

# **Center for Strategic and International Studies (CSIS)**

**The Acquisition Implications of the DOD Strategic Guidance  
And the FY 2013 Budget**

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DAVID BERTEAU: Ladies and gentlemen, if you would please take your seats, we're about ready to begin. I don't know what conceivable topic could bring out a crowd like this on a beautiful day like today. There are so many more interesting things going on in Washington.

Welcome to the Center for Strategic and International Studies. I'm David Berteau. I'm the director of our International Security Program and the director of our Defense Industrial Initiatives Group, and it's my privilege to welcome you here this morning.

We're really honored to have as our guest this morning the honorable Frank Kendall. Frank is the acting undersecretary of defense for acquisition, technology and logistics. He's been in this business, actually, since the name was much shorter than that. It used to just be the undersecretary of defense for acquisition, because we assumed that acquisition encompassed technology, logistics, et cetera. But it's nice to be expanded and precise, if you will.

Mr. Kendall I have known for a number of years. We did work together in USD(AT&L) a couple of decades back. Very unsuccessfully – virtually everything we ever worked on still remains to be fixed, at least from my perspective. We're really delighted to have him here this morning, though, to give us both his perspective on a number of issues and in anticipation of the budget that will come out next week, following on from the comments made by Secretary Panetta and the department a week and a half ago when they laid out their initial round of the budget reductions, if you will.

So with that – well, first of all, a couple of administrative details. Number one is please silence your cell phones and other noise-producing devices. We don't have very good coverage down here, but it's good enough that I can guarantee you it will penetrate on the call that you don't want to set off your name.

I also want to extend a welcome to our viewers on the Web, and many of you know that we occasionally webcast these items as well for those who can't make it downtown. When it comes to the question and answers, I'll come back up and describe our process, if you will. So without any further ado, let me turn the floor over to Mr. Kendall. Thank you, sir. (Applause.)

FRANK KENDALL: Thank you, David. David's an old and dear friend, and a former colleague, as he mentioned, and I'd like to thank you for that introduction. It's always great to be with you. It's also great to be at CSIS, which is one of the intellectual fonts, if you will, of the Defense Department, among other things. And I'm going to give you what is going to be a fairly informal talk this morning. I think the atmosphere here tends to lend itself to that – taking a little bit of a risk, I guess, because I'm acting, as it says down there, and I've been nominated for the position. So I have to be a little careful of what I say these days.

But there's a lot going on, and it's very important that we communicate to you and to the entire community, all the many communities that care about what's going on in defense, about what we're doing and why we're doing it. So I'm here as part of that effort.

Before the formal budget rolls out – as you know, of course, our strategy’s already been rolled out and discussed quite a bit by Secretary Panetta and others. And the budget major movers, I think, have been discussed pretty well.

I’m going to disappoint any of you who think I’m going to give you a lot more detail on the budget today. I think that the service leadership, as well as Secretary Panetta and the deputy secretary, Dr. Carter, and the chairman and vice chairman have all been out and said about as much as there is to say about the major movers in the budget until we actually provide the budget to the Congress next week. So I’ll be happy to dodge your questions afterwards, if you like, on specific programs, but I’m not going to say much, much more about the details.

I want to start by acknowledging a couple of things. And these are somewhat personal. But I want to mention, first of all, David Van Buren, who is the assistant secretary of the Air Force who announced that he is going to be leaving in a couple of months. The secretary of the Air Force put that out last Friday. David’s been a great colleague for me for the last two years. I’ve learned an enormous amount from him. He’s a true professional and he’s really going to be missed in the department. So it’s sad to have him be departing, but he’s given great, great service to the Air Force and the Department of Defense, and we’re going to miss him.

The other one I want to mention is sort of a sad one. It’s Brigadier General Terence Hildner, who died over – on Friday, in Kabul. He’s out of the AT&L world, if you will. He was there helping supply for the Afghan training mission, primarily, as the commander of the 13th Expeditionary Sustainment Command from Fort Hood. And he passed away. I just wanted to acknowledge that. His mother, as it turns out, actually works in the AT&L office, and I’ll be going to Dover this afternoon to be with the family when he’s returned. Remind you, both of these, of the great people that we have, and also the sacrifices that sometimes have to be paid.

I’m going to start by talking about the budget in the strategic context. And I think, you know, when we had the budget act last summer, last August, and we knew we had to take a significant amount of money out over the next 10 years, that was not something that was not entirely unanticipated. We could see the impetus to reduce the deficit coming.

And if you go back to Secretary Gates’s work of a year before, more than a year before, to improve the efficiency of how the department did business and to get rid of as much excess cost as possible, and to move resources from things that weren’t productive into things that were, and the Better Buying Power initiative that Dr. Carter and I started under that, you know, we had done some things to prepare. So we weren’t entirely unready for that.

What we had done, in fact, was to get some money out already and move it over, and then we found that we had to take much deeper cuts. We had had the services do an exercise called the ALT POM exercise, which gave us kind of a benchmark at a lower level than we were working to from our previous budget. So when we got hit with the new guidance, it wasn’t entirely a surprise and we had done a fair amount to prepare.

But we realized right away that what we did not want to do was just another cut-draw. We did not want to go through and just take out funding, as least pain as possible, across the

board. We had to step back at that point, because the cuts were so deep, and look at our fundamental strategy and say, do we need to make strategic adjustments that are commensurate with the level of resources that we're going to have? And the answer, of course, was yes.

So we did that. We spent – and it was a fairly intense period. We did a strategic review, if you will, and came out with some new strategic guidelines. And I would encourage you to read both that document, which is relatively short – it's a fairly dense document – and the document that we put out on the budget decisions that flowed from that strategy. But we got it right, I think, in that we did strategy first, budget second.

Chairman Dempsey and the secretary both felt very strongly that we shouldn't just be taking cuts, that we should be building toward some goal. And we took the time frame of about 2020 and said, OK, what do we want the Defense Department to try to look like in 2020? And how do we get from here to there? So that was essentially the approach we took. And then the budget drill that followed the strategy review was done with that in mind.

So I think, with the two products together, we have essentially turned the ship from headed over here, to over here – about the direction that we want to be going in. There is probably going to be some fine-tuning. You know, we do this process every year, and as we go forward, I think there'll be continued adjustments that will have to be made. But I think we got it about right and I think that we gave a pretty good case for the choices that we made.

They were painful. Some of them were extremely painful. And I think when we roll the whole picture out – you know, in our document that we put out recently, we tended to emphasize the positive. We tended to emphasize the things that we had done as opposed to the things we had to cut or didn't do. And I think you're going to see more of the things that we cut as we go forward.

