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PRESENT MEETS FUTURE: EVOLVING DEFENSE PARADIGMS

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PARTICIPANTS:

PANEL 4: OPPORTUNITIES WITHIN DOD IN AN AGE OF AUSTERITY:

**Moderator:**

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**Panelists:**

COLONEL LOURDES DUVALL (USAF)  
Federal Executive Fellow, The Brookings Institution  
"Be Quick, Be Useable, Be on Time: Lessons in  
Agile Delivery of Analytic Tools"

COLONEL KARL GINGRICH (USA)  
Federal Executive Fellow, The Brookings Institution  
"Making It Personnel: The Need for Military  
Compensation Reform"

COLONEL DAVID TRYBULA (USA)  
Army Fellow, Institute for Defense Analyses  
"Big Five Lessons for Today and Tomorrow"

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## P R O C E E D I N G S

MR. O'HANLON: I'm Mike O'Hanlon at Brookings and delighted to see so many of you still here. Noah was talking about an hour ago about how it was hard to follow such a great act at lunch. I think it's hard -- it's a testament to the quality of our panelists and their topics and what they're about to say, but it's hard to go at 3 o'clock after a long day when there's also an NCAA basketball tournament in the works. And by now most of you have figured out that even though Peter and I had said that the room next door was going to have a keg of beer and games up all day, whatever you needed, that was a lie to induce you to come but you stayed anyway. We appreciate that.

It reminds me a little bit of also the time I once was asked to give a speech at the Air Force Academy, and it turned out it was the same time as a football game, Air Force against UNLV, and the winner was going to go to a ballgame. And so I complained a little bit about this to my sponsors about why they would think of putting me in that kind of a time slot, and they said oh, don't worry, there'll be a few hundred students there; we made them come. And so I'm thinking great, nice way to get your audience on your side. (Laughter)

Thankfully today my job is much easier. I just have to introduce three outstanding panelists, and they have excellent topics on a general subject that we all know is hugely important because of the age of austerity we're living in and because of the tough choices that are going to be before the Department of Defense. We only have about an hour left today, and so I'm going to be pretty brief in introducing everyone, and two of the three are colleagues here that Peter Singer and I are delighted to have with us here at Brookings this year.

Lourdes Duvall who is an Air Force intelligence officer who has served in a wide array of Air Force jobs having to do with intelligence, including some very operational jobs with special operators but also planning jobs and thinking-ahead jobs, and so she really has the full gamut of skills and experiences that allow her to take on her topic today, which has to do with agility and synthesis and rapid effective response in Air Force and DoD intelligence operations.

Carl Gingrich I've had the good fortune of knowing now for, I guess, about three years, because I used to take briefings from him over in Kabul when he was with the MNSTC-I Command. And

he's also a longstanding Army operations officer and systems analyst and has had a number of important jobs within the Army, including helping prepare its POM, including working on base closures, including a number of other such subjects, and just has been a great joy to have here at Brookings -- and a very sharp critical mind on defense, compensation, and personnel issues, which is what he's going to be speaking about today.

Dave Trybula is another expert Army economist and systems analyst, and he has a topic that -- he'll be the last speaker today, and we had to save a pretty exciting one for the end, and we certainly did, which is a thoughtful perspective on the Army's Big Five. They're of course the famous 1980s modernization programs that have still constituted the core of major Army weaponry and equipment with a lot of lessons, probably most of them good but a number of hiccups and problems along the way that I know Dave's going to explain as we try to think about a period of Army acquisition and DoD acquisition, which, shall we politely say, is slightly more complex and trouble perhaps today than it might have been in the glory days of the Big Five, although I guess he'll speak for himself in a minute about whether that's the right way to begin the argument.

So, without further ado, let me turn things over and we'll work from your right to left, over to Lourdes.

COLONEL DUVALL: Okay, great. Thank you so much, Michael.

Well, good afternoon, and thanks for all of you that have stuck around for this.

This last part and this panel are looking more internal to the Department of Defense, so the aspect that I'm going to look at is that over the decade we've seen a lot of effort has been put into making defense processes more agile, predominantly for the ability to react to urgent warfare needs. You've seen that from statements from Secretary Gates when he was there. You've seen it in QDR language and even language that's coming out from our current chairman. And there certainly are parts of the Department of Defense that have shown great agility in different aspects of this, particularly for developing and fielding needs that are needed urgently in the combat operations that we have ongoing.

When I use the term "agile," and for the presentation, I'm really looking at kind of an intense focus on user needs -- you know, how do you get something out there that's actually usable and is going to satisfy what's needed out there; also, having a time dimension to that, realizing that you need

to get something out there quickly. It might not be the perfect solution, but sometimes an 80 percent is better than the 100 percent.

And also this idea of incremental and proven capabilities, that there's this send it out -- their learn, adapt, and improve cycle. Almost as the general mentioned, there are oodles of concepts being employed in development where you have to kind of sometimes see how things are working in order to improve and adapt upon them.

My fear is that as our existing combat warfare commitments begin to decline and as budgets begin to tighten, we might actually see also a declining urgency for this type of agility in the Department, and I argue in my paper that as this urgency is potentially declining, the actual importance of us as a department of maintaining this kind of agility is actually growing and expanding for a number of external factors outside of combat operations. So, what I chose to look at is to see if there are some lessons that we can take from some fantastic things that have been done in this area of agility over the past decade, and even historically, and see if we can maybe not risk losing those lessons and use those to actually expand agile into more missionary, as I'm an intelligence officer, as mentioned, and I actually think intelligence operations are one of those areas that could really benefit and has benefited quite a bit from an agile approach and want to see that actually expanded.

So, what I did was look at historical cases of organizations that have been known for their agile approaches. You know, the Clarence "Kelley" Johnson Lockheed Skunk Works and some of the innovative things that they've done for the intelligence community and for the Air Force -- Air Force Big Safari Program, you know, and those types of historical organizations that just embody an agile culture.

I also looked at commercial examples of companies -- Cisco, Unisys, Ericsson, and some other large companies -- who have recently transitioned from kind of traditional, serial, big, heavy acquisition processes to more agile processes and in their minds successfully have done that.

And then potentially most novel as I looked at three military and intelligence community case studies that are contemporary where there's been some great success out there and tried to glean some lessons learned from those experiences to see if we could capture those and see what kinds of things they offer for the Defense Department as we decide, you know, do we need to do agile? My answer's yes. And then how do we do agile in order some of the challenges that we have in doing that?

