DEFENSE ACQUISITION PERFORMANCE ASSESSMENT PROJECT

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ACQUISITION PERSPECTIVES FROM INDUSTRY

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PUBLIC MEETING

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WEDNESDAY

AUGUST 17, 2005

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The meeting convened at 1:15 p.m. in the 4th Floor Conference Room, 1560 Wilson Boulevard, Suite 400, Arlington, Virginia, Ron Kadish, Chairperson, presiding.

C-O-N-T-E-N-T-S

PRESENT:

RON KADISH Chairperson
DR. LINDA BRANDT
EILEEN GIGLIO
RICHARD HAWLEY
ALFRED HUTCHINS
DON KOZLOWSKI
DAVID PATTERSON

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

1:24 p.m.

MR. PATTERSON: I'm Dave Patterson and while we're waiting for some of our members to arrive -- I guess it's easier to get here at seven in the morning than it is at 1:15. And we'll cut them some slack. They're in traffic.

But I think it would be a good idea for us to get started. And as we have done in the past, we have kind of explained what we're all about, why we're doing this.

And essentially this is as a consequence of a tasking by the Deputy Secretary of Defense -- Acting Deputy Secretary of Defense, Gordon England. And it was his desire that an independent panel that is established under the Federal Advisory Commission Act, the FACA Act, look at the acquisition system and processes. And as he put it, every aspect.

And so that's the undertaking that we have before us. I'm Dave Patterson. And I'm the Director of what we refer to as the Defense Acquisition Performance Assessment Project.

And with that as an introduction, what I'd like to do is to turn the remainder of this opening session over to our Chairman, Ron Kadish.

CHAIRPERSON KADISH: Good afternoon everybody. Today's session is focused on discussing these issues with industry representatives.

Last time we met in open session, we talked to the NDIA. We had representatives from L3 Communications and BAE Systems. Am I missing anybody? I don't think so.

PARTICIPANT: And the NDIA?

CHAIRPERSON KADISH: The NDIA. And today we'll continue with -- our agenda includes General Dynamics with Mike Mancuso, the CFO of that company. We have Lockheed Martin. We have Raytheon and Northrop Grumman scheduled along with Boeing. And we will be going, because of the scheduling of all these folks, until at least 7:15 tonight, maybe later, which makes it for an interesting afternoon.

So Ron Sugar from Northrop will be joining us by telephone, is that right?

PARTICIPANT: That's correct. He's in California.

CHAIRPERSON KADISH: The rest will be joining us here in person.

The objective of this is to get a view from industry as to what the problems they see in these areas and to harvest some information from them

through their statements as well as any questions afterwards. So each one has an hour, which I would expect the first 30 minutes to be some sort of statement and then the rest questions from the panel.

So that's the afternoon. To begin with, we'd like to discuss in open session some of the issues that we're facing potentially and start off with taking questions from anyone who is here in the room about the process we're using or any of the issues related to the panel. So we'll set aside a few minutes for that.

MR. KAPOWSKI: (Speaking from unmiked location.) I have one general -- can you, kind of as clearly as you can, delineate how your effort is different than the Packard Commission -- and a year from now into it, where might -- recommendations?

CHAIRPERSON KADISH: Tony, that's a great question. And let me try to give you the simple answer.

And I gave this briefing last week. And I was going to also discuss it again today. But it plays into your question. What's difference about our approach and what might be different a year from now than what other efforts along these lines might have produced?

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Now I don't know this is going to happen but this is the way we're approaching the problem. If you look at the Department's management framework, it has three major processes involved in the train, organize, and equip activity. You've got the requirements process. You've got the acquisition process. And then you've got the budgeting and programming process.

The intersection of these things create a successful effort in terms of all the things the Department does. Now what has happened, and a way to look at this, is that we have lost confidence in one of these circles, Venn diagrams, the acquisition system.

If you look at these as a set of gears, they may not be meshing very well in the process. And out of sync with what we need to do. So this is the view of the world that says here is how it should work in an idealistic sense, all these circles are equal. I'm not sure they are, in fact, in terms of the process themselves and the weight that they bring to the effort.

So I would make a distinction here on the next chart. We are dealing in a world where acquisition definitions might be useful to understand.

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And the simplest difference, it's a little bit trite but there is a difference between Big A acquisition and Little A acquisition.

The Big A acquisition includes those three circles process going all the way from the time it's a concept to the time you put it in the bone yard. If you look at Little A, the acquisition system, it includes things like the contracts, the engineering, the delivery of the product.

Now the important issue here, Tony, to answer your question is that to the best of our knowledge, previous efforts along this line have dealt with only Little A, only Little A, with tangential recommendations in other areas.

But the Packard Commission, for instance, in the Little A area, set up a very strong acquisition executive system. It's SAE to PEO to PM. And to some degree, for example, that has isolated the requirements people from the acquisition system. So it pulled apart that Venn diagram a little bit.

So our focus is on not only the Little A but the Big A. And that's in concert with Secretary England's letter as well. So what's different is that we're looking much broader for solutions to these problems than people have looked in the past by

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concentrating on the larger acquisition process that may not traditionally have been looked at before.

Next chart. And so if you take that view, Little A can only be effective if all these others parts are working in synchronization with them. Okay? So the requirements, the funding, the technology being mature, all play into these issues. And, of course, those are the kinds of criticisms that you hear from the critics and the oversight process in general.

So that's the most straightforward way we can answer the question. Now we're doing some other things differently in methodology. I don't think that is as important as this particular issue.

Does anybody have anything to add?

MR. MOK: May I make a comment? I think the three circles that you have there, one the PBD, ES and the capability, and the acquisition. The Little A kind of assumes a static or stable environment. So the other two circles, the PBD and ES and the capability circle, the assumption is that they don't move.

CHAIRPERSON KADISH: That's right.