Now, Secretary Gates, a year or so before, had cut a lot of major programs that were basically unaffordable, so a lot of that work had already been done. And I think there were some people who expected bigger things like that in our announcement that Secretary Panetta made. We had to look other places, because most of the programs that we still have – all the programs we still have – we very much need.

We do need to recapitalize the force. Even though we are taking some force structure reductions, they are not extreme. And the recapitalization and modernization that are required are still there, and we had to support that. So we did take a look across the board. We put everything on the table. We put things that were perhaps third rails in the past, such as compensation, on the table.

We're asking for a BRAC. That's not popular with anybody, but it's a way we needed to act to get some savings. We didn't put some savings from BRAC in the budget. We're basically going to go to that to try to save more pain later on. I'll say a few words at the end about the situation we're in and how I see it playing out, but essentially, we think we have set up a plan which is reasonable and executable. We have taken some risk in it, and I'll say a little bit more about that later.

The other point I want to make, I guess in terms of context, is personal. I've been in the job as acting now for about four months, and I was nominated a couple of weeks ago. And I'll probably get a hearing in another couple of months, so by then I'll have been in position for six months. And my previous experience with a confirmation through the Senate suggests to me that it may take several more months before anything gets done one way or the other.

I can't wait for that. I've got to do what I think is right in this job, and I will. And I've started down that path, and I'm going to say quite a bit now about my intentions here and what I'm trying to accomplish.

I've been in this business for a very, very long time. And I've seen a lot of cycles come through – different attempts at acquisition reform under various guises and various attempts to – and I think David mentioned, you know, the same problems existed when we were there in the '80s and in the '90s that are there today. Unfortunately, that, to a large extent, is true.

And I have asked the question a couple of times, you know, are we doing better or worse than we were 10 years ago? And it's hard to even get an answer to that question. I'll come back to that in a minute, when I get a little further into this. So I'm not being presumptive about any of this. I'm just dealing with the cards that I have and doing the job that I've been given to do as best that I can. And I'm going to continue to do that.

You're going to see a lot of continuity. Dr. Carter and I worked closely together; I was his deputy for almost two years – a year and a half. And the efficiency initiatives that we started will continue. Better Buying Power is kind of the label we gave to things, but it's really about a set of activities designed to control cost and designed to get better business deals, to have more competition, to start affordable programs.

There were a number of things we did under the guise of Better Buying Power which are really just about being efficient and controlling costs. And that is a major thrust that will certainly continue for as long as I'm here in this office or one like it.

I've given a lot of speeches over the past couple of years. I think maybe they're getting noticed a little bit more now. But if you went back and looked at a speech I gave at Defense Acquisition University in March, two years ago almost, and you looked at what I'm going to say today, there's an awful lot of continuity there as well. You know, there's a certain Groundhog Day to this to me, in that, you know, I keep giving kind of the same speech and talking about the same things. And they're similar to everything that Dr. Carter and I said all the time he was in the acquisition job.

What I think matters at the end of the day is not what we say, but what we do and what impact it has. So I'm going to kind of turn to that in a minute, but I'm going to talk first, just briefly, about some of my priorities. I put out a note to the workforce, the acquisition workforce in October, right after Dr. Carter became the deputy and I became acting, and I talked about the things that were important to me, basically, that I thought we should be emphasizing.

And obviously, the first one was support to the wars. We have a lot to do there. We still have a long way to go in Afghanistan. We still have a long way to go fighting in Afghanistan, and then in supporting the troops there and then getting everything out as we draw down. So there's a great deal to be done there. There's a great deal to be done on the rapid acquisition side, to continue the support there; the contingency contracting side, fighting corruption – an enormous amount of work to do in terms of support to the wars.

Affordable programs, OK, was the next thing on my list, and I'll get back to that in a second and talk to you about what I'm doing about that. And if you saw Senator McCain's floor speech – and I'm not sucking up to Senator McCain – but if you saw Senator – although it's not a bad idea – (laughter) – if you saw Senator McCain's floor speech, or read it, about December, I think it was, a couple of months ago, it was actually pretty much spot on about the problems that we have had over the years.

I mean, if you think about the F-22 and FCS, Future Combat Systems, and the DDG-1000 and some of the other programs – the JTRS family of radios – things that we started and found out late that they were unaffordable, or things that we just couldn't execute very well – we have got to stop that kind of behavior. So having both affordable programs and programs that execute well are essential to success, more essential now than they were before we took the budget cuts that we're about to – the era that we're about to go into.

Improved efficiency I've mentioned already, and the whole Better Buying Power initiative and all the many things that we have to do there. Strengthening the government workforce – I think that my highest-priority program is the government workforce, and that will continue. I don't think there's anything more important for us, in terms of doing a better job, than having people who are more capable and qualified and ready to do the jobs they've been given throughout the acquisition community.

The industrial base, strengthening the industrial base. Yeah, I'll say more about this in a minute, but essentially, the industrial base is part of our force structure and we have to treat it like that. We have to understand that and treat it like that. And I think that as – I'll mention what we did in the budget process a little bit. We gave a lot of very conscious consideration to the impact of our decisions on the industrial base.

The decision-making body for most of the budget decisions was something that Dr. Carter created, called the DMAG, which is the – he corrected me on this; I want to make sure I get it right – the Deputy's Management Action Group. I called it the Deputy's Management Advisory Group the other day, and he corrected me on that. It's the action group. It's the group of senior leaders in the Pentagon that he's using basically as kind of a board of directors to make major choices about – major decisions about what we do going forward.

But we had a dedicated session of that group on the industrial base that Brett Lambert, who with his – essentially helped lead. As we went through the decisions in the budget, we consciously thought about the impact. We still have a ways to go there, OK?

I just recently had a chance to go look at some of the things we did and how they affected different locations and different companies across the industrial base. And it falls a little bit unevenly. We can't possibly make it even, but we ought to be very careful about what we do to it and understand it. And we did make some decisions in the course of the budget that were designed to protect elements of the industrial base.

Preserving the future: That's a broad topic on my list, and it's really about making sure we have technological superiority in the future. It's making sure we retain some of the skills that we've developed over the course of the last 10 years of combat for the time when we might have to do similar things again in the future, after we draw down in Afghanistan.

It's a range of things. It's not letting readiness decline too much. You know, I lived through the '70s readiness crisis back in the – when I was in uniform – and it wasn't a very pleasant experience to have my unit nonoperational all the time for lack of spare parts. So I understand what that's like as well.