And what I came up with -- and it's funny that General Miller mentioned it this morning -- is that it's likely going to require some institutional adaptations, and that's not normally very easy to do in a successful institution to do that. But I'm going to talk and focus my talk on three of those what I am calling institutional adaptations that are really going to be pre-conditions -- like, we shouldn't even think about going down this road if we're not willing to commit to these three institutional adaptations. So, we'll be happy to talk in any greater detail about what I think the drivers are of why we need to be more agile. Just in summary, it's the pace and uncertainty of technological change, the rapid advancements of data sources and data volumes that we're seeing in the world, and all of these have kind of exponential trajectories, not just, you know, linear, and the wide range not only in capability but also in the character of the type of conflicts and adversaries that we're likely to see in the future. And I think that these three kind of factors converge in some interesting ways to make it so adaptability isn't going to be just kind of a nice thing to aspire for but actually a requisite, you know, for our Department in the future for certain critical mission areas.

So, these three critical adaptations, you know, given that I think that, you know, the world is driving us in that direction. The first is entirely different thinking from traditional ways that we have thought about how user collaboration needs to happen throughout the development process, and I'll talk in more depth about each of these when we introduce them.

Second is creating mechanisms to easily bring together multifunctional teams, and it was interesting that Krystal talked a bit about, you know, needing more multidisciplinary expertise, and this is just a follow-on to that, you know. Unfunctional stovepipes have really no role in being agile, and I'll expand on that.

And, finally, a need to show consistency between what is being voiced as being important agility and adaptability and what we actually measure and incentivize within the Department.

So, I'll briefly go through each of these three what I consider the major adaptations that need to take place, and then I'll leave it up to questions if anybody wants to know more about the cases I looked at or some of the factors about why I think agile is important.

So, first, insisting upon user collaboration development. And for those of you that normally wear a uniform, you're probably pretty familiar with this -- in more traditional defense programs,

organizations representing the user spend an awful lot of time up front defining and coordinating what the big requirements are for a system. And that's really the crux of the user involvement, this up-front requirement definition vetting approval process. And once those requirements are documented, there's basically a hand-off then to the acquisition community, who then, you know, develops a solution for us. And the acquisition organizations normally serve as a proxy for the end user. Basically, until then, you know, there's operation test and evaluation and then the user gets this end product.

In contrast, and this is a very sharp contrast, agile approaches require user involvement for the entire development process. You know, there is really no hand-off here. The good news is there's a whole spectrum of how successful efforts have done this. There are some great cases. One of the studies that I did about co-locating developers with actual users in the operational space, and this is a technique that works extremely well when there is a high level of requirement uncertainty, you're dealing with a new technology, or you're dealing with a really novel and evolving operational environment where you need to have changes happening at a really fast pace. And it also is really good if you've got a specialized capability that's being out there.

You can also identify a consistent group of users that's going to participate in the development effort. You know, now with modern technology that can be by video teleconference or others, but they have to be part of the team -- and a consistent group, not just a, you know, hey, I have to send Joe to a meeting kind of thing. But these are people that are actually in the development and are able to look at prototypes as they come out and provide valuable feedback so that the development effort stays on track.

You can do something like the Big Safari model, which is bringing really high-quality experts into your program office. They're able to bring their unique recent operational expertise as well as tap into the community that they just left in order to make sure that there is a tight connection between what the developers are doing and what the operational, you know, organizations in the evolving situation need.

So, you know, the issue really isn't the how right now; it's really the bigger, more macro question of changing the mindset about a commitment to continuous user involvement.

And when you talk about users -- I just want to bring up one more piece about this -- the

continuous user involvement is something that, you know, we've seen in combat an awful lot, and one aspect of that -- the lead user -- we really see in combat and urgent needs quite a bit. But it exists in other areas. A lead user is somebody who sees that there might be substantial benefit to them if a solution to their need is fixed, and these folks then have a high, high motivation to innovate. You saw them in World War II with the hedge cutters. You saw them with U.S. troops putting armor improvised onto their light Humvees. I cite a case of -- in the intelligence, Air Force intelligence, of a mission management tool that didn't exist that was badly needed in order to let analysts kind of spend more time doing analysis.

So, you know, having a culture that not just encourages people to do that but seeks out, you know, who are the leaders out there and then has an open mind to bring users into the solution front. That's very different thinking than our traditional acquisition process is now where the user's role is seen as defining requirements, and then solution set is really handed over to the acquisition personnel. Lead user concept has a wealth of academic literature behind it. It's been used in medicine thinking, a whole bunch of industrial examples in addition to defense examples, and a cultural change in how we engage users I think is really needed if we want to say that we want to do and become more agile.

So, some questions I think leaders need to ask -- and, again, most of these questions are outside of the acquisition community, even though most of these topics are talked about only in the acquisition community -- are: How are users -- how is my community involved in system development? And that's a commitment. What is the pacing of delivery of the first workable copy so we can provide some feedback? And if the answer is seven years, which is actually the average for a major information technology system, unfortunately, in the Department of Defense, that's too long. So, you know, how do we change that, and what needs to be done to make that quicker? And do we have mechanisms to seek out and identify lead users and bring them into the solution set? So, again, a pre-condition, I think, to expanding agile is thinking differently about users.

The second, I contend, is figuring out mechanisms to do cross-functional, quick teaming on programs, and this is really fluid, because almost every program has a different depth and level of which functions need to be involved and the duration of the teaming and things like that, and, again, for our institution that many of us are familiar with, sometimes that level of flexibility in assignments and

teaming comes a bit difficult to us.

So, in traditional DoD processes, again, functions -- such as user requirements, testing, security accreditation, operability testing, training -- they all have their functional organizations, and most of them in a traditional process have kind of their turn in the cycle. So, somebody gets done with their part of the program, they hand it over to somebody else, they get their turn, and you can really stay in your functional stovepipe for the most part, you know, as a program progresses.

Agile is an entirely different ball of wax. So, if you do agile, you really need to do tighter collaboration across functional boundaries. So, there's different thinking about how functional stakeholders really need to be involved in these processes. And again, without getting in too much detail, one of the programs I saw had just a fantastic, different way of thinking about the role of training and trainers, which I thought was really innovative. They actually saw the trainers as kind of the bellwether for the problems that the, you know, end user would have. Since they were on the phone call end of problems that the users were having with the current system, you know, they were able to alert developers early to things that probably needed to get changed before the user even asked for them to be changed just through the questions that the, you know, operators were asking about -- functions and things that were confusing to them or analytic problems that weren't being answered, you know, by the current configuration. So, not thinking of training as an entirely separate enterprise but, rather, thinking of training as feeding development in a very iterative way I think is pretty innovative but also one of the kinds of things that agile really requires.