MR. MOK: In reality, they're shifting, they're changing.

CHAIRPERSON KADISH: That's correct.

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MR. MOK: So, you know, I'd kind of like to take the concept a step further is that they advise the issue, as the two other circles shift and moves, then, you know, the acquisition circle is kind of out of sync. And I think, you know, we kind of live in a dynamic world and that, you know, we have to assume that those circles will shift.

And the acquisition piece may need to be structured in such a way that is flexible enough and can engage those changes in a way that will actually welcome those changes rather than, you know, as a reason for not being able to make things happen.

I just want to take that, you know, Little A and the Big A a step further. And what happens, you take a Big A system, you kind of have different pieces that shift. And if the structure, the process, that the infrastructure can be built in such a way that it is modular and flexible, I think that would to a large extent accommodate the changes in acquisition.

I think in the future, you're going to see more changes than less changes.

MR. PATTERSON: Would you identify yourself when --

MR. MOK: Oh, I'm sorry. I'm Joe Mok. And I have a company, a consulting company. I used to

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work for the Army in the civilian sector --
MR. PATTERSON: Okay.
MR. MOK: -- in the acquisition area.
MR. PATTERSON: Thank you.
MR. MOK: I retired three years ago and started a consulting company.
CHAIRPERSON KADISH: And Tony Kapowski was our first questioner.
MR. KAPOWSKI: Can I ask a follow up?
CHAIRPERSON KADISH: Sure.
MR. KAPOWSKI: Are there any systems you are using as models of effective acquisition or ineffective acquisition as kind of a term you can get your arms around? I'm thinking one the C-17 possibly because you, Mr. Kozlowski, had issues with to fix the system basically?
CHAIRPERSON KADISH: At this point, I would answer that by saying no. The trouble with models is that -- or examples of these types of things is that they are very tailored to the environment and the time frame that they are put in. And these systems take on quite a long time frame.
It takes, for instance the C-17 program that you mentioned, the C-17 program what four or five years before even Don and I got involved, was an

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acquisition enterprise reform program, designated as such. And was one of the ones entered into the overall process of acquisition reform.
It got into trouble and then there were a different set of things that we faced when we worked that program. And that's just one example.
So it's very difficult to model something after any one particular effort. But what is important is that we're doing a literature search and a look at all these different efforts and trying to find the trends and the issues that surround the system in that Big A as well as the Little A that effect all of the major efforts.
And, in fact, I think what we're finding in some of our literature or activities and the history that we're reading is that since World War II at least, we've had these types of problems on all -- I could probably make an assertion here that I can't back up but I will anyway -- and that's about 20 percent of any program set at any given time in the DoD has some sort of trouble. So it is about a 20 percent factor -- somewhere between 20 and 30.
MR. KOZLOWSKI: Can I respond to that now if I don't knock something over here?
Your question is an interesting one, Tony.

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I started out in this trying to see if there were a couple of model programs that you could hold up as a good example. And I haven't found one yet. That doesn't mean that all programs are bad.
What it really means is the following. Even if you find somebody who came in on budget and on schedule, as you start digging into it, you'll find some degree of trauma in that program. Perhaps somebody wanted the requirement to be tighter. He wanted more. Somebody else wanted it to be cheaper yet. Somebody else wanted it faster. I haven't found a human being that doesn't want more cheaper and faster, et cetera.
So there is a degree of excellence that we all strive for. You always want more. Ron says that the problems existed back to the Civil War. Lately I've been reading a lot of history about George Washington and those guys.
And the best procurement system devised in those days -- and George had his problems -- is when Congress gave George the money and he appropriated whatever he needed out in the field on his own. He didn't really have an acquisition system backing him up. And things did not go easy in those days. You know the problems were more fundamental. It was a

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bring-your-own-rifle kind of a war.
Before I digress too far, there is always room for improvement in a system. So I don't really think we ought to -- I got off the kick of trying to find a model. Some programs come in way over budget. Some not so much. Some programs come in fast. Some come in slow.
What we're looking for is a system that gives us the most efficient process whatever the heck that may be in an area where you are pushing down technology barriers and a whole bunch of unknowns. The expectations are very great but the specifics are hard to come by.
When you look at all the different program histories that are floating around, it is amazing the kind of problems that they encounter. Budget stability is one. I don't have the money. I can't get there from here.
We've had some discussions just recently about work. Sometimes the people aren't there. One of the demises of the C-17 was they got off to a great prototyping kind of a launch. They threw out all the regulations. In fact, a friend of mine literally threw all the regs in a 50-gallon drum and they burned them. The company regs and the government regs. And

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So rather than looking for scapegoats where we can throw blame or ideal cases, I don't think they exist. What we're looking for is a better way to get the job done. And put the best we can in the hands of the war fighter.

And when you look at all the Big A, Little A spectrum, it's a tough problem. You've got to temper an awful lot of appetites in that process. So don't try to look for an ideal solution. I don't know that there is a good example out there.

MR. MOSES: This is Tom Moses, Light Safe International. So you mentioned we're looking for a more efficient system. Does this panel think it is important to identify that? And if so, what kind of metric would you say you would use to say this system

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works better than it used to?

I mean how will we know we're there? I mean obviously you are doing this because something went wrong to begin with. Is it all about cost and schedule? How would you know your recommendations have been effective?

CHAIRPERSON KADISH: Well, there's a part of the discussions that we're going to have to spend a lot more time on on different ways of measuring success. We have the tried and true cost schedule and performance. But those things might mean different things, for instance, if you have different categories of programs.

Today, for instance, the way we categorize programs is by dollar value projected. You are an A Cat. 1 program if you spend what -- 350 million dollars in R&D funds. That's the only criteria that I am aware of. And there is some judgment that could be made by the leadership to put something on the list that doesn't meet that criteria.