I'm going to turn now from the priorities to some more specifics, and try to get more specific with you about my plans for the next year. And I hope I'm not being overly optimistic about that. But we have to move forward, and the times are such that to do otherwise would be irresponsible.

I just had an off-site last week with my senior leadership. I took, essentially, the people who are at assistant secretary of defense level that work for me, as well as the service acquisition executives, the three of them, out for two days. And we spent two days going through our plans, essentially, for FY '12, and there were two sides to this. The first day, each organization kind of walked through what it intends to accomplish in FY '12.

The second day was spent on – and that was pretty much as you would expect, and I'll mention who they were, because the scope of AT&L is pretty broad and usually we're thought of as being the programs people. Actually, AT&L is much broader than that. And programs, in fact, in the budget are less than a quarter of the overall investment account – major programs. So you've got some programs that are major – MDAPs, major defense acquisition programs. And then you've got everything else, and then you've got all the service contracting as well.

So when you look at the total of the investment accounts, the total money we spend with contractors outside the department, only a quarter of that turns out to be the actual major acquisition programs that we spent so much time discussing and talking about. So there's a lot more to it than that. Outside of that, there are some other things.

So assistant secretary for acquisition, which is filled by someone performing their duties right now; research and engineering, obviously key; logistics and material readiness, which gets to all the sustainment and the services associated with that; installations and environment; operational energy, and nuclear, chemical, and biological weapons. So that's the scope of what we're doing, and we went through all that.

But the second day was spent on something else. The second day was spent on some very specific projects that I'm kicking off that have targets to be accomplished in FY '12, so I'm – and they all line up with both my priorities and with the strategic direction of the department and with the budget situation that we're in. So that's the intent.

The first two are kind of related. They're about measuring performance. We've had a little bit of help from the Congress with regard to this. They've created PARCA, an organization in AT&L Program Assessments and Root Cause Analyses, which is run by Gary Bliss, which has been doing great work for about a year and a half with me now assessing some of our programs and digging in and finding out what really happened.

You know, there is an enormous amount of conventional wisdom in the acquisitions business, but finding out what really happened and why, and then building up a database so that you really understand that and you understand the implications of your policies, is to me very important. I'm kind of a proponent of some of Deming's ideas. I have a sign outside my door that says "In God we trust; all others must bring data." I actually believe that.

There is an enormous amount of conventional wisdom that floats around this community about what works and what doesn't, and we tend to retry things every 10 years or so because we don't remember what happened last time they were tried, and we don't have any data that would tell us what happened last time they were tried. I've been gathering some data on some of these things. But my first two projects for the year are to do that on – institutionalize our ability to do that and put in place some capability to do that, on two sides of the matrix.

One is the program side, which we're all familiar with. And we all see the GAO report every year that talks about the overruns and the – you know, in time and in cost, the schedule slips and the cost increases. So there's the program side of that, and there's the things that we standardly kind of keep track of. But I don't think they go deep enough in understanding root causes.

The other side is the institutional side – how do our institutions reform? And there are two classes of institutions. There are government institutions and there are contractors as institutions. So we want to start to understand if there are systemic differences in the performance of different institutions – and not so we can point fingers at people, but so that we can understand what works and what doesn't, so we can dig in a layer or two deeper and start to understand those things.

And I'm – now, I'll give you a quick story that I've told a lot of times. It's about my first congressional hearing. My first congressional hearing ever, I was a captain in the Army and I was an aide-to-camp to an Army two-star who was the program manager for missile defense in the Army. This was before SDI. This was 1980. And we went to a testimony, and I can't remember what program we were talking about.

But I do remember a staffer on the – it was on the House side – and I remember him holding up a schedule and waxing eloquent about concurrency. And I can honestly not remember whether he was for or against it, but he was one or the other, and he was passionate

about it, OK? And we have been for and against concurrency about four or five times ever since. We have been for and against fixed-price contracting four or five times since. And we're going through another cycle of that now.

We need to understand what really works. And I think it takes data and in-depth analysis to understand what really works. Now, part of our problem is that people like myself tend to be in office for three or four years. And if you look at the lifecycle of most of our programs they span about 40 years. So we're in office for a relatively small percentage of any given program.

And whatever decisions we make about those programs – you know, I have a stream of investment decisions that kind of come through my office. Whatever decisions we make, we don't see the impact of them for two or three more years after the contract's been let and things have happened and so on.

So essentially, we're not around, you know, to get the credit or take the blame for what we did, or to necessarily understand the impact of what we did. So we need a system that is institutionalized – and I'm doing this not for myself as much as for the person after me and the person after that, so that we'll really be able to understand what works and what doesn't. You know, do – and I've gotten enough analysis that's pretty interesting about this. And I'll just throw a few points out.

Unfixed contract actions – how much difference does it make whether you have a UCA or not? Are they good things or bad things? Well, it turns out that for production it doesn't make much difference, but for development it turns out to be a very high correlation between unfixed contract actions and overruns and schedule slips. Now, why is that true? Well, that's the next step, you understand what's going on there because it could be several things that correlate to that.

Fixed price low-rate production – does it matter whether you do fixed price or cost plus low-rate production? The data says it doesn't make much difference. Well, if that's the case, we got to look carefully at what the consequences are and why. Maybe that's not where we should be trying to put our effort.

I think that in general we need to do a lot more work in this area and we need to institutionalize some practices and put some things in place. Acquisition is not a science. There will always be some art to this. We do very hard things that have never been done before. And it's always going to be a continuous learning process to do better at it. But until we start examining carefully the impacts of our policies we're not going to learn enough from our experience to be able to make good decisions and put good things in place.

There are best practices and we have to identify them and start to implement them more carefully. We also need to understand institutional – I'll give you a couple on institutions. One of our services is doing relatively poorly in acquisition compared to the others. Two – they are kind of spread out – 1, 2, 3, kind of like that. And the question you have to ask yourself is why. Why is it that one service seems to do better – it doesn't do perfectly, it still has a way to go to improve. But why should it be significantly better than the others? And I think that's a question

we need to know the answer to. And the service that's doing less well needs to understand what it needs to do to change. And that's the sort of thing I'm getting at there.

On the contractor side, you know, the same sort of thing. Are some contractors performing much better than others? We set out to start a superior supplier program as one of the Better Buying Power initiatives. And we wrestled with that. It's one of the ones we haven't finished yet. And I'm going to go back to that.

We want to go back to the Better Buying Power initiatives and go through the entire list of 23 and do an assessment, which is in progress, to see whether they're – we implemented them successfully or not, and whether they seem to be working or not. And if we didn't implement them, do we need to do so and do we need to figure out a way to get where we wanted to go or should we just abandon them? And should we add some to the list?