So, with user involvement there's a whole variety of ways to do this. You know, many organizations will maintain the existing kind of functional boundaries but have found ways to cross-matrix, for periods of time, individuals to the right offices. You could expand offices already comprised of multifunctional teams -- you know, Big Safari-like organizations that have figured out how to bring together experts to do that. I think the biggest risk -- and some people have said it's happened with organizations such as JIEEDO -- is that if you make an organization too big and have too diverse a portfolio, you actually sort of defeat the purpose and make them less agile. So, the right sizing of an organization is really important.

You can also create a new organization kind of from scratch in the commercial world --

Ericsson actually did this -- where it's built from the ground up to do this kind of agile staffing, you know, of an organization -- allow people to quickly move to different programs as needed and that kind of thing. And I know in times of budget cuts, kind of that last one, creating new organizations is probably thought of as the least preferred. There's really not a lot of people out there to say yes -- you know, cut my budget and create a new organization.

But, I'll tell you, the academic research out there from people like Professor Christianson of Harvard Business School and folks that have looked about, you know, innervation within industry -- creating that new organization might actually be the preferred option. And I'll just give you a quick rundown as to why.

So, in the academic research about having a successful organization that has embedded processes and values and then bringing in a disruptive change -- you know, entirely different processes and values that are at odds with what the current organization has. Sometimes rolling off or spinning off a new organization to allow it to compete separately for resources and create its own value and process structure is actually much more productive than trying to embed or kind of have this co-equal status within an existing organization, particularly when an organization has been successful, like the Department of Defense, relying on its existing processes and values. That mismatch can be very detrimental to having that new process actually get the ability to take root and to compete for resources. So, although that might not be kind of what people want to hear in this environment, there's an awful lot of literature and business and governmental research out there that says, you know, if that process value mismatch is so great, it might not be even possible to be able to do the new process value look like agility if you don't do something radically different. And if you keep it within the same organization, the CEO, the very top, you know, has to buy into it to make sure that the resources and all the measurements are aligned well to let it survive.

The last thing I'll discuss, and the final challenge, which really flows from that, is matching the intent of being agile with appropriate measures and incentives. So, you know, right now, there's a lot of value -- process compliance on functional expertise and making sure that all the functions have their, you know, appropriate look and role in the process; detailed, up-front analysis and cost estimates no matter how much in the future they happen to be off but the fact that you spent the time to do detailed

analysis up front -- all those things are extremely valued in our defense processes today.

Agile, on the other hand, places more value on speed of delivery, usability, adaptability, actual use of whatever is being created. It also values cross-functional teaming and team effort versus individual performance or individual functional excellence. These are very different things for organizations to figure out how do you measure and incentivize.

I thought it was really interesting, too, to hear General Petraeus talk about risk in his advice when he was asked, you know, what one piece of advice would you give to acquisition professionals? And then when he was USCENTCOM commander he said never, ever underestimate how important speed is. And I think, for agile, what that does is it really kind of turns a risk proposition on its head, because right now we separate fairly clearly, you know, the folks in combat -- they're doing that; the people who are procuring are doing that.

What agile and rapid delivery and those kinds of things did was actually try to mate the risk of the user of not having a capability with the risk of a process either being delayed or paced by some decision or inaction, and leaders forced that timing to happen so that the risk of the process was often made through exceptions and things like that so we could minimize the risk, you know, to the user, the war fighter, because it was so important.

What agile does is it tries to institutionalize that and make it so that not just for urgencies and not just for, you know, combat but all the time, linking that risk to how much a solution is good enough to get out there so that we can continue to grow versus how much time to we need to make sure we've got the process perfect and who's bearing the risk in that situation.

So, questions, I think, that need to be asked really are:

How much is that mismatch between metrics and incentives and behavior?

If it's big, how do we change those?

Can it be done within existing organizations, and how do we start rewarding for the things that we say are important?

How quickly are things fielded to the war fighter?

How much use and usability is happening from capabilities we provide?

How do we reward quick failures that we learn from, you know, versus having these

monumental failures after numbers of years? It's better to have the quick-learning experiences and then move on.

And then, finally, how do we weigh risk properly in all these cases?

So, just to wrap up, I think most of us can agree that the primary driver behind the most recent focus on useful capabilities was troops in harm's way. You know, in the past '50s and '60s you can definitely see cold war was an impetus for a lot of organizational changes and adaptations and rapid delivery efforts. But currently, as the urgency for these processes declines and we focus on how do we tighten our budgets, I'm afraid that we might miss an opportunity to learn from these decades of experience that we have and do an agile in organizations doing just the things that I described in terms of user collaboration and multifunctional teaming and the right measures. And I would argue the importance that agile is growing for the Department, and although change will be difficult, it's going to be needed.

I think the good news, sort of the silver lining in all of this is that we have practitioners that have done this, some for decades in the case of Big Safari, some for 9, 10 years in terms of most of those organizations and capabilities that have been responding to the current fights. And we have a number of users, you know, a huge percentage, actually, of our armed forces that have only experienced this kind of responsiveness, and they're going to continue to demand it, you know, as they become more senior. So, the values, the beginning of those culture changes, have already taken root, and we have people we can learn from. It's just a question of how much we want to acknowledge that and then embrace the change.

Thank you.

MR. O'HANLON: Thank you very much for a very sophisticated analysis.

And now we're going to turn to military compensation. About the only hot-button issue that Karl doesn't touch, by the way, in this -- I've had the pleasure of reading the paper in draft form -- is maybe dropping the Army football team. So, you could argue that he left out the low-hanging fruit, but you could also argue that he's gone for even bigger fish.

And so we look forward to hearing you as well.

COLONEL GINGRICH: Thanks, Mike, and thanks for moderating this panel. We do appreciate it.

Okay, on to a non-controversial topic, so let's just get after it. National debt exceeds \$15

trillion as of a couple of months ago. Mandatory programs, such as entitlements and obligations on the debt, are largely responsible for that. However, defense spending over the last decade, as Mike can attest to, has grown exponentially as well. The 2013 budget by DoD is attempting to save or reduce spending by \$487 billion. That's now over being discussed on the Hill. They face a potential additional 5 to \$600 billion -- \$500 billion, depending on sequestration comes out.

So, how do you adapt to that type of fiscal environment? Well, you do what you heard today, burden sharing. You adjust your strategy. You decommission frigates. What I chose to do is take an internal look and try and do some internal reforms that can generate some savings, if you will, some efficiencies so you can afford more strategies.

