloads or small sats, and small sats are going to be less expensive, that's very true, it's going to have some interesting capabilities, faster to launch, and the design lifecycle for small sats will be such that you might have them last 4 or 5 or 6 years, not the expectation of 15 or 20. You can launch 5 with the expectation of 4 actually working, so you can move very quickly, that allows you to bring commercial technology into bear not a small sat. You can respond very quickly as the need changes, you can continue to launch these small satellites. It's very difficult to do that with these large exquisite systems.

Brown: And also, Ellen mentioned earlier about the disaggregation of space in terms of the launch as well and bringing down launch costs, a lot more accessibility to scape with commercial entities, that brings down overall costs for components, you can now bring hosted payloads and ride share. All of that is a dimension that's happening in the space that's going to allow us to move faster and compete against people like the Chinese and the Russians in this particular area.

Lord: An enabler to all of this is coming up with an architecture and interface control documents and so forth that would give industry the framework to focus their efforts.

Ryan: Moving on, I'd like to ask a little bit about potential cooperation with China in this context of competition and-

PART 2 OF 3 ENDS [00:32:04]

Ryan: ... in this context of competition. And I took part in ... I traveled along with Secretary Mattis last June when he visited China. And one of his central messages that he had during that trip was, "Cooperate where we can and compete where we must." And I think it's a really interesting question given the overall sort of geopolitical tensions that characterize the relationship at this point in time.

Ryan: So from the perspective of you all as panelists, how does the United States do that? How do you cooperate with China in areas that are vital, in areas that serve American interests, while at the same time continuing to identify them explicitly, as the National Defense strategy does, as the primary competitor, at least in terms of technology?

Gallagher: So I'll confess that on this I've been influenced by a different Mattis. Which is to say Peter Mattis, I think, actually had a great argument about this. And he says that when people advocate for engagement, they traditionally identify four areas where it makes sense to cooperate. I'm going to forget the ... WMD proliferation, economic independence, stability on the Korean peninsula and the environment, or global warming.

Gallagher: If you go down the line, let's examine the record.

Gallagher: WMD proliferation, China's promises to enhance export controls to get a dual use technology, so it never really materialized.

Gallagher: Economic interdependence, we have that, but at the cost of coercive trade practices, IP theft, forced technology transfer.

Gallagher: China continues to undermine sanctions against North Korea, contributing to instability on the Korean Peninsula. And their climate record and environmental record stinks.

Gallagher: So I think the wisdom in the current moment lies in recognizing that this is not a country we share many long term interests with. And that in the short term we need to focus on strengthening our own society and our own instruments of national power to gear up for sustained, strategic competition with China.

Gallagher: And foremost among the weapons we have in our arsenal, beyond our free and open society relative to China, is our network of allies in the Indo-Pacific. We had a lot of smart people that made a lot of far reaching and seeing decision at the end of World War Two, and as a result, we have a team that China can't match. And I, sort of naively, believe we should be looking for every single opportunity to expand cooperation with India, with Australia, with South Korea. To look for new and emerging allies. And not to give them a choice between us or China, but really it is a choice between sovereignty or servitude, right? These countries care about their own independence, regional stability and economic prosperity. China represents a threat to all of that, in the immediate, and certainly over the long term. And so they don't have to agree with us on everything, but we do have need to give them the ability to assert their own interests and independence when it will be, as it often will be, be threatened by Beijing.

Ryan: Just a follow up on that really quickly.

Gallagher: Yeah.

Ryan: Can you play that out a little bit? What did the deep end alliances do? How does that actually prevent China from ...

Gallagher: Yeah. Well, one thing I'd say is it works both ways. I am proud to share the Friends of Australia caucus. If we have any Aussies, hundred years of mateship since we fought with you. General Monash, awesome. Nobody? Okay.

Gallagher: The Australians have really been the sort of the canary in the coal mine for the nature of China Communist party influence in their own domestic politics. And so I would say there's certain lessons we can learn from them. I think we should take advantage of every opportunity to have advanced basing and enhance our presence in the Indo-Pacific. Again, as I alluded to before, I think being free from the restrictions of the INF will allow us to do a variety of things.