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Another way of looking at it is to expand the set of metrics that we look at for the system. We tend to measure cost, schedule, and performance on programs. We don't tend to measure the process that those programs go through. The overhead, if you will. So that's another way of looking at it.

So the answer to your question is there's a set of things we need to discuss and look at without any conclusions being made. But we know that's an issue. And there are different ways of look at it. I hope that helps.

MR. KOZLOWSKI: All of us in this business are here to provide the war fighter with what he needs to get the job done. And there isn't a taxpayer around that I think would disagree with me that they want the best for their troops so that they can win and defend our freedoms. So you can take the cost, schedule, performance issues and put it in the light of what is happening in a combat theater. What's the cost? What's the schedule issue? What's the timing issue? What's the performance issue?

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But if you could get something there sooner and maybe not have as much of a spec and it still worked, that would be better. How do you judge that? You make decisions today that will effect the posture of somebody fighting a war a couple of years down the pike. It's a very difficult process.

So we deal in the things that we can deal with in terms of metrics. But we've got to somehow -- and I don't know how to do this -- measure it in how well are we equipping, manning, training, and all that sort of stuff with our forces. And perhaps Dick can speak to that much better than I can.

MR. HAWLEY: Well, I was just going to add a thought on this metrics issue that, of course, we are driven by cost, schedule, and performance. I mean that's where all the criticism comes from is programs that don't live up to expectations in one of those three metrics.

One of the things I think that we're struggling with and the DoD has to struggle with is

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what are those metrics in relation to? They are in relation to some expectation that was established early in the program's life. And it seems clear to the information that we've gathered so far that those expectations are often the problem, at least as much as the actual execution of the program.

We set these expectations very optimistically and so part of the problem is not just executing to the advertised cost, schedule, and performance goals but setting appropriate goals to begin with. And I think that is an area where we'll have to address. So perhaps another metric is the quality of those initial estimates of cost, schedule, and performance.

CHAIRPERSON KADISH: Anybody else?

PARTICIPANT: You bring up, you know, the fact you've got three circles there, you know, which kind of what I used to refer to as the three-legged stool and the relationships to them. And we talk about collecting all the metrics on acquisition, you know, which is really most of the time in the Little A area.

You know maybe we need to think about how do we collect metrics relative to requirements in budgeting and how those metrics then fit with the

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Little A metrics and percolate each other so that, you know, you're not just saying well, geez, you know, we've got a program that's slipping.

Well, if you had metrics that were looking at how the requirements were changing or varying or the budget wasn't supported or something, you know then maybe you don't have a program in trouble because the system dictated that the requirements change or, you know, the budget shifted. It pushes it out and, therefore, you know, you shouldn't be saying that you have a breech or a problem.

CHAIRPERSON KADISH: Yes, we are well aware of those issues. And that's part of what we're trying to describe here and just where to go. Simple measures like design changes driven by requirements interpretation. But those things tend to get drowned out by the cost, schedule, and performance issues. It turns out to be inside the beltway type of discussions.

But the point is well taken. And I think we're going to have some pretty lively discussions over that issue.

MR. GIBSON: Paul Gibson. I provide support to DOT and E.

When you laid out that spectrum of the

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elements of the Big A, the things that come after the Little A, like operations -- operate, sustain, and so forth, you would think -- I think that the cost, schedule, and performance metrics tend to get identified with contract bill of required test to produce.

But perhaps there is a feedback loop from operate, sustain, upgrade that needs to come back to Little A so that there is some learning there in going through that process. So I would hope that perhaps you would have an input from the maintenance function, you know, which ends up with how often it breaks and how difficult it is to repair and the huge logistics footprints that has to go along with deploying forces which slow down and so forth and so on that might influence that Little A process and indeed the requirements process as well.

So I would encourage some feedback from that community, too.

CHAIRPERSON KADISH: Well, there is -- no description like this is absolutely perfect. But if you talk about the feedback across the spectrum there, I think there are walls that have been built around the Little A because of all kinds of different reasons. And testing is a good example because one

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way you can look at this activity and the way we're describing it is that testing is a requirements process, not a feedback loop. Okay?

And the reason I say that is that in the process of having a multi-year development of a program where you start out with requirements designed by the user, if you will, spend four to seven years working on those requirements and filling in the white space that they create, and then putting it in a testing environment, the testing environment itself because of the seven-year lag will generate new requirements.

And that feedback is in the requirements process more than anything else. Once you get into operations sustainment, you still have Little A. And it is done in different ways by the logistics centers and depots and sustainment organizations.

But your point is also well taken. But one of the things we need to think about in this process is just what constitutes a requirement. When you set up the MOEs within the test organizations to do the testing, they are designed to trace back to the original requirement. But in the process, all of us have experienced that those MOEs expand the requirement in many areas, sometimes beyond the design

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And any time there is a deficiency, who

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failed? You know you'd love to have a force that is well equipped to the point where they are invincible, let's say, whatever that is to you. But we all deal in today's banking economics. It's the calendar. It's the dollars. And it's the technical spec.

But if you could get something there sooner and maybe not have as much of a spec and it still worked, that would be better. How do you judge that? You make decisions today that will effect the posture of somebody fighting a war a couple of years down the pike. It's a very difficult process.

So we deal in the things that we can deal with in terms of metrics. But we've got to somehow -- and I don't know how to do this -- measure it in how well are we equipping, manning, training, and all that sort of stuff with our forces. And perhaps Dick can speak to that much better than I can.

MR. HAWLEY: Well, I was just going to add a thought on this metrics issue that, of course, we are driven by cost, schedule, and performance. I mean that's where all the criticism comes from is programs that don't live up to expectations in one of those three metrics.

One of the things I think that we're struggling with and the DoD has to struggle with is

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what are those metrics in relation to? They are in relation to some expectation that was established early in the program's life. And it seems clear to the information that we've gathered so far that those expectations are often the problem, at least as much as the actual execution of the program.