What I'm here to tell you today is that as evidenced by the release of the 2013 defense budget, DoD is trying to do both -- adjust strategy and do some internal reforms. However, I don't think DoD has gone far enough, and I also think that the context has changed so much today that Congress really needs to participate in this discussion and take DoD at its word and start to pass some of these into legislation, some of these military reforms.

What do I mean by a change in context? Just in a general sense, a hundred years ago military pay was nominal. It was not competitive with the civil sector at the time. Skill transference was not there between military and civilian. Congress offset this low pay by establishing a generous retirement plan to recognize that commitment of the retirees. And then health care was based on the single soldier at a remote outpost. It wasn't based on the family member or the retiree after he left military service. That's some significant change in the context. That's what I think DoD is trying to address. I think we need to go a little bit farther.

Okay, military compensation. Three primary components -- cash compensation, non-cash benefits, and deferred benefits. And I'll go through each one of those.

What the Department seeks to do is to provide competitive pay and benefits but in a fiscally responsible manner, and I think we're getting out of balance in that equation these days. But one thing -- don't just tell me I'm looking for efficiencies, because I'll be the first one to tell you that an efficiency has to have no effect on the effectiveness of military compensation, okay? You can be efficient to a certain point, but the primary metric in a time of austerity in anything we do has to be effectiveness,

okay? I think we can gain some efficiencies and still maintain a level of effectiveness in everything we do. In fact, I think there's about 101 to \$112 billion worth of military compensation reforms out there. I think DoD is a subset below that, and I won't bother to put a figure on it.

So, in my opinion I think -- you'll hear my recommendations -- slow our cash compensation growth, okay? Slow it, not stop it. Reduce the value of non-cash and deferred benefits by transferring some of those costs to our retirees. And I'll get to some more details.

And, more importantly, everything that we have to do needs to maintain the nation's commitment to the all-volunteer force. We have been busy over the last decade -- or two decades. We can't let people go out and lead the service without continuing that commitment.

Okay, cash compensation. We're structured a little bit differently, our military compensation. If you go to a civilian, they have -- about 82 percent of their compensation is in cash, 18 in benefits. If you go to a civilian federal government employee, about 67 percent cash, 33 in benefits. Military, 49 percent cash, 51 percent non-cash and deferred benefits. So, you can see the balance. So, that gives us a little bit of difficulties as we make comparisons across the transom, if you will.

Okay, of the three components, cash compensation -- biggest one is basic pay. That's what I'm going to focus on. Do I think there's some opportunity for reforms, larger reforms on how we pay our people and bonuses and things like that? Absolutely. Can we get there in the near term and start to save a hundred billion dollars over 10 years? No, we can't. And so what I chose is those quick wins, something that we can do today and immediately start to gain some of the savings. So keep that in mind as well.

Okay, our cash compensation -- every year we get a pay raise mandated by law, tied to the ECI. Back in the 1990s they talked about civilian pay parity and how we were way out of parity with civilian pay. I will tell you that no longer exists. Over the last 11 years I think all but two years Congress has passed an above-ECI pay raise for us, and that's ECI plus a half percent, sometimes 1 percent, sometimes 1.5 percent. So, Congress has been very good for the military, and basically what happens is now that is inverse, and now I'll show you a couple of sources that think military pay is beyond what it needs to be when compared to civilians.

Okay, I'm not going to talk about -- before I go into that, I'm not going to talk about

housing allowance, another one of those things that is too prickly that we need to study a little bit longer because of all the privatization we've done on our bases in the amount of capital investment that we made there. If we try to undo some of our BAH, and the way we do housing is just -- you can't do that in a quick win, but I think it's out there for a more long-term reform.

Okay, now whether or not military cash compensation is adequate. Some hard truths first. Civilian compensation levels ought not to be the ultimate arbiter of how much you pay a military person. Ought to give us a sense, but it should not be explicitly tied to that. There are no exact comparisons for what we do, okay? That's one of the hard truths.

And then finally the last one is our pay is largely commensurate with civilian sector compensation. For instance, CNA corporation in 2008, using just regular military compensation -- that's pay, housing, and subsistence -- found that the average enlisted person averaged \$4700 more than a comparable civilian; officers, 11,500. When we start to bring in some of our other benefits, that changes to \$13,400 and \$24,900 as a pay parity, and we getting more pay than our civilian counterparts.

In 2007, Congressional Budget Office found the same thing. We are in excess of the 70th percentile of commensurate civilians. That's the goal -- 70th percentile. The Rand Corporation in 2011 found that we were above 75 just in RMC. If you add in some of our benefits, we're probably over the 80th percentile. So, we're starting to get out of balance.

So, how can we get after that? Well, my recommendation is you take the ECI, as long it's positive, and subtract off a half percent. What that does is that gradually brings that percentile down over time. Guys and girls still get a pay raise; however, they are losing buying power over time, but psychologically it's like no pay raise. Or, what DoD has proposed is do nothing for the next two years, which I have extreme heartburn with. If you postpone anything in the United States that has to do with the budget for two years, you have to fight for it the next two years to get it back, and so that's why I take -- I question that.

What they're saying is in FY13 give us an ECI, don't do anything in '14 right now, and then in FY15 take it down to a half percent and then 1 percent in FY16. I think that's a little too aggressive. I think my approach is a little less aggressive, but immediately start savings and we can save about \$17 billion over the next decade using my recommendation.

Non-cash benefits. Military personnel receive approximately 20 percent of our compensation in the form of non-cash benefits, the largest of which is health care. I'm going to talk about health care for both retirees, although when you talk retiree health care, it's actually a deferred benefit. I'm going to talk to them together, because it's a little bit more simple. And I'm also going to talk about installation benefits. Those are the two largest non-cash benefits that we receive, health care being about 9 percent of the DoD budget. So, we're talking about a huge amount of savings.

I won't get into great details about the defense health program that's available out there in my paper and many other papers.

A little bit of history: We've had health care in the military since 1799. If you go back and you take a look at the law, there's actually to provide adequate medical support to service members assigned to wilderness outposts. It's not very wilderness outside anymore, so, again, a context change. What we saw was families started to move to the base, retirees started to get seen on a space-available basis, and now we have Tricare, which provides nine different world-class health care programs for the military. But that comes at great cost, and what mandatory programs are doing to the federal budget we're seeing health care and military compensation do to the DoD budget. That's why we have to get after this.

Department requested \$52.8 billion in 2012 for military health care and \$48.7 billion in FY13 with about \$1.8 billion of savings around the edges there. That's 9 percent of the budget, like I said. If projections from 2012 growth were to be carried forward, CBO projects by 2030 that could exceed \$92 billion. So, you can see that's quite a bit of resources out there.