So the Better Buying Power label – that's my next project – is about efficiency and continuously improving efficiency in the department and measuring that. A big part of that is elevating the cost-consciousness of our workforce, and through our incentives increasing the cost-consciousness of industry, and putting incentives in place – in both places. Now, Ash liked to say at times that he didn't do culture. I remember him getting a question about that at the first press conference he had, I think, about Better Buying Power.

I'm doing culture because I think at the end of the day a lot of our problems stem from culture. And I tell the story a lot about the meeting we had with a fighter pilot in the room, where I was talking to Bob Hale – I was with Ash and we were talking to Bob Hale about taking people's money away because they weren't obligating it fast enough or getting it on contract fast enough.

And I had sent a note to Bob Hale when he put something out about this saying: Bob, we got to meeting on this. This is exactly the wrong incentive for people. Spending the money fast is not the fast metric; getting it out the door is not what we want to measure people by. So we had a meeting and after the meeting there was a fighter pilot in the room. He brought up the fact that at the end of the year, every year when he was in the unit, they would go out and fly around at the end of the – end of the year in September to burn up fuel.

My operational energy person wouldn't like that very much, but the reason they were doing it was obvious, right? The reason they were doing it is because they would get their budget cut the next year if they didn't burn up their fuel and spend their money. That's not the kind of culture we want, OK? And changing culture is one of the hardest things you can do in any organization. It's a long-term project. It requires constant reinforcement and tenacity.

But if we don't do that we're going to have huge problems forever. People have got to understand that the money matters now. And I think we have this – I had an example in my office where people were rather glibly spending several hundred million dollars of the taxpayers' money and not getting anything for it. And the rationale was somewhat, I'll say, bureaucratic. And it was, wait a minute, you know, this is real money. You know, it's money that people had to earn and pay out of their taxes, or it's money that had to be borrowed from somebody in order

to have it for the government to use. In either case, we don't want to spend it unless we're going to really get something for our money.

The whole initiative that Secretary Gates started and that Dr. Carter and I continued – or supported through Better Buying Power was about getting value for the money. And we need a culture in which getting value for the money is a very, very highly considered attribute for people across our workforce. And we want to, by incentive system we've put in place, do the same with industry.

So that's a major project. And we looked at it through also a number of things we can do to try to do that. A lot of that has to do with the personnel system and what we reward and so on, and how we build things in throughout out chain of command as well as how we incentivize industry. The next one is related. And I – the acquisition system gets a lot of bashing from people – perhaps deservedly in some cases. But the acquisition system depends fundamentally on one thing: the quality of the acquisition workforce; its ability to do its job.

And it is, in fact, in many cases, rocket science. It takes true professionals to do this stuff well. And if the services are not encouraging people to go into this field, if they're not rewarding people for going into it, if they're not making something that confers status and prestige on people to be in, then we're not going to get the kind of people we need in the acquisition workforce.

So I've already spoken to each of the – all the service chiefs and service secretaries, with one exception and he's on my calendar, about this. And I'm going to be spending a lot of time with them, encouraging them to do as much as they can to elevate the abilities, the characteristics, the qualities, the performance level, the background, the promotion potential and the prestige of the acquisition workforce – particularly key leaders.

And this has got to go through the whole chain of command, but I'm talking about not just program managers but also chief engineers, contracting officers, lifecycle support managers – the people who actually do make a difference. Any of us who have ever worked out on the real work and worked on real programs know that leadership qualities have everything to do with success or failure. So we've got to push that much harder. And that's the next thing on my list.

I talked about affordability a lot already. I'm going to mention it a little bit more. It has to do with that – it is a requirement now. It was the leading topic of the six topics under Better Buying Power. And what we're trying to do there is start out programs that have a chance of actually being produced in field and not have programs that have to go several years of development and a couple years, maybe, of low-rate before they're killed because they're unaffordable. We cannot afford to do that.

Most of the things in the – Senator McCain talks about in that floor speech I mentioned are of that nature. Most of the things that Secretary Gates cancelled two years ago are of that nature. You know, we cannot have programs like that, and the best place to stop them is before they start. So the way you do that – or a way to do it is to do some analysis before you start of what you think you can actually afford.

And I've had a little trouble communicating this to the workforce. It's still a bit of a struggle. So we're going to put it into some of our more formal documentation as a requirement. We're going to start putting some examples out there that people can see. We're doing it on a case-by-case basis now. We want to institutionalize this more.

And essentially, what you have to do is pick a portfolio of products that exist in your capital structure – let me just pick ground combat vehicles, for example – and say, OK, what reasonable amount of money can I expect to have over the lifecycle of this product to recapitalize that part of my force structure? And we're not going to be perfect about this. I mean, there are cycles in the defense establishment, both in terms of the size of the establishment and the amount of budget we get.

But nevertheless, we can take a pretty good cut at what we can expect to have reasonably. And then we can take a look at what's in that portfolio and say, OK, if I'm going to have 15,000 vehicles in that portfolio, and I'm about to a program to replace 2,000 of them, and I've still got to do something with the rest of them, what is that? And what am I going to have left, at a reasonable amount of budgetary planning, to do the other things I need to do?

And then you basically derive a cost cap for the new program that you're about to start. It's portfolio analysis; it's capital planning. It's something that's pretty familiar to people in the industry who do this sort of thing. You have to make investments that you can actually afford and that are going to give you a return.

When we did this for the GCV – the Ground Combat Vehicle platform the Army's just starting on – it was a revelation to the G-8 and the Army how much money he was going to have for other things out in the budget, and it's led to a lot of serious planning on the part of the Army about what it can actually afford. You know, I think our – one of our single biggest problems is starting things that we should never have started.

So we're imposing those, or we're going to be doing – institutionalizing that, and working more to make sure everybody understands what we're doing here. This is not necessarily a program manager's responsibility. In fact, it's not. It's more of the G-8 and the institutional responsibility to ensure it does sound long-term capital planning.

Now I'll be doing this through whatever portfolios the services want to put together to do it from, as far as their planning is concerned. Through the D-MAG (ph) that I mentioned, Dr. Carter's going to be looking at strategic portfolios and programs more from a capability perspective. So we'll be coming at it from both sides, trying to make sure we make sound decisions so that, two or three acquisition executives down the road, programs aren't being killed because I started them and they weren't affordable.

More on the industrial base: We done a lot of work – Brett Lambert (ph) has done an enormous amount of work, supported by surveys that went out to the industry, and which we really appreciate the response on – to build a database of the – of the industry. It's called sector-by-sector, tier-by-tier analysis database that he's put together. And we're well into getting that put together; we're not quite done, but we're getting there.