We set these expectations very optimistically and so part of the problem is not just executing to the advertised cost, schedule, and performance goals but setting appropriate goals to begin with. And I think that is an area where we'll have to address. So perhaps another metric is the quality of those initial estimates of cost, schedule, and performance.

CHAIRPERSON KADISH: Anybody else?

PARTICIPANT: You bring up, you know, the fact you've got three circles there, you know, which kind of what I used to refer to as the three-legged stool and the relationships to them. And we talk about collecting all the metrics on acquisition, you know, which is really most of the time in the Little A area.

You know maybe we need to think about how do we collect metrics relative to requirements in budgeting and how those metrics then fit with the

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Little A metrics and percolate each other so that, you know, you're not just saying well, geez, you know, we've got a program that's slipping.

Well, if you had metrics that were looking at how the requirements were changing or varying or the budget wasn't supported or something, you know then maybe you don't have a program in trouble because the system dictated that the requirements change or, you know, the budget shifted. It pushes it out and, therefore, you know, you shouldn't be saying that you have a breech or a problem.

CHAIRPERSON KADISH: Yes, we are well aware of those issues. And that's part of what we're trying to describe here and just where to go. Simple measures like design changes driven by requirements interpretation. But those things tend to get drowned out by the cost, schedule, and performance issues. It turns out to be inside the beltway type of discussions.

But the point is well taken. And I think we're going to have some pretty lively discussions over that issue.

MR. GIBSON: Paul Gibson. I provide support to DOT and E.

When you laid out that spectrum of the

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elements of the Big A, the things that come after the Little A, like operations -- operate, sustain, and so forth, you would think -- I think that the cost, schedule, and performance metrics tend to get identified with contract bill of required test to produce.

But perhaps there is a feedback loop from operate, sustain, upgrade that needs to come back to Little A so that there is some learning there in going through that process. So I would hope that perhaps you would have an input from the maintenance function, you know, which ends up with how often it breaks and how difficult it is to repair and the huge logistics footprints that has to go along with deploying forces which slow down and so forth and so on that might influence that Little A process and indeed the requirements process as well.

So I would encourage some feedback from that community, too.

CHAIRPERSON KADISH: Well, there is -- no description like this is absolutely perfect. But if you talk about the feedback across the spectrum there, I think there are walls that have been built around the Little A because of all kinds of different reasons. And testing is a good example because one

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way you can look at this activity and the way we're describing it is that testing is a requirements process, not a feedback loop. Okay?

And the reason I say that is that in the process of having a multi-year development of a program where you start out with requirements designed by the user, if you will, spend four to seven years working on those requirements and filling in the white space that they create, and then putting it in a testing environment, the testing environment itself because of the seven-year lag will generate new requirements.

And that feedback is in the requirements process more than anything else. Once you get into operations sustainment, you still have Little A. And it is done in different ways by the logistics centers and depots and sustainment organizations.

But your point is also well taken. But one of the things we need to think about in this process is just what constitutes a requirement. When you set up the MOEs within the test organizations to do the testing, they are designed to trace back to the original requirement. But in the process, all of us have experienced that those MOEs expand the requirement in many areas, sometimes beyond the design

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of the system you are testing.
So it's a big problem in terms of the way we're looking at the whole Big A issue.
MR. KOZLOWSKI: You just did something, though, which is illustrative of the complexity and the kind of problems you get into. I just finished reading a paper this morning where a very respected leader in this business took great issue with the acquisition system and he came back to a reference diagram and he changed one line and it changed the whole perception and his whole outlook on the acquisition system.
If you take a look at that chart, you could just as easily have said Little Acquisition from my perspective included the next -- and probably all the way to the disposal. It could have been everything in the last three columns.
The point I'm trying to get to is you've got hundreds of thousands of people in this business who take a look at regs and flow diagrams and viewgraphs. Each one of them has the possibility of coming up with a different interpretation as to what the author meant.
If the Secretary or somebody in the chain of command says we're going to do business this way,

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there have been reams written about why didn't they do it the way he said. Some do. Some don't. Some have different interpretations.
I don't know how the hell you fix that as long as we're all human beings. And thank God we're all different. That would be a very boring world if everybody was the same. But as long as we're all different, you're going to get a lot of different perceptions and that is one of the difficulties with this system. Not everybody conforms and does everything the same way.
CHAIRPERSON KADISH: Yes --
MR. KOZLOWSKI: Sorry to get you confused.
CHAIRPERSON KADISH: But just to pull that thread a little bit. How many people are in the acquisition workforce in the DoD today? We have trouble counting them. All right? And then you can lop yourself into the Big A or the Little A. And so a budget analyst interpreting the regulations in the 5,000 series might have a different perspective than the program manager in the process.
And that's -- consistency of interpretation is a very big problem. And another good example is the PEO systems between and among the services. The same structure, different

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implementations. Same rules.
So we've got a real challenge here in the process. And the challenge -- the way we're setting this thing up is that we may not like the way we define some of these things for our own purposes but that's what we're going to have to do to cut down on the complexity.
We have time for one more.
MR. BENNY: Hi, I'm Jim Benny with BNA, Civilian Contracts Report.
I know you can't predict or necessarily speculate what Congress is going to do but both authorization bills currently have a number of requirements that could change the way maybe the Little A works, especially the Senate's current version.
Could their passage of some of these requirements maybe delay some of your work? And vice versa? Is the work of your panel having any influence on the creation or the development of those requirements or provisions?
CHAIRPERSON KADISH: Well, right now we have people on the staff who -- and Dave Patter in particular -- who have been talking to the different staffers on the Hill. And we hope to converge on this