Why are we seeing that? Medical inflation, expansion of benefits, growth of covered population, pharmaceutical costs.

Medical inflation -- we all live it every day; your families live it; your extended family. 4.9 percent annual inflation of health care costs since 1960. That's a lot.

Congress continues to expand our benefits. They roll back any changes to catastrophic co-pays, things like that. They've been very generous with us. In fact, I'll give you a quick stat. Back in 1996 we paid 27 percent of our health care costs; 2006 we're down to paying 12 percent of our health care costs, and that's across -- and that's primarily for our retirees. Today they pay \$520 annually,

whereas a typical civilian family, according to Kaiser Health, pays \$4200 for family health care. So, you can see we're kind of out of balance there. Tricare for Life, which is a benefit that doesn't cost anything as of today for Medicare-eligible retirees -- those costs have -- that program alone has contributed 48 percent to the growth of our health care costs from 2000 to 2005, and that's for Medicare-eligible retirees. So, you can see the balance.

We've increased the number of beneficiaries -- 9.6 million beneficiaries today, again, Congress adjusting who is a beneficiary. They tried to kick it to 26 years old as long as a child or a dependent is in college. So, you can see it just continues to increase that.

And then, finally, pharmaceutical costs -- \$1.6 billion in 2,000; \$7.5 billion in 2009. Why? Because we like to go to Target, CVS, and we like to buy our pharmaceuticals through the most expensive means available, retail. It's more convenient. It's not that we use the most expensive; it's convenient. It's just very expensive.

Now, DoD has requested changes -- 2007, '08, '09, '11, and '12. However, Congress has been very averse to accepting any of them. So, we're trying again in 2013. My recommendation -- and I'll really summarize what I do across all of these. Under 65 retiree, Tricare, is basically you increase the cost burden to the retiree, move it up to about 50 percent of what the common family is paying. So, go from about \$520 over a series of years to about \$2,000 a year. You increase the co-pay's catastrophic cost, et cetera, and then you index future growth so that we don't have to go back to Congress every year and ask for an increase. You tie it in law to an index so that it automatically goes up every year. And I think that's doable. I think it saves somewhere between 30 and \$40 billion a year. Still looking at the details at DoD. I don't think they go as far as what I was recommending. Still doing a little bit of research there.

Tricare for Life? Again, increase the cost. That's a free good right now. Zero is the cost for that. And it's really a supplemental to Medicare Part B. So, we need to put some costs associated with that, kind of push down that while the retirees go to possibly some other means. That could save \$33 billion over the year.

And then pharmaceuticals -- increase the pace, okay? Just try to do the pay structure where it pushes people away from retail over into our medical treatment facilities or mail order. We can

mail order 90-day supplies much cheaper than a retail. So, there are options out there aren't really affecting what you get; it's just how you get it.

Okay, let's talk about installation real quickly. Defense Commissary Agency I think we can do away with. It's not a common core task for the United States military. It's long outlived the context with which it was brought on. There's not a whole lot of money there, but, frankly, there's not a whole lot there in military compensation for the entire force. You only shop at the commissary when you're close to the commissary, okay? Not all of our people are close to the commissary. We all probably have four or five supermarkets. Even in some of our more remote bases, we probably have four or five different opportunities as opposed to the commissary.

Post and base exchange -- I would say eliminate those. Again, not a very high-cost savings; however, it's not a core competency for us.

Restructure the way we do child care, and there are details in my paper about that.

And then stateside schools. Get rid of them. We're running 64 schools in CONUS and U.S. territories for about 28,000 people. We could actually give the local community \$12,000 for each one of our students and save \$39,000 per student.

That is, none of these on installation benefits are in DoD's 2013 budget request. In fact, they request an additional \$50 million to repair and upkeep some of the worst kept schools stateside. I just think that's -- and most of them are probably redundant with local services.

Okay, last one, deferred benefits. And deferred benefits, just like non-cash, is considered less efficient because of the value you place on it. It's not something I'm going to get from year one when I was a second lieutenant; it's something I'm going to get if I serve 20 years. So, it's kind of difficult. How do you value that? How do you model that? And that's my biggest problem. DoD has requested a commission to look at retirement alternatives, okay? They have not recommended anything. They are looking at alternatives, which I think is good, because we can't model. We don't have sophisticated enough tools to model what will happen if we drastically change the retirement system.

The other thing I would say is that according to the Principal Deputy Under Secretary of Defense for Personnel and Readiness -- she stated that the retirement system is neither unaffordable nor spiraling out of control. That was a couple of months ago. I actually sat in on that subcommittee hearing

over on the Hill. So, there's no immediate change. And I know Mike has some ideas on this; I have some ideas on this. But right now I say we don't change the retirement benefit till we have those sophisticated tools and we can have a conversation about how best to do this.

Some of you may have seen the Defense Business Board, what they put out. I take great -- I have questions about the way that was rolled out and the data that they provided in there. I have some very big concerns. I have some very big concerns about going to a 401(k) system. I just don't think that's the right thing to do. I think there's something we can do in between that would still allow us to maintain our commitment to the force and our retirees and still be competitive.

Okay, I won't go into a whole lot more details on the retirement. I'll allow that to hold over to questions. But I do like how DoD did not affect retirement. However, I think they're abrogating their leadership on this issue by going to a BRAC-like commission. That's where I take issue with it. If you can make the hard decisions on pay, on health care, why can't you do it on retirement? And so I take some issue there.

Okay, in closing, DoD self-proclaimed modest changes to military compensation or just that -- modest. I think we can go from modest to robust, not radical, and still garner additional savings and meet our commitment to the all-volunteer force. And I think Mike probably said it the best, and I captured some of his testimony prep here, making modest changes in military compensation, especially for retirees.

That's your assessment of the 2013 budget.

But targeting military compensation for only one-ninth of overall spending cuts, even though it constitutes one-third of the defense budget, I think we have some more work we can do there.

Thanks.

MR. O'HANLON: Karl, thanks for an amazing and very, very informative presentation -- very provocative, too. I will look forward to discussion on that. But first, Dave, I look forward very much to hearing about Army acquisition.

COLONEL TRYBULA: Let me start by thanking Brookings, Michael, and my fellow panelists for this opportunity and each of you for persevering through what's been a very full day, and please take my remarks as my own, not representing the Army or anyone else. And what I'd like to do is

really set the stage with a quote from Senator McCain when General Dempsey was sitting for his confirmation hearing to be the chief of staff for the Army almost a year ago.