Gallagher: And then in almost any scenario you play out militarily in that region of the world, it sounds simple, but you're just going to need more ships. You're going to need more ships, you're going to need a variety of different sizes sailing around enforcing freedom of navigation. And right now we don't have that. We don't have a path to 355 ships. If we cut 33 billion dollars from the top line, we certainly won't have a path to even get above where Obama wanted to go with the Navy.

Gallagher: So those are a few things that come to mind immediately.

Ryan: Secretary ...

Lord:	From my perspective, China's been very, very clear in what their ambitions are. It's all laid out in documents. I think we need to go back to our rule-based engagement and be very, very clear about the rules that we are going to live by. And going back to what Secretary Mattis would say, "No better friend, but no worse enemy."
Ryan:	Bill?
Brown:	Yeah, from my per ... Yeah, I want to build on the congressman who talked about allies and partners, really, around the world, and particularly in Asia. We've got a special relationship with New Zealand and Australia. We're now the largest event supplier into India. Special relationship with the UK and Canada.
Brown:	You know, for us to really, fully leverage the power of that alliance, when you think about the Five Eyes, you know, we've got to be thinking about and articulating our strategy of more than the next one or two years. We need to have a vision that goes out five, ten, fifteen years, because that's what they'll look to us for. Which is making sure that if they're going to partner with us on certain things, big technology initiatives, we've got a clear view of where we want to go, and we have the fortitude to find our way to get there.
Lord:	And I think we need to make sure that we have the mechanisms to sell US systems so that we're interoperable so when that call comes, we've trained together, we've exercised together, and we can go and fight a war together.
Ryan:	Okay. Maybe just one more question before we open it up to the audience.
Ryan:	How do you balance the need for sort of mainlining these greater cyber protections, making sure that China doesn't insert malicious code into technology or put chips on hardware ... How do you balance the need to build that into the weapons development process with the desire to avoid greater costs and slowing things down.
Lord:	The same way the banking industry does. You know, other industries have dealt with this and dealt with it pretty successfully. We just have never been clear in our requirements. We say cyber security, we have some high level standards, but I don't think we have disaggregated them in a way that we measure against them clearly. And we're going to have to. It's just part of the cost of being a defense supplier.
Ryan:	Does that imply a more intrusive US government involvement in the ...
Lord:	No. It comes down to design requirements, performance requirements, and being very clear from the outset what the requirements are.
Ryan:	Okay. And Bill, is there anything you wanted to add?
Brown:	No, I would just say that, you know, in terms of all the PCBs, microelectronics that we get out of Asia, a lot does come through the supply chain. It's hard to pinpoint exactly where it happens to be 'cause it's several tiers down. We're all concerned with that. You know, part of this is making sure we've got capacity in our trusted foundries. I know this is at the top of mine, to the under secretary as well, making sure that we have trusted stores of components, mostly on the electronic side. And again, it comes back to making sure that we continue to fund on a regular basis. It's very hard to build facilities that are

really geared towards our US military and then have the military spend move up and down. So there's got to be consistency in funding.

Ryan: You want to add?

Lord: So I don't think we can just, excuse me, continue to be defensive about all of this. We have to go on the offense and have those trusted supplies.

Brown: Yeah, I agree.

Lord: And I think we see commercial industry leaning forward and being very, very interested in working with us because it's a shared destiny here.

Brown: Right. Yep.

Gallagher: I guess my simple view of cyber is that, as much as we talk about code and machines, at the end of the day, it's all about people, right? It's whether we can get the best and the brightest to work on these issues, and certainly counteract the way China's operating. Which is to say, last year they announced that they're going to nest about four to six cyber security schools within elite universities that are solely focused on training the next generation of elite cyber warriors.