And what we talked about at the off-site quite a bit was, what are we going to do with that? How is it going to help us make better decisions? And what I'd like to do in that regard is work more closely with the service acquisition executives, so that we provide a tool to them that they – when they do their budget-building process and services, they can understand the industrial base implications much more clearly – because by the time it comes to OSD, after it's been through the several months of on-building in the service, it's pretty much a cooked deal, and we have to go raise individual issues. I would much rather be engaged early in a cooperative way with the services to make sure industrial base things are taken into account earlier. So that'll be one of the things that gives us a good feel for that.

The other thing it'll do – the biggest source of income, of – I'm sorry, of information we have about the healthy industrial base is the industrial base. When it – people see that there's a supplier who is in trouble, when they're in trouble themselves, they need to come let us know. You know, when they look out and see their business base eroding, or see that they're not going to be viable for whatever reason, we need to know that. Then we can do assessments that look at whether we need to retain competition there, whether there's a niche capability we have to continue to support somehow, how we might intervene.

Interventions will be rare, OK. I have to tell you that. Resources are limited, and interventions will be rare. But we are prepared to intervene where it makes sense and where we have to. But I'd like to get that process started. I'd like to avoid those situations as much as we can, by doing our planning early and up front. But we have to be reactive, we'll do that as well. The S2T2 database will give us a way to assess some of those concerns and determine what our options really are.

I mentioned earlier that the industrial base is something that I'm trying to get people to think of as part of our force structure. You know – (inaudible) – this idea came to me initially out of a recognition that half of the people we're deploying into Afghanistan and Iraq were contractors. You know, when you think about that, you have to manage that total force that you deploy, because the boots on the ground include 50 percent, basically, contractor boots as well as uniform boots.

That's a different way of fighting; it's a different way of doing war. It's somewhat unique to kind of contingency, counterinsurgency operations we're doing now. But we may well be doing them again. And if you expand that concept just a little bit more and say, wait a minute, you know – if you look at the defense enterprise writ large, industry is part of that enterprise. It is essentially part of the force structure. And we are dependent on it in order to equip our forces and go do the missions that we have to do. And we need to think about it that way.

Now there are a couple of sides to that, right? One is that you have to make sure – you got to sustain it, you have to take care of it. The other is that you want it to perform as well as possible. Any unit in the force structure is going to be trained; it's going to have standards; it's going to have to meet readiness requirements, et cetera. Industry needs to be as capable as possible for as little cost as possible as well.

And the question is, how do you make industry both more capable, sustain it, and at the same time motivate it to do – to be leaner, to lower overheads, to be as efficient and effective as

possible? And we have to do that largely through the way we contract. OK, we don't have the same kind of direct control we do over – a unit commander has over his own forces. But we do have ways to influence industry through how we contract. And we have tools like competition, which we need to use as much as possible. We have incentive systems, even in the cases where we don't have those sorts of competitive tools.

So we're trying to expand the one, and we're trying to use the other more effectively. And I am a bit of a fanatic about incentives. We have been accused often – and I put this in just about every speech I make – of coming after people's profits. We are not after people's profits. What we are after is better performance, OK. And if you look back at the history of the programs that are dying, there are a couple things that are true. One is that they're often unaffordable; but also, there are a lot of programs that did not execute well.

I like to say sometimes, a little bit glibly, that we only have two problems in defense acquisition: planning and execution. (Laughter.) And historically, I would have said planning was much more significant, that we were not doing a good job of writing requirements, and we were not doing a good job of planning the budget in the time and so on for programs. That was a government responsibility.

But I'm afraid that increasingly we're having problems with execution. And execution is fundamentally industry's responsibility. And all we can do about that is provide better incentives to industry, and then get industry to react. And I know industry will respond to those incentives. I've been there; I've been part of that; I know what competitive pressures do to industry. We have to be careful and we have to be smart about it, which is going to bring me to my next thing.

I want to go back to the workforce, because the workforce plays a huge role here – the government workforce and its relationship to industry, which needs to be cooperative, professional and structured in a way which gets the best value for the government but recognizes industry's real needs. And it's an interesting tightrope to watch sometimes for government people. We have to understand what we're doing. It gets back to the professionalism of the workforce and those high standards I mentioned.

I'm going to go back because this is another piece of data. The – I did a – I came to a revelation, if you will, about our technology development phase. One of the things that was done by John Young – and I have – I spoken positively of this many times – was to have competitive technology development phases, where people built prototypes, part of a down-select for a – to support a competitive down-select for manufacturing development.

OK, the idea there was that, you know, we could go further in the design, and we could have less risk going into EMD, and that therefore things would be, you know, more successful. And I was looking at programs coming through and thinking about what people are actually doing to get ready for EMD. And what we were supposed to do in the technology development phase is develop technology. (You're ?) supposed to reduce the risk of EMD. OK, that sounds good so far. What was actually happening? And this should not have been a surprise to people. What was actually happening in some cases was that people were not trying to reduce a risk; they were trying to win.

Now the fact that industry is trying to win the next contract should not be a surprise to anybody, OK. But it takes smart people on the government side to understand that, and to insist that we get the risk reduction that we really need. And that's how you win, OK. So a lot of this is about the government being a better – doing its job on its side. And I just (did ?) a study that suggests exactly what I just described is happening fairly widely.

OK, next thing on my list, I refer to another project for the year: (inaudible) – service contract management. Service contracts are half of our contracts (spent ?). And we started this under better buying power. One of the initiatives there was improving our trade craft and service contracting. And we've made some progress in that. We established leaders in each military department for service contracting. We defined the taxonomy we would use.

We've got a lot more work to do there. We've got a lot more work to do with identifying best practices. And I'm talking about things like knowledge-based services – maintenance in particular, and other areas. So we will be doing some concrete things to try to improve our performance in services. I think, in terms of getting better value for the dollar, it's probably one of the most fruitful things. It's also a place where I'm afraid we're taking a risk in the budget, OK. We're counting on OCO for a while to help us with readiness. We're counting on some efficiency improvements there. And it's one of the areas where we're going to have to succeed.

The last one on my list of projects is small businesses. Small businesses are a huge source of innovation. They can be very efficient. We – the administration is committed to supporting small businesses. And we have a lot of initiatives across the board in there. We fall short, routinely, of our goals – not by much; we fall short by a point or two; but that's still too much.

And we need to find ways to encourage innovation, and bring more small businesses into the fold, and expand the technology opportunities that are available to government and get more for those dollars as well. So small businesses, I think, are a route to some of the things that we want to accomplish overall. We need to strengthen our programs there. So we'll be doing some things along that line.