“I am deeply concerned by the Army’s inability to manage successfully its major defense acquisition programs; most prominently, the future combat system. With the arguable exception of Stryker, the Army has not successfully brought a major system from research and development through full production since the so-called ‘big five,’ the Abrams tank, Bradley fighting vehicle, Patriot missile, and Black Hawk and Apache helicopters in the late 1970s and early 1980s.”

The Army, indeed the Department of Defense, is repeatedly assailed by Congress and the press for a succession of less than stellar major acquisition programs. In many cases, these have been outright failures. A common thread behind this discourse is desire for the success that fashioned the Army’s Big Five. The desire is the basis for my research. We will begin with what I call the legend of the Big Five, followed by an examination of the history behind the legend with a foundation in actual events, which you then turn to understanding the environment during the Big Five and juxtapose it with today’s environment, and then the salient points to be filtered through the environmental changes to produce lessons learned and recommendation for today’s acquisitions and future acquisitions. The expectation is to use the Big Five to create a framework for future successes.

So, the legend of the Big Five. America’s preeminent ground combat capability is the result of the now famous Big Five acquisition that produced the Abrams main battle tank, the Bradley fighting vehicle, the Apache attack helicopter, the Black Hawk utility helicopter, and the Patriot Air Defense Missile System. The overmatch and excellence of these systems was first proven in 1991 in the hundred of hours of ground combat in the first Gulf war that resoundly defeated a numerically superior Iraqi army. The Army’s leadership developed the Big Five systems in the 1970s and ’80s in response to the Soviet horde that threatened Western Europe with technologically superior weapon systems in numbers far greater than the U.S. or NATO could supply. Each of the Big Five systems was developed to be a leap forward technologically that would integrate seamlessly with the other Big Five systems to provide superior capabilities. These capabilities would be more than sufficient to overcome the Soviet advantage in numbers. The leadership in acquisition management of these programs successfully got it done through post-Vietnam downsizing and increased oversight. The result was more capability

delivered before it was needed and produced in greater numbers than originally planned, all within the Army's budget. The battle-proven capability of the Big Five systems that are the mainstay of today's combat formations demonstrates the success of these programs. Clearly, the Big Five acquisition is the gold standard.

Now, the history. Like most legends, the legend of the Big Five has its roots in actual events but also grows grander as memories of missteps, challenges, and problems fade in light of final successes that continue to appear and reinforce our greatness. The belief in the purity in the origins of the Big Five belies the fact that three of these programs were built on the top of failed programs. The Advanced Attack Helicopter program, which became the Apache, was a follow-on to the failed Cheyenne helicopter; the Bradley was built on the failed Mechanized Infantry Combat Vehicle-65 program; and the M1 followed on two failed efforts, the MBT-70 and the XM803 -- while easily forgotten decades after the acquisition, cost growth was also a significant factor.

Nunn-McCurdy did not exist at the time of the Big Five. If it had, according to the historical data reported to Congress in the quarterly Select Acquisition Reports, all five of the Big Five programs would have had Nunn-McCurdy breaches and would have required termination or SECDEV certification in re-baseline.

Even after development, there were significant concerns about these systems. After source selection, the Abrams went through a mandatory competition with Germany's Leopard 2 tank. The live fire tests of the Bradley compelled its own congressional hearings and required extensive efforts, including the personal involvement of the chairman of the Joint Chiefs of Staff, Admiral Crowe, to avoid a congressional cancellation of the program in 1986 and resulted in a book and an HBO movie that many of you may know, *The Pentagon Wars*.

Each of the Big Five was a significant step forward, but this was through the integration of available technology, not through revolutionary technological advances. The integration of dozens of recent technologies made the results extraordinary when compared to the systems -- to those that they were replacing. But they were evolutionary, not revolutionary, technological advances.

The Big Five also were not produced as the optimal systems. They had planned upgrades that were ready in design when full production started. It is critical to understand that there was

both a compelling need to get the systems to the field and a recognition that they needed to incorporate the ability to upgrade in the future. Apache Longbow, a variance of the Black Hawk, the M1A1 are all excellent examples.

This superficial dash through the history of the Big Five is no way intended to diminish the success that these programs became and continue to be. It is intended, however, to shed light on the faded memories of the programs' reality and to reinforce that each had its own struggles, which under a different environment may not have led to success. So, what are the environmental changes?

I know this will surprise everyone, but I'd like to suggest that the 1970s and '80s are different than the 2010s. Understanding how the environment had changed is important in determining both what lessons are applicable today and the corresponding recommendations. I'd like to highlight five critical environmental variables and describe how they have changed, or not, over the last 30 to 40 years.

The first is the threat. During the development and production of the Big Five, the threat was clearly understood as a massive Soviet conventional attack in Europe. This threat was clearly defined and compelling. Today, while the existence of a threat is undeniable in terms of conventional ground forces, it is not currently clearly defined in a compelling manner that supports the determination or the justification of specific requirements.

The second environmental variable is fiscal. The Big Five were developed at the end of the Vietnam war and the years immediately following. Using fiscal year 2012 constant dollars to take inflation out, the Army's research and development budget fluctuated between \$8.5 billion and \$6.5 billion in the '70s. From its nadir of \$6.5 billion in '76 it rose until it reached \$9.6 billion in '92 before steadily diminishing to 6.7 in 1999. From 1999 till 2004 there were steadily increases until it leveled off at about \$12 billion a year. This year it's 9.7 billion, which exceeds each and every year during the development of the Big Five.

Next is the industrial base and competition. The Department of Defense made a conscious decision in 1993 at Secretary Perry's famous last supper to promote consolidation, which is preceded so that there are now only a few companies able to compete for any of the Army's major acquisition programs. While the argument can be made that the competition was traded for health and viability, the byproducts are greater risk aversion and co-dependence.

Then we have the acquisition process. At the start of the big Five, the acquisition process was loosely structured and essentially service run with the Secretary of Defense approval required to initiate a program and for production. Over the years, the process was formalized with the introduction of milestone reviews, standardization, and integration with the PPBE process. Goldwater-Nichols created the separate acquisition executives that pulled the service chiefs out of the acquisition process. The result remains a linear process with more oversight and bureaucratic requirements.

The final environmental variable is government expertise. During the development of the Big Five, the Army possessed incredible in-house expertise. Before the Request for Proposals went out for the M1 prototypes, army engineers understood the tradeoffs. Within the sphere of feasible, it had actually done the calculations and simulations, so they can understand things like the tradeoff between the width of a track on speed and maneuverability as components of mobility. Today, the in-house expertise is diminished to the point where we have several examples over the last two decades of key performance parameters for systems having thresholds which, when taken together for the system, are simply infeasible.