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issue with the people that are concerned as soon we are practically able to do so. Because, again, you know, you can enlarge those Venn diagrams to include Congress and a few other people as well -- OMB and the executive.
So to break down the complexity, we kind of focus on what we need to focus on now. But our intent -- and I think the Secretary's intent if you read the letter closely is to look at legislative issues as well, is to pull that string and see what we can do together on these issues.
And I guess that's about all I have to say. We don't have anything specific right now. But our intent is to move into that arena and be cooperative with what the Congress would like to do. And hopefully we can all do it together for the benefit of everybody.
Dave, do you have any comments on that?
MR. PATTERSON: Well, I think that's right. I mean the Senate particularly has some initiatives that they'd like to see. And as we go through what we're doing and we get more and more data and we have greater insight into some of the behaviors of not only the system but the people who are involved, I believe that we're going to have an

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opportunity to provide some fortifying, in some cases, and complimentary data to them so that when they make their decisions in conference, that they'll be informed and that we would hope that our efforts are certainly supportive of one another.

And we have to keep in mind that what we're doing here is an extension of what the Secretary of Defense has started some three and a half years ago in terms of transforming the Department of Defense into a more capable organization to provide for the national security.

We have been somewhat engaged in other pursuits most recently but that did not take away the requirement for the Department of Defense, in his eyes, to make itself better in every way. And the acquisition system is a way that it is now time to do that. And that's what this panel is all about.

CHAIRPERSON KADISH: Okay. Well, I think -- do any of the panel members have anything they'd like to add before we take a break and get to our first guest?

(No response.)

CHAIRPERSON KADISH: Okay. We'll take a 15-minute break and come back and start with General Dynamics. Thank you.

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(Whereupon, the foregoing matter went off the record at 2:00 p.m. and went back on the record at 2:18 p.m.)

CHAIRPERSON KADISH: Welcome back everyone.

We have -- for the next hour, we have General Dynamics, represented by Michael J. Mancuso, General Dynamics CFO. And so without further ado, I'll just turn it over to him and speak in the microphone. And what we'll do is we'll ask you for whatever you'd like to contribute to us and then if you wouldn't mind subjecting yourself to a bunch of questions, I'd appreciate it very much.

MR. MANCUSO: As long as I don't have to answer them.

(Laughter.)

CHAIRPERSON KADISH: Well, you can answer them any way you want to.

MR. MANCUSO: Thank you. Thank you, General. Good afternoon.

Ladies and gentlemen, distinguished panel members, what I intend to do is offer you some basically observations of the acquisition process as I have experienced. I'd remind you up front these views are not necessarily the views of General Dynamics Corporation but one executive who has participated in the defense industry a number of years. So please receive them in that context.

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I'm not looking necessarily to be controversial but I would like to leave you with some food for thought as you undertake a very significant effort in viewing modifications to the acquisition process. So let me go forward if you will.

On behalf of our Chairman and CEO, Nick Chebraya, I'd like to thank Secretary England for his invitation to General Dynamics to participate in this DoD-sponsored assessment of acquisition policies, procedures, and processes.

As you now know, I am the corporation's chief financial officer reporting to Mr. Chebraya. I've been in this job since 1994 but in the defense industry since 1965. With over 40 years experience with three major corporations in the industry, at least I feel somewhat qualified to share with the panel some observations of the acquisition process from my industry perspective. So with that said, let me go forward.

Overall, I believe that the acquisition process, while not broken, can certainly stand to undergo some improvement. I believe that our mutual

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goal -- and by the our I mean DoD and industry -- is to provide our military with the very best technologies and systems that are available in the shortest amount of time and at affordable prices.

Too often, the system collectively fails to achieve that goal while consuming billions of dollars in the process. For such a complex process, there can be no single cause for this shortfall. And, therefore, no simple remedy.

There is, however, for the very large programs that represent a significant share of the DoD budget a common element that acquisition history suggests is the biggest single contributor to schedule expansion, cost growth, quantity curtailment, or outright cancellation. Let me explain.

When DoD and industry collectively embark on a program that attempts revolutionary technological, leap-ahead product or system performance versus evolutionary improvement, we almost always get in trouble, almost always. Regardless of the contract structure, the end result is almost always cost growth, dissatisfaction, and conflict.

To illustrate my point, I've listed a number of current and past programs, a few programs that I would label outright disappointments, those

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that I would consider successful, and a number of today's programs that are arguably at some risk for either cancellation, curtailment, certainly schedule expansion, and absolute cost growth. And these examples are not just General Dynamics' programs.

Let me talk a little bit about what I'd call the major disappointments. If you go back far enough in time, you could go back to the A-12 program. It was going to be a revolutionary, carrier-based Stealth aircraft. Its roots go back into the mid-`80s. The program was ultimately terminated in 1991 after billions of dollars were exhausted. There is literally nothing to show for it.

A little bit more contemporary than the A-12 is the Comanche program. That was going to be the next generation scout helicopter. A team of United Technologies, Sikorsky, and Boeing teamed together on the Comanche. Again, the program was awarded, I believe, in the late `80s, perhaps 1989. Ultimately after about nine, ten, eleven years later, the program winds up being cancelled. Again, with billions of dollars spent and really nothing to show for it.

You could down that list of additional disappointments. You could talk about Crusader. Crusader was a mobile artillery system that was going

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to replace the Paladin which was considered too slow and lacking in fire power.

The Crusader started out to embody or introduce a liquid propellant gun. Ultimately when that failed, the system was throttled back to a conventional gun. And then again after a period of time -- a long time -- after billions were spent, the Crusader went away.

If you get into the evolutionary cycle, I think we could talk about a lot more successes. You could go all the way back to the B-52, which has its roots probably in the `50s, if not early `60s. It just keeps going and going. Each time, new technologies being introduced into the aircraft, not leap-ahead, drastic technologies but continuing additions to the capability of the airframe, making it more and more viable and contemporaneous with the need of the day.