I'm going to wrap up and give you a chance to ask me some questions. I'm going to close with a few more words on context. We're in a situation where our force structure's coming down – not dramatically, not like after the Cold War. We're not going to take a procurement holiday like we did after the Cold War. A good reason for those things: National security threats are not really declining. They are, if anything, perhaps increasing in some areas. We will be able to withdraw, hopefully, from Afghanistan in the next couple of years and reduce that commitment. So that will help; but that's not going to really change the fundamental situation on the ground.

I lived through the end of the Cold War. I was in the Pentagon for a few years before it ended and then a few years after my last tour in the Pentagon. And I know what that was like. It was very dramatic for industry. It was very dramatic for the military – huge impact. I don't think we're going to see that kind of cuts. I'm a little nervous about sequestration and the potential for another \$600 billion coming out, and that will look a lot closer to like what we did in the Cold War. We shouldn't do that for a lot of reasons, OK? We think we've got a reasonable strategy now which supports our national security objectives. We think we've got a

budget that's consistent with that strategy, and that's where we would really like to be. I won't – Secretary Panetta's been about as eloquent as anybody can be about sequestration. I don't need to say much more about that. But we don't have a very positive view of it; I can say that, anyway. That's understatement.

We are not planning on it, OK – not at this point. I mean, there may come a time a few months down the road when we feel we have no choice, but we're hoping the Congress will act and we'll avoid that disaster.

There are assumptions in the budget that I mentioned that may not be realized. One of the problems we have is that people tend to expect perfect performance of our acquisition system, which I think is a little bit unrealistic, actually. We try to do things that have never been done before. We routinely try to do things that have never been done before. We do what we can to get risk out early so then when we go off into an EMD and get ready to start production, we've – get rid of as much risk as possible and we try to make our performance predictable.

But because we do things that are beyond things anybody's ever done before, we are – you know, it's a bit like – I make the analogy of – anybody work on cars anymore? OK, not many people work on cars anymore. I'm old enough to have worked on cars once upon a time. I can tell you from my experience that the first time I ever did anything, it took twice as long as I anticipated, no matter how much – how careful I was about thinking it through, right? It's a little bit like that. There's some inherent forces for optimism in our system, people will be optimistic about – for any number of reasons. I've given testimony about this. So we are – tend to overrun.

And we don't have a cushion anymore. We don't have a cushion of growth in the budget that we had for a long time. And there is no reserve in the budget anywhere to cover overruns. They have to come from other programs. So you – inefficiencies build on inefficiencies, and they reinforce each other. We can't have that. That's another impetus to us doing better. So there's risk there. It's one of the things that I'm trying to get at through most of these projects that I talked to you about – doing a better job upfront so that those things don't happen.

We have to change, OK? If we're going to be successful, we're – you know, we're going to have to change. We have to change how we think about the money, how we value it, how we spend it and how we do our business. The change has to be real. It can't be superficial. You know, one of the things I find interesting is, soon as somebody puts out a new label, like better buying power, or talk about efficiency a lot, everybody that walks into your office is going to talk to you about efficiency all of a sudden. You know, it's just – that's the word. That's changing the label. We've got to go deeper than that. We've got to change what we actually do. That's harder. It takes a lot of work. It takes tenacity.

If we don't succeed, though, we're not going to be able to support the force that we have, and that's my challenge. And I would ask you to help me with that, those of you who have an opportunity to do so. Senator McCain's floor speech about all those bad programs, we cannot continue that kind of behavior. We have got to stop that.

Now, the steps I'm planning to outline are our first step on this journey. They're not the end. You know, this is about continuous improvement. It's not about a revolution. I've seen so many different attempts at acquisition reform, you know? We are not going to solve this by

adding an office in OSD. We're not going to solve it by going to one contract type. We're going to solve it by hard work across a wide variety of fronts and tenacity over a long period of time. And I want to start that journey. So thank you.

And I'll take some questions. (Applause.)

MR. BERTEAU: (Off mic.) Better? I think there's a remarkable difference.

Mr. Kendall, I want to thank you. That was a comprehensive and actually quite astonishing tour of the world in which we all live here. And I appreciate that very much.

The process for questions is you'll raise your hand, we'll bring you a working microphone, and then you'll state both your name and your affiliation and you can ask your question. I'm going to, however, take the moderator's prerogative and ask the first question.

You mentioned, sir, the desire to get improved culture, behavior and to change incentives for both the department, military and civilian personnel, in the acquisition workforce, and for industry. You hinted at the need for improvements in requirements as well. But if there's one place where the culture and the incentives also need addressing, it's in requirements. And of course, that's in the original statutory basis for the position in the undersecretary, but it's a largely unrealized potential over time. So I'd like you to comment a little bit of how you're going to bring requirements into the same culture change and incentive dynamic.

MR. KENDALL: A couple of comments. Good point. This is the planning side, right, that I talked about earlier? I've just seen a study on space programs that suggested that the single biggest problem with our space program by far has been the requirements that were set that were unrealistic and had one problem or another. And I've long felt that the requirements process is the place where there's the greatest potential for improvement.

I also – one of the better – (inaudible) – is getting rid of bureaucracy. One of the bureaucracies that has been created while I was out at the Pentagon was the JSIGE (ph) bureaucracy. And I don't know that we're getting any better output for all that, and I'm kind of curious about that. But anyway, that's an aside.

I'm working with Sandy Winnefeld on this. He and I have talked about it. There's, I think, a recognition in the Joint Staff that their end of the requirements business has been – become too cumbersome; it takes too long to get things through, and it's not necessarily as value-added as it should be. So we're looking at some things there to just simplify things.

I'm attending the Joint Requirements Oversight Council. I've been at a couple meetings so far, but I'm going to start going to them regularly so I'm directly participating. And one of the things that we really need to do is bring the acquisition people, the technical people, together with the requirement to operational community so that they iterate and discuss together requirements so that people don't just set pie in the sky requirements based on what they'd like to have or that they think is conceivable, but that they're rooted in some realism about what things actually cost and how hard they are to do. And I think that would be healthy across the board.

There are – there are any number of problems with the requirements that – as illustrated now. We actually have courses now out at DAU for people so that they kind of have a better understanding of what a good requirement is, as it was started over a year ago.

I sent a note to Sandy recently about one program that came through. It was – I won't name it, but it said we've got all three of are kind of core problems here. I may pull a Rick Perry on you and not remember all of them. But one of them is that the requirement's so vague that there's no way you can translate it into anything you can put on contract. And if you do put it on contract, you know, as vaguely as written, it's going to be left pretty much to industry to define what you meant. Because, you know, you wrote it, and they get to kind of define it – you know, depending upon the type of contract. You can iterate through a cost-plus contract, but that can be troublesome. So vagueness is one.