So, what lessons could we learn? With this understanding of the environmental changes that have occurred since the big Five, we can summarize a few things. First, leadership matters. It must be able to prioritize and focus. The ability to gain buy-in from OSD, the Joint Staff, and Congress is critical. Feedback mechanisms can create flexibility to overcome the environmental changes that will happen. Expertise, within both government and industry, to include understanding the art and science of the feasible is critical. Finally -- and this will surprise you -- evolutionary is far easier than revolutionary change.

Now, recommendations. So, these lessons suggest five recommendations for the Big Five. First, lead -- actively, continuously, and throughout. Continuity of leadership at all levels is important. The ability to maintain continuity at the most senior levels, given the changes from Goldwater-Nichols, mandates conscious forethought and redundancy at senior levels.

While prioritization and focus could be included under leadership, they are important enough to warrant their own recommendation. Prioritization and focus must be more than PowerPoint or simply decreed in a memo. They must be followed with the application of resources and senior

leaders' time.

The next recommendation is to create flexibility and overcome linearity in the acquisition process with feedback mechanisms. Might sound familiar from something earlier. This means the integration of users and engineers throughout the process, as well as continuously reevaluating assumptions and their implications.

Next, one of the reasons for the challenge of maintaining expertise is that until the 1960s acquisition programs fell right on top of each other. Lately there have been significant gaps in programs. Eliminating these gaps through heel-to-toe programs is one way to increase expertise and maintain it.

Finally, strategic communications must be compelling, pervasive, and updated regularly. These recommendations are purposely broad. Success requires a holistic approach and a detailed list as others are prescribed in the past are easy to be cherry picked or may solve specific problems being examined but are likely to resolve other challenges or fail the test of time.

I look forward to your questions.

MR. O'HANLON: That's excellent, David.

I'm just going to begin with one question for you and then open it up to the crowd. We've got about 15 minutes to go. I just want to ask, specifically to bring back to where you began with Senator McCain's quote, and maybe this is something you'd rather not say in so many words -- and I appreciate your being as tough on your own service as you've already been -- but I'm going to see if I can ask you to be even more blunt. Do you basically think the Senator was correct, and to the extent programs like the future combat system, Comanche and Crusader, failed that they were actually handled worse than the Big Five, and which of those five lessons that you just recited did they least take stock of? In other words, what does the Army -- of all these logical things that you said, what did the Army most get wrong and most need to quickly learn and adapt to so it won't make the same mistakes in the next 5 to 10 years?

COLONEL TRYBULA: I think, first of all, the Army does not do a good job of enumerating successes. Since the Big Five, you've had Stryker, you've had MORS, you've had Avenger you've had HIMARS and Lakota, not to mention evolutionary upgrades in terms of every one of the Big Five systems has gone through an upgrade program, which has been a major acquisition program, as well as the Chinook. I mean, the F model, the Chinook is nothing like what was built in the '60s. And so I

think that in terms of major acquisition programs, the Army doesn't take enough credit for what it has done and where it has been successful. That said, okay -- and Kiowa Warrior is another one of those successes -- how many of those were really developmental programs? I think that gets at the crux of the problem and where those failures are really coming out. And I think it's important when you look at things -- and PARC I think has done a great job, starting to be able to differentiate when they look at why programs fail, differentiate between problems in the origin of the program versus bad management of the program. And so if you start fundamentally flawed with an infeasible solution, you can't get there. And I think in at least one of the cases that you mention there, Michael, that's a real issue. The program management -- I think we continue to work through issues of how do you lead the program and maintain that continuity, and I think that's a challenge that we still need to overcome.

MR. O'HANLON: Excellent. Now, in light of the time what I think I'm going to do is just take one round of questions. So, I'm going to take three and then we're just going to down the -- that'll probably take us right till 3 o'clock. So we probably just have time for one round, and I see three hands so I'm just going to go with the three of you.

In the far back, and then after that we'll take them all together. Please make notes, and then we'll just have a concluding round of answers.

SPEAKER: Thank you. I had a question for Colonel Trybula. On the issue of the Big Five programs, I mean, they're still be looked upon as the model programs. Even General Crowley said we should do it like the Abrams, do the new common vehicle like we did the Abrams. But would you agree that maybe the problem is that those five programs were conceived and developed when we had a threat that we understood and now we don't really know what the threat is and that just makes it really difficult to plan for new systems?

MR. O'HANLON: Now we'll go here to the gentleman in the white shirt and then back to -

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MR. DEDDA: Michael Dedda with the Bureau of Economic Analysis. My question is for Mr. Gingrich. Did I say that right?

COLONEL GINGRICH: Gingrich. Close enough.

MR. DEDDA: Well, I have two questions. The first one is how would per diem rates be

affected in this situation of across all branches? And also what's your recommendation for that? And my second question is how would the reservist pay be affected as well and your recommendations for that?

Thank you.

MR. O'HANLON: And in the back.

MR. GRICE: Hugh Grice, THIS for Diplomats. Did you mention the MRAP? Because that was somewhat of a success story in a way, right or not?

MR. O'HANLON: Okay, and then if there is a question also on intelligence or intelligence reform, we'll add that to the list as well if anybody has that or, if not, going once, going twice, any other questions? Those were all so admirably concise we could even add a fourth to the list if anybody else wants to have the last question of the day. Okay, we'll go here and then we'll ask everyone to speak.

MS. BLUMBERG: Hi, Katie Blumberg from the Marine Corps. I was just wondering, Colonel Gingrich, what is it that you took into consideration that DoD didn't when they studied closing commentaries and exchanges? They've studied it four times recently, most recently in 2006, and where were they lacking when they decided not to close them?

MR. O'HANLON: And I guess I will ask one question for Lourdes also to add to the list, which is going to be how do we make sure -- and I realize that you were talking a lot about IT and certain technology solutions, but how do we make sure that in the effort to be fast we don't just get to the wrong answer faster? It's sort of a broader, philosophical question, but we know that, for example, looking back on the wars in Afghanistan and Iraq, we made a lot of mistakes, especially in the early years, which we may or may not ever fully recover from. And I'm not blaming DoD. We certainly share responsibility here in the broader academic and policy worlds, too. But if the whole focus is on accelerated decision making and we start with a bad concept of the problem, how do we make sure that this effort to be efficient, agile, you know, Apple-like, whatever else, doesn't just get us into, you know, making mistakes because we're - - you know, haste can make waste as well as make good solutions.

I think we'll go down the row and start with you, David.