The F-16 is another example. I don't know how many models we are up to on the F-16. But there is a low cost, single-engine, multi-capable fighter that has gone through any number of upgrades and evolutionary additions to the capability of the airframe.

You go back to the M1 tank. The M1 tank

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ultimately evolved in the M1A2 SEP tank but the M1 moved to the M1A1, upgraded the gun from a 105 to 120-millimeter gun. And now we're up to the M1A2 SEP that has all of the latest and greatest upgraded electronics in it. Again, each one adding ultimate capability to the platform without taking dynamic risks with dollars and time in trying to get something new into the program.

F-18 is another example. We're up now to the ENF model. Again, constant upgrade.

The Blackhawk helicopter is still flying. That has its roots back into the late `70s, early `80s with various upgrades.

The Striker, General Shinseki knew that if he didn't get a platform quick introduced, he would run the risk of it never having happened. So he took an existing LAV platform or frame and introduced all the new technologies that were necessary, knew that he wanted a wheeled armored vehicle. And the Striker was born and is now serving us well in theater. If we had to start new with that, God only knows where we'd be now.

Trident SSGN, there is another one. Take the four Tridents that were coming out of service needing to be refueled and convert them to tactical

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missiles from ballistic missiles. Modest cost. Not high risk. Not long schedule. Very doable. And in a very short term, we'll have four very capable platforms where we didn't spend billions of dollars in trying to get something new started.

C-130, notwithstanding the advertised problems with the J model, the C-130 has come along in various and sundry upgrades and applications for the last 25 years, 30 years.

If we move over to the revolutionary programs, the today programs that may be on the bubble but certainly are capturing a lot of the news, we could talk about the F-22, again a program awarded in 1989 or 1988. I was with United Technologies when they got the engine contract on the F-22. Here we are in 2005 and we're not sure how many we want to buy, how many we can afford, et cetera.

The V-22, very revolutionary. Changing the flight dynamics of vertical and fixed wing flight. Again, its roots go back to 1990, 1989. Secretary Cheney at the time tried to cancel the program. Here we are in 2005 and it is still a development program in essence.

The F-35 is garnering a lot of attention today. It's a technological marvel. Three different

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models, et cetera, et cetera. But it's back to the issue of is it affordable along with the F-22 and the other platforms. Can we afford to do it?

The Aerial Common Sensor, there is another example where the Army made a selection and now all of a sudden, the platform that was selected is deemed not to be capable of handling the electronics package that is necessary. And now we're talking about another procurement or a change or a modification to the program to introduce a new aircraft again which will spin the development cycle back a number of months if not years.

Future Combat Systems, another one that is drawing a lot of attention. Very, very revolutionary. Many parts and many pieces, moving all in different directions kind of thing. Sitting out there with a schedule that has now been slipped a couple, two, three years from its original advertisement requirements date, et cetera, et cetera, and still under a significant amount of pressure.

The Expeditionary Fighting Vehicle, it is a great system. This was the original AAAV. General Dynamics won that program in 1995. We're here in 2005 and we're still in development. Money was stretched out. Additional requirements testing and so on and so

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forth. Low rate production not anticipated for another three years.

Finally DDX, I'll talk more about DDX but it is another example of a very revolutionary platform. And unfortunately with a lot of the attributes are the problems that come with revolutionary platforms.

This list is not intended to be all-encompassing. There are still other programs we could talk about like the Virginia-class submarine, the CVNX, the LPD, various satellite programs I'm sure you are aware of, and the littoral combat ship to name a few.

The major disappointments reflect that despite having spent billions of dollars, there's not much to show for the revolutionary effort. The successes, I think, demonstrate that an evolutionary approach to introducing new technologies can pay significant dividends.

The revolutionary, at-risk group have all experienced some element of schedule slip, quantity reductions, and/or cost growth and be on a watch list for some time primarily because they represent revolutionary advances in technology that can and will command a large piece of some very, very tight budgets

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as we go forward.

Revolutionary programs by their very nature are risky. They require a very long-term commitment, will undoubtedly experience problems, and need to be viewed accordingly by both DoD leadership and Congress. And may need to be managed and funded outside what I call the normal process. When programs get into trouble, the schedule gets extended, requirements get relaxed, and ultimately quantities get reduced.

Back to DDX. DDX is perfect example of a program whose roots date back to the mid-1990s and evolved from the arsenal ship concept to what was the Surface Combatant 21 or SC-21 to the DD-21 and is now the DDX. Huge sums have been expended up to now. And under the current program scenario, the Navy will not see a first ship until at least 2013. And God knows at what cost per copy.

The DDX is stuffed with new, unproven technologies that must undergo exhaustive development before being introduced into production. The DD-21, its forerunner, if you will, was a 9,500 ton ship with a recurring unit cost target of 750 million dollars. The DDX is at least 14,000 tons as currently envisioned and will cost anywhere between three-and-a-

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half and four-and-a-half billion a copy. And the quantities are now down to eight to twelve range.

To further underscore my point, there was a recent article in Defense News the other day titled "Hard Choices Ahead" that talk about yet another round of program reviews initiated by Secretary England. Reviews of these very programs we've been talking about.

There was another editorial article in the Los Angeles Times titled "Best Weapons Money Can Buy" specifically addressing the challenges faced by the Pentagon surrounding many of these very programs. But in reviewing these programs, the DoD and the Congress must carefully assess the impact of any decision to alter course on the defense industrial base.

In summary, what I have attempted to do is focus the panel on just one important aspect of the acquisition process. I've not gone so far as to recommend the solution because I think this aspect needs to be addressed in the context of your overall assessment. But in terms of process sufficiency, affordability, and managing the expectations, we need to learn from our past.