Ours should be specific enough that they're translatable into something you can actually go build. They have to be feasible. And I – one that came through recently was on reliability, and this is one where we've had a classic problem of people for some reason arbitrarily setting very high reliability goals, and they – well, I've got about this now in the field, so let's go for twice that. And it becomes a KPP. And then you get into OT, and you fail OT for suitability reasons because you couldn't achieve it or you spent years and years in LRIP trying to get – you know, spend money trying to achieve a reliability number that really may not have had any value to you. I mean, this is, again, about translating things into value. So vagueness, feasibility.

Meaningful in terms of the returns is the third one. And I saw one that was written so badly. It was basically about, well, the system has a KPP of being able to deal with some percentage of the threat. And wait a minute: Who gets to pick the percentage of the threat? Which ones are ours? This – it had to do with a wide spectrum of possible threats – just say it's an electronic warfare system. Say – we actually do care which ones. And so having an arbitrary percentage, you can pick the easy ones if you're on the side of – one side, and if you pick the hard ones if you're on the other side. So meaningful requirements is really important. It is – it is the – (inaudible). And they have to – we have to be more flexible about them. We can start out with what we'd like to have, and then as we go down the road and we learn more about what's feasible and what it will cost, we should be iterating and changing them.

If the threat changes, we should change them. One of my classic stories is about a program called ADET (ph). Anybody remember that one? A long time ago. It was canceled eventually.

But I remember the PM coming to me and saying, you know, well, we wanted to cancel the program because the threat had changed. Essentially, the threat had become more severe, and the program – there was no way we could redesign the system to deal with the threat. It was just fundamentally outside the reach of the system. And it would have made no sense operationally to field the system.

But the PM's attitude was, well, I met my requirement that you stated, therefore you should buy my system. So there was a certain disconnect between the reality of what we operationally would have to have and the – and the perceptions of how the system should actually work. So there's a lot of work, fundamentally, David, to be done getting the acquisition community and the requirements operations community together to work on these things as a

team. And that's really the thrust of what Sandy and I are trying to accomplish there. Good question, though, because that is the root of a lot of the things we do.

MR. BERTEAU (?): You're welcome to call on people – (inaudible).

MR. KENDALL: Right here.

MR. BERTEAU (?): Wait for the mic to come to you.

Q: Hi. Dave Fulghum, Aviation Week.

MR. KENDALL: Hi there.

Q: I – what's your best estimate of the cost of cyberintrusion and theft to acquisition? And is that trend going up or is it going down?

MR. KENDALL: It's a good question and I don't have an answer for you. I don't even – I'm not even going to pick a ballpark number. Cyber's an area that is getting a lot of attention now too. Let me say a word or two about it since you brought it up. We're working on a report to Congress which – called the section 933 pulled out of last year's NDAA – which will lay out how we're going to handle acquisition for cyber.

And we – and I saw a draft the other day – been through the staffing process, and to be honest, what had happened in the staffing process was that every interest group, if you will, had kind of gotten the thing to where it was so weakened that it really wasn't going to have much teeth in it anymore. So I pulled it back and I'm working on rewriting it.

But basically, what we were asked for was how we're going to handle cyberacquisition and how we're going to handle testing of the things that we buy. And when I say cyber, I'm really not talking about IT. I'm separating that from the things that we use specifically to defend our networks, where the IT is, and the things that we might buy to attack other people, and then some of the things that are used for intel as well would go under.

So basically, the problem we have with those programs is that they tend to be very small, so they don't – in terms of dollars – so they don't make the MDAP level. They don't make the MES level even, but they're terribly important. You know, they're important to the survival of our networks, they're important to our ability to operate, they can be very important on the offensive side as well.

So what we're going to try to put in place is a way to respect the fact that cyber has to move at a much faster pace than anything else we do. The technologies move extremely quickly. We have to react instantaneously to many of the threats. We can't sit around and wait for a DAB or a JROC for these things, OK? So we got to take it outside the conventional system for the major long-term weapons system entirely.

But at the same time, we really want to understand where we are. We want to be able to answer a question like that one. So we want to know, you know, what we're – what we're – our defense levels are, what our abilities are to attack and where they exist, and what kind of gaps we have between what we have and what we would like to have, and also what our investments are giving us. You know, we're putting a fair amount of money into cyber right now. We had a lot of money for cyber S&T last year. We'll see some things done in the budget this year.

So we appreciate the significance of the problem and we appreciate that we have to do a lot about it and we have some very competent people working in that area. But at the department level, we need to get a better handle on exactly what we're getting for our money and exactly what our posture is. We know we're at risk in some areas. We know there are stories in the paper fairly often about things that are happening out there. And we know there is a cost, but it would be hard for us, I think anywhere, to put a real number on it right now.

Q: Could you even do some really ballpark – like say it's a big problem for you, it's a medium problem –

MR. KENDALL: It's a very serious problem – serious problem for industry as well.

OK, over here, lady in the front. I'm going to work my way back. Right here, yeah. In the boots and the striped shirt with your arm waving around, yeah. Waiting for the mic, OK. Thanks.

Q: Thank you. It's Aviation Week's lucky day. This is Amy Butler. I'm with Aviation Week as well.

MR. KENDALL: Hi, Amy.

Q: (Chuckles.) I wanted to ask you to follow up on a couple of the comments you made about contractor behavior. One was that a study had revealed that in some cases fixed price or cost plus doesn't necessarily make a difference in LRIP. So I'm wondering if you can give us some examples – (chuckles) –

MR. KENDALL: Yeah, I refer to that – I refer to that, yeah.

Q: -- of that data. And the most prominent example lately, from the Defense Department, has been LRIP four and five for Joint Strike Fighters. So is that what you were speaking of? And then secondly, you made an interesting comment about competitive prototyping, that they weren't out to reduce risk, they were out to win.

So what –

MR. KENDALL: Hopefully they're doing the same –

Q: Well, right. And so what do you do with that knowledge and how do you work that to your advantage?

MR. KENDALL: Let me take both of those. Yeah, the data shows – the data I've seen, OK, it's not complete, but the data I've seen suggests that you don't get a different result significantly between cost plus and fixed-price, low-rate production. Why is that? I think the reason is that industry, first of all, is doing its best, in general. I think a little more motivation wouldn't hurt. But I think, in general, industry is doing its best. It's not trying to fail.