Gallagher: And then contrasted with what we're trying to do, I think the various military services are admirably thinking creatively about ... You know, the marine corp, for example. "Do we create a separate career path for cyber warriors in the same way that MARSOC sort of exists further away from the flagpole?" That may help on the margins. I just don't think it's going to be enough, right? Because one, I'm skeptical that the best, the sort of, "the geeks", the talented geeks are going to want to get a high and tight and do pull ups and join the marine corps. Or even if you were able to take someone who joined and train them to be elite, you'd lose them to the private sector. There's just no way to keep up with compensation.

Gallagher: So exploring a more flexible career path or a way where we can harness civilian talent I think is the challenge.

Lord: That's key. And we are working on a lot of different programs to rotate people in and out. Because you're right. People want to go to industry and make money. But it's incredible in terms of opportunity to come in to the department and work across an incredible breadth of things they might not be able to do in industry. So it's up to us to create those flexibilities and programs to allow that. Because the mission is awesome. People want to come and work with us, but they don't want to wait 90 days to get a call back in 30 days to get a computer, and you know, on and on and on and on. We've got to fix some of these things.

Gallagher: Totally. And before I get in trouble, I said "geeks" only because I am a geek, and that was actually when Asia Times described the Chinese program, they said they're deliberately going after geeks and unconventional people, right? So they sort of get it, and we need to think creatively as well.

Ryan: Okay. And let's see. We have three minutes, so let's see if we'll get at least one, maybe two questions from the audience. And one questioner asks, "Does the recent US

withdrawal from the INF Treaty represent the removal of a real technological barrier? Will non-nuclear ballistic missiles become a key US asset in the future?"

Brown: Okay, congressman.

Gallagher: Yeah, since I was so laudatory of it, I guess. I think so. I guess the challenge is whether we have allies that are willing to house and base some of those ground-launch missiles with ranges of between five and fifty-five hundred kilometers. That's an open question, but I think it's an opportunity we should explore.

Gallagher: And I'm also intrigued as to what this might mean for fostering some productive tension between Russia and China and some of the capabilities that Russia is worried about from China. And so I think it just opens up an opportunity. I could be wrong when we look back ten years from now, but I know there's people much smarter than I that are considering this in the White House, and I'm glad that we're at very least recognizing, as the state department has done since 2014, Russia's violating the INF.

Ryan: All right. And let's just ... We'll get one more, building on something that we were just talking about about getting the right talent. "What is the role that public education plays in our national defense needs?" Any thoughts on that?

Lord: I think it's a focus on STEM. We obviously have to make sure we have the right curriculum and the right standards. So it's hugely important to make sure that we have a trained workforce once kids graduate from high school and college.

Brown: And I think it goes deeper in terms of ... You know, there was a survey that was done that said something like 70 or 72% of young children that go into a STEM program know they want to be in STEM at their very early age, actually in elementary school. And I think the challenge I think we all have is that these less than 20% of the engineers in our colleges today are women. You know? And we've got to change that mix, and we've got to bring more women, more young ladies into high school, into colleges focusing on STEM, engineering type careers. And I think that's going to be really essential is diversifying that base.

Gallagher: I would completely agree. At a broader level, when you consider the question of just health, there was survey that's, I think, one in four young men between the ages of 17 and 34 are qualified to enlist in the military due to a combination of things, but it's primarily obesity, mental health or they've just not finished basic education necessary. That's a crisis, I think, that may manifest itself in a few years for the military, and so it's absolutely critical that we get upstream from a lot of this stuff and invest early on.

Ryan: Anything else you want ... Last word?

Lord: I was just going to say one thing we don't often think about when we think about the next generation, always focused on engineers and scientists, but we've forgotten about the trades and how important they are, and to make sure that we have a public education system that brings along the next generations of welders and different skilled labor. Now, in this day and age, somehow trade schools don't seem to be quite as highly thought of. We need to rethink that because we are missing a lot of skilled labor.

Ryan: Great. Well, I want to thank our panelists for a really interesting discussion today. I think you've brought a lot of food for thought in the audience, and thank you.

Lord: Thank you.

Brown: Great.

Gallagher: Thank you.

PART 3 OF 3 ENDS [00:45:26]