Industry stands ready to support the DoD but to be viable, we need stability in order to

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effectively apply resources to these programs. Impatience and under-funding of these revolutionary pursuits exacerbate our problem and our challenge.

Thank you ladies and gentlemen and panel members for your attention. And I look forward to your questions.

CHAIRPERSON KADISH: Well, thanks. That was a pretty good summary of some of the major issues that we're facing.

At this time then, I'd like to open it up for questions from the panel if I might. Anybody?

MR. KOZLOWSKI: I think most of us realize the dichotomy -- I'm not sure what the right word is -- between what you call the revolutionary approach versus the evolutionary and the risks associated with that and so on.

I break that down into two specific questions. One, to get around the revolutionary approach, one could start off saying hey, we ought to develop the technologies, get them mature before you really launch into a full out program. Given that, is the risk in the primary vehicle? Or is the risk in the subsystem arena? Or both? That's one question.

And the second one is very much more broad based. And that is how much of the cost overrun

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perception, be it real or imagined, how much of it is due to industry? In other words, lack of performance in the industry?

MR. MANCUSO: Well, let me take the back part of that question first. And talk about how much of the overrun or problem, if you will, belongs to industry. Certainly industry is not without fault. So I wouldn't sit up here and suggest to you that industry is perfect and it is somebody else's problem.

We have an appetite and sometimes the exuberance to sign up for things that we're not necessarily capable of doing. We're perhaps under-assessing the technological challenge embodied in what it is we're attempting to do. But for competitive pressures or what have you, we wind up signing up a little bit more aggressively perhaps than we necessarily should.

After being scarred and burned a number of times, of course we all step back and take pause and wonder what it is we're signing up for. I mean you could go back to the early `80s and the mid `80s where the watch word of the day was fixed price development contracts. Industry got killed. Bled to death. It wound up resulting in a change of the law to eliminate fixed price development. That was to protect us to

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some degree from ourselves.

So industry has a role and a responsibility but if I were to apply my own guess, I'd say it is 60-40 -- 60 DoD, 40 industry, industry certainly a willing partner but we're trying to satisfy the wants and needs of our customer. And if our customer defines those needs as important and pressing, perhaps sometimes we're all too willing to sign up.

Again, back to your early part of your question is it the primarily platform, if you will, or the system that drives the two things? And I guess an evasive answer would be it depends. If in the case of -- a good example perhaps might be the Aerial Common Sensor program. The aircraft was viewed in defining the requirements for the program as merely the bus that was going to carry the payload or passengers kind of thing. So as long as it met minimum requirements, it was fine.

It turns out that the payload is a lot heavier and the power requirements more exhaustive than were initially envisioned. Therefore, that rendered the aircraft perhaps too small for the mission. So it's the chicken and the egg issue. What drove the delay? What will cause a relook, re-

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procurement kind of thing?

A long-winded answer, Don, but --

MR. KOZLOWSKI: That one -- that example is kind of a unique one. And the platform is an insignificant issue as long as it was big enough and powerful enough.

Let's take the DDX. A lot of technology issues associated with that which I'll call subsystems aboard ship. But the platform itself is also somewhat revolutionary to be sure.

How would you, in general, approach it? I mean some people say let's develop all the technologies before you really launch into a full development program. That can be a real sporting proposition when you're talking about 10,000 ton vessels and up.

MR. MANCUSO: Well, let me -- DDX is a good example. Let's take that. There are two big issues with the DDX. One, of course, is -- obviously, its mission. But one of the things is get the systems onboard the ship that will allow it to reduce crew size from approximately 300 to approximately 100 sailors. That means a significant challenge in the technologies to getting the systems onboard the ship.

The second desire or need for the ship

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besides being stealthy is the introduction of a new hull form. Now I would suggest to you that with the existing DDG platform through a series of flight upgrades or technological upgrades, you could probably gradually introduce the various systems and capabilities the ship needs to have to reduce the crew size. And it wouldn't take forever.

You can't get to the hull form issue. So you would definitely need a technology demonstrator that I would suggest to you should be procured in parallel to prove out the hull form so that you are not trying to put all the new technologies and the hull form together at the same time on a new ship.

And oh, by the way, develop a gun that can fire 100 miles. And there are only two of them on the ship.

CHAIRPERSON KADISH: Anybody else?

DR. BRANDT: You mentioned stability. And that's one thing that industry is interested in. Where do you think the major sources of instability come from today? Is it budget? Is it requirement? Is it technology? Is it some combination? And does it come mostly from the government side? Or does industry in some way participate in that instability? How would you attack that?

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MR. MANCUSO: Well, I think it comes from multiple sources. It even comes from the evolution of the threat. We launch or conceive a platform to meet a certain threat. And before we get that platform into production, the threat disappears. F-22 perhaps an example of a stealthy fighter that we need to counter the Soviet forces and now there aren't any Soviet forces today to necessarily encounter. So the threat changed significantly.

Because it takes us so long, and the us is everybody, the technologies leapfrog themselves. You can see it in the most simplest example of laptop technology and how much capability is now in a handheld device, et cetera, et cetera.

The same thing happens to us in technology. If we take 10 or 15 or 20 years to develop a system, certainly by the time we get anywhere near completing the thing, technology has turned over four or five times.

So trying to -- and that's generally because we're making this, I believe, this huge leap ahead of desire to introduce as opposed to evolutionarily introduce these technologies.

So put all those factors together. Industry stands by to manage resources to bring them

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to bear. The fortunate or unfortunate thing about most of the defense industrial bases, they're all public companies and there is an army of shareholders and Wall Street beating up the CEOs for results, et cetera, et cetera, a lot of that comes back to managing resources and making a reasonable profit.

So industry has its share of challenges. But we're a partnership in making this work. Now back to the point. The end game we want to get in the hands of the war fighter the greatest capability in the shortest amount of time at a price that is affordable in our economy and our society kind of thing. So we're all in this together.