COLONEL TRYBULA: The question about threat definition is a great question, and threat's definitely much harder to define today, but I would ask you very simply do you want DoD to propose spending billions of dollars on a program without a compelling case for that program. And that

needs to be -- you need to have a compelling case, given the environment that there is today. If you can't make that compelling case, you're going to have problems, and there's a real question of whether or not that money should be spent if you can't make that compelling case. And so I think there's a lot of work that needs to be done in defining that, and then also being able to take that message to stakeholders and make sure that they understand it. And if they don't buy into it, then that's feedback to go back and say were we right, were we wrong and then iterate on that and move on to what really is compelling; what do we need.

In terms of the MRAP, I didn't mention any of the successes in response to the ONS or the JUONS programs from the Rapid Fielding Initiatives to the Rapid Equipping. I was trying to stay with what were Army major major defense acquisition program that came up in the selected acquisition reports. And certainly there are lessons to be learned, but I think that environment's even different and are those successes repeatable in peacetime. I think there are lessons to be gained from there, absolutely.

MR. O'HANLON: Thank you.

Karl, over to you.

COLONEL GINGRICH: Okay. Per diem. Really, outside of what I was looking at. I think per diem really falls into the O&M category as opposed to a specific military compensation. So, I really didn't look at that, okay? Although I think O&M, you know, has its own set of efficiencies that we can all look at. But what per diem does kick into mind is really our basic allowance for housing, which kind of follows the same pattern of well, we take a look back over the previous year how much it cost us for housing, and then we establish a BAH rate, and then every one of the landlords goes and looks up what the BAH rate is and then charges us rent at the BAH rate. So, you see that, you know, per diem also has a little bit of that self-licking ice cream cone, you know, philosophy behind it.

Your question on reservists -- again, reservists are -- you know, we're one force, but our compensation systems are fairly unique. However, what I am talking about really will affect both. As you control pay growth over time, that will be reflected in the pay tables of our National Guard and reservists across all of the different forces. So, they will naturally see their pay compensation grow at a slower rate. That has second- and third-order effects on their retirement, because their retirement is based on your

final base pay, and so that's another reason why we want to control that pay compensation because of the second- and third-order effect it has for retirement.

And then, finally, health care really -- because they primarily receive their health care while they're on a mobilized status and their family and their dependents are also served there, minimal impact there. However, when they become retirees, they would fall into -- just like every other retiree, we don't differentiate, so they would, you know, be affected by the same changes that I'm requesting or recommending with enrollment fees, co-pays, catastrophic pays, et cetera.

Commissary closings. Not a core competency for us, okay? If you take a look back, it tells me in my family I save \$4400 if I use the commissary. But military -- not everybody uses the commissary, yet everybody gets credit for it within their compensation. So, it's kind of hard to value that benefit and the people who don't use it and the people who use it. I also have issues because GAO has issues with it that the commissary says they're going to save us 30 percent over a local store. Well, they think that's overstated. They also think the PX savings is overstated by about one-third of what they say. The other thing is there's been no independent analysis of who goes to the commissary. The commissary has self-reported about a 90 percent utilization rate. Well, what does that mean? Does that -- the active duty guys and gals living on post go there 90 percent of the time or what? And they don't differentiate between which population they're serving, whether it's active duty or reservists, and one of my points that I made was that was retirees and their dependents now exceed active duty personnel and their dependents, so how much of that benefit is going to them as opposed to the active force? Those are my issues with the commissary, the PX, and similarly with the schooling system.

Thanks.

MR. O'HANLON: Hey, Lourdes, over to you.

COLONEL DUVALL: No, that was a great question, and I probably didn't cover this very well. You know, what I'm proposing is not this kind of one-size-fits-all, you know, transition the entire Department of Defense into this, you know, agile, lean, kind of Microsoft or Apple or Cisco. But I think that there are certain mission capability areas and even kind of subsets within that. For example, if you want to think of -- you know, something I'm familiar with, (inaudible) intelligence systems, for example, analytic systems. You know, tons of thought -- systems engineering, lots of more deliver process need to

happen when you're laying down the initial infrastructure and the standards, because you -- you know, this is global enterprises and you can't just really make random quick decisions and let every, you know, operator have their own, you know, preferences -- I prefer this or that. But when you come to a layer of the analytics of the, you know, how does somebody who's working problem set A need to visualize, sort, query information versus somebody with a problem set B? We have a lot of trouble now with deliver processes making that kind of discrimination and tailoring and rapid adjustments. And if all of a sudden problem set A transition to a new conflict with a different coalition partner or sharing need, that even makes our existing system go into more spasms, because if it hadn't planned early, you know, now you're trying to figure out, you know, how do I accommodate this. So, I don't think this is a one-size-fits-all. There are certainly certain, you know, risk calculations that are going to have to be made when you have high interdependence, mission assurance, reliability, those kinds of factors where you're going to have to really continue to see things more deliberately and do all that proper coordination to make sure that you've laid down good bones, you know, and your good infrastructure and foundation.

What I'm really arguing is that for the interface for the users out there and for certain tailoring in specialized mission areas and, you know, as we evolve and be able to say that, you know, there's new technologies that could be potentially spun in that we hadn't thought about two years ago or three years ago. You know, there need to be on ramps for that kind of enervation that I think we're really lacking with our current processes. So, for some systems there's going to be a hybrid approach. For certain areas I think you are going to be able to just say hey, agile's the way. And then there really are going to be some cases, because of security aspects or others, where you're really going to, you know, want to stick to our existing processes. But, you know, my argument is that we risk going to what we know, which are existing traditional processes outweighing those when I argue there are some factors in play where we need to keep our mind open and actually, you know, kind of look at our different mission areas and say, you know, where are more of these agile approaches probably more suited and how do we accommodate those, and I think that's kind of what you were talking about, you know, how do you take the lessons from some of these -- not all of them good -- you know, of where we -- you know, we were fast and we met the need, but, man, was that expensive, you know, or it was expensive and we did it fast but we didn't meet the need, you know? So, how do you make that work? Again, I'm not sure if

that's the, you know, most comprehensive view, but I do think that this is not a one-size-fits-all. The whole Department has to move this way. But certain critical mission areas -- cyber, intel, some other ones I think -- we're really going to risk some relevance if we don't transition some of our capabilities down to this kind of route.

MR. O'HANLON: That's great.

I just want to say on behalf of all of us at Brookings -- and I want to really congratulate the excellent event but thank all of you for being here. I want to congratulate and say how much I admire this forum that Brendon and Peter and especially all of the FEFs here at Brookings and those of you from around town and around the country who have come and participated and have made this just an outstanding event. So, thanks to all of you, hats off to all of you and to the crowd as well. Best wishes.

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