I actually had a conversation with Senator McCain last week, and I made that point; and he didn't disagree with me. When you're an LRIP, you're trying to get to full rate. You're trying to get to a higher rate of production. And the way you do that is by succeeding at LRIP, getting things built and getting them into OT. So there's already some inherent motivation when you're an LRIP to perform reasonably well.

And also I'm – I should have made this point earlier – in today's environment in particular, but I think this has always been true to a degree, we're – there's a competition in the budget to survive. And if you're failing in your programs, if you're doing very badly, if you've overrunning costs significantly and your schedule's slipping badly, you're likely to be cancelled. I mean, that's a fact, OK? I mean, if you look at some of the programs, you look at some of the things I've done even in the last few months, programs that are not performing are going to have a hard time surviving. I mean, that's about as much motivation, I think, as you can get.

So anyway, I think that's the root cause of that side. And as far as the F-35, I can spend quite a few minutes on the F-35, but I don't want to. (Chuckles.) It – this will make a headline if I say it, but I'm going to say it anyway. Putting the F-35 into production years before the first test flight was acquisition malpractice. It should not have been done, OK? But we did it, OK?

So now – Dr. Carter first and now – and now I am dealing with that. And what we're seeing is the – I talked about optimism earlier – the optimistic predictions, when we started the production of the F-35, that we now had good enough design tools and good enough simulations and modeling that we wouldn't have to worry about finding problems in test was wrong. And now we're paying the price for being wrong about that, OK?

So we're finding problems with all three of the variants that are the types of things that are historically in a state-of-the-art, next-generation, fighter aircraft you're going to find, OK, where our design tools are not perfect and we didn't model everything as precisely as we thought we had. So we're working our way through that.

The hardest part of any acquisition program is the transition from development to production, OK? And that's where the concurrency arguments come in. You know, when should you start? And I think there's been a tendency to start too early in some cases. And the F-35 is probably an extreme example of that.

That said, there all – all those aircraft are making progress. And we're committed to that program. It is the future of tactical air for the Department of Defense, for all three of the services it supports. We don't, at this point, see anything that would preclude continuing production at a reasonable rate. And we're trying to balance the risk we see in terms of the design problems and

having to fix them – not just in the current aircraft but in the ones we've already built – against, you know, the risk – or the cost of slowing down production too much and having to even restart it potentially.

So we're trying to cut a balance for that. We're about 20 percent into the test program. We're going to pick up another 15 or 20 percent over the next couple years each year. And we'll learn from that. And hopefully we won't see any more serious problems emerge and we'll get on with it and get the ramp – the rate up as quickly as we can.

The key to getting the cost down on the F-35 is going to be getting the production rate up. And we need to do that as soon as we're ready to do it, but we're not ready to do it yet. So that's the story on that one. That's sort of an unusual case. Is that good?

Right here.

Q: Cameron Lucti (sp), Booz Allen. If we take the analysis that you just provided a few minutes ago about the importance of requirements, getting them right up front, and we look at the programs that, as you put it, should never have been started, one of the common themes is the technology wasn't mature. It was way out there. And so at the same time, it seems like there's a dilemma between maintaining our technological superiority, and yet not starting programs where it's not mature yet.

MR. KENDALL: This gives me a chance to answer the question I didn't answer about industry behavior at TD phase. Yeah, a couple things there. We – technical maturity and feasibility, in some cases, has been a problem for a lot of programs. We instituted the TRL system. TRL, technology readiness levels, is – which is a NASA system originally – a few years ago as a way to kind of help alleviate that problem. And there's some language in the statutes now that says we have to assess technical readiness, which is an important thing to do. I'm glad – and it's good.

But what I – what I saw when I first came in was that there was this infatuation, I guess, with TRL levels. And TRL levels were used as essentially the equivalent of technical maturity and of reduced risk, which they are not. OK, the TRLs are a benchmark. They give you a sense of where you are, but it's really just the first question you have to ask. And we had a process in place for kind of almost a judicial process for evaluating TRLs as precursor to going into EMD, manufacturing and development.

So I changed that a little bit to make it less judicial and put more responsibility on the chain of command to do technology assessments. But the correlation between this and the – so it's something we just have to pay attention to, but it gets back to the need for professionalism and the need for people who really understand what they're doing, which is how this relates back to the question about tech demonstration and what happens there, and industry's desire to win.

Industry is pretty predictable. Industry needs – you know, business to be in business. And it will do the things that it needs to do to get more business. You know, growth is an imperative for industry. So – and winning the contract is an imperative for industry. It's not an

option. So when you set up a program – say, OK, I’m going to have a competitive down select, and you’re going to go do a demonstrator, and then I’m going to pick somebody and you’re going to – that person’s going to be sole-source for the life of the program, that’s a lot of incentive. It’s an incentive to win.

What we need, however, is people who reduce the risk, so that when I pick somebody for EMD I know the risk is reduced. And what happened in a program I looked at personally, and then I had a study done after I saw this one because I realized what was – what seemed to be happening – was that we were not doing a good enough job on the government on insisting in risk reduction, as opposed to demonstrations in the technology demonstration phase.

So someone would do a flight of a missile, in the case I’m thinking of, which showed that they could build a missile that could do a certain thing. The problem was, that wasn’t the missile they were going to build. That was a very different missile that was much easier to build. You know, it was – you know, it was a laboratory-built missile that could show the performance capability. But when I looked at the individual components of that design, virtually none of them were going to be the same design that was taken into development for production.

So we really hadn’t done much to reduce the risk. We’d done something to show that it could be done, so that – you know, we had proof of principle, essentially, as opposed a real risk reduction and maturation of the technology that was going to be used. So if you’re using different materials and different components and then – so the point of all this is that we have to be smart on the government side about this. We have to really understand the designs and we have to really understand and manage the risks.

And having a label of TRL isn’t the same thing, OK? It’s a useful thing to do as you go about doing your job to kind of benchmark and help you understand, but it is not the answer to the question. The question really is, have I gotten enough risk out that I can go in EMD? And I may be TRL five or four, and there may be very little risk of going into EMD, and if we understand that, that’s fine. Yeah, anyway, that’s – I kind of worked my way around, but that’s essentially what that’s all about.

MR. BERTEAU: I know there are dozens of other questions. But I unfortunately also note that we’re well past our appointed time to end. And so –

MR. KENDALL: I talk too long. I like this stuff. I talk long.

MR. BERTEAU: (Chuckles.) Well, I tell you, we’re all better off for it, and we’re all extremely grateful for your taking the time this morning and for sharing your thoughts with us. So thank you very much.

MR. KENDALL: Thank you. (Applause.)

(END)