And I think it is all of us managing requirements. We can't let requirements change. We started out with an upgraded version of a DDG and we're now at umpty-ump accelerated versions of a cruiser-sized warship that we're calling a DDX. We can't let that get away from us. Those requirements just kept getting bigger and bigger and bigger and changing and changing and changing.

I can't tell you the number of times that Northrop-Grumman and General Dynamics have submitted lengthy, voluminous responses to proposals for a set of requirements that no longer existed, no longer

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existed, no longer existed, evaluated criteria against a 750 million dollar baseline ship that no longer is, you know, it's a speck in somebody's memory way back.

So requirements got away from us. I don't know -- I'm not -- certainly I'm not blaming the Navy and I'm not blaming industry because we're in this collectively together. We need to communicate what is doable and what is affordable at which time the partnership sits down and makes the tradeoffs.

What can we afford? What's it going to cost? What can we accept in terms of capability? And then give me a roadmap of how I can really get to really what I want. Just tell me how much is it going to cost and how long is it going to take. And if I can't afford that, I'm prepared to scale back and take it in steps.

Too often we just jump to the gee whiz futuristic call of the world and then we're disappointed seven, or eight, or nine years later when the budgets are being overrun and we're not getting the performance that we're looking for.

I hope that helped your answer.

MR. HAWLEY: You mentioned firm fixed price development programs and some of the problems they cause. Others have commented that our current

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approach with cost plus award fee programs tends to incentivize people to drag out programs because there is some reward there for having the cost grow.

And some have said that there might be a place for fixed price plus incentives development programs in those cases where the government has paid a lot of money to buy down the risk. Is there ever a place for a firm fixed price development program with incentives? Or is this just -- if you open the door, it's just too tempting to, as you said, for industry to do something that causes us to come back in and try to save industry from itself?

MR. MANCUSO: I think that -- I mean I don't subscribe to the theory that speaking as an industry participant that I can't remember ever a case where we tried to stretch a cost plus program.

You know we get measured -- you know we're an energy -- we're an EPS company, earnings per share company. And we're an ROS company kind of thing. So it's not earnings at any cost. ROS is important to the investors in terms of a quality company. So I don't think that's the case with the industry.

Yes, there are, I think, examples of where fixed price development could work. Certainly fixed price incentive works in limited rate production.

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Fixed price incentive is working on the submarine contracts that we have. The development side was cost plus incentive fees. So there is an incentive on cost.

Depending on how aggressive the technology leap is, if it is a modest and reasonable and the risks can be reasonably bounded, then fixed price incentive could work.

MR. KOZLOWSKI: I'm going to generalize for a minute on this issue of stability. We've discussed amongst ourselves and in the public domain as well the issue of budget stability. That is where the funding stream is nice and consistent and well defined for let's say a typical government program manager. And that, of course, would flow down to industry with a reasonable degree of stability. That's one view of stability. That the incoming money stream is going to be there.

There is another dimension of stability that I spent an awful lot of my career working on and that was keeping the in-house staffing relatively stable and keeping the asset controls stable and things of that sort. Let's just say it is the internal mechanisms that you look at in a corporation.

I haven't yet found the solution where DoD has got enough money to keep every industry out there stable. The two are sort of disconnected.

So this is a rhetorical, somewhat of an idealistic question. As a CFO, what I used to call the money guy in the corporation, what would you rather see -- individual programs in your company that would be stable and, therefore, reasonably successful?

I mean you take your hits on everything else bouncing up and down inside the corporation which, by the way, drives your internal overhead rates, your formal pricing agreements, and it's hard as hell to stay on a nice continuous fixed price basis that way, by the way.

Or contrast that -- would you rather just as soon have your entire workforce reasonably stable so that you've got one economic engine to manage and it is relatively constant? Do you see the point I'm trying to get at?

MR. MANCUSO: I'm going to try and answer it. You know I'm not sure my boss would answer the question the way I'm going to answer it so take it with a grain of salt.

I would rather see stability from a customer budgets requirement standpoint kind of thing. I think it is incumbent upon us to solve the latter

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equation. What's the right size of the corporation?

I know I can speak in the context of General Dynamics. We -- in 1991, General Dynamics was a 10 billion dollar defense company. And in 1991 dollars, 10 billion dollars was a big dog. By 1994, after the effect of the Berlin Wall and post-Desert Storm, Bill Anders had sold off a lot of the company and we were down to three billion dollars.

We dropped our corporate staff to about -- the goal was 50 people. We never got there. We got about to the 70-ish kind of head standpoint. We've grown from three billion dollars to roughly 21 billion dollars this year if you believe the projections. And so a sevenfold increase in the size of the corporation.

And our corporate staff is 165 people. That includes drivers, finance folks, everything kind of thing. So we've attempted to manage the resources inside and found better and more efficient ways to satisfy the requirements all the while trying not to become a burden to the business units that need to serve the DoD community, to be affordable at low rates of production.

Electric Boat downsized about 70 percent in the early '90s to be affordable at low rates of

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production. They had six or seven submarines in the yard. Today we're delivering one every two years or so. Not even delivering.

So I'd rather see the requirements -- the external budget remain stable and challenge us to manage the return for our shareholders and provide fair and affordable prices to the customer.

CHAIRPERSON KADISH: I'd like to take it to a different level now. The workforce in the DoD to manage these programs and interface with industry is atrophied or at least allegedly atrophied over a number of years. And some of the acquisition strategies we're seeing are allegedly designed to overcome that. The idea of lead systems integrators for instance.

What's your view of that particular strategy in managing programs? And do you think it is working? And if not, why not?

MR. MANCUSO: Ron, I think at least my view of LSIs right now, I'd say the jury is still out on LSIs. And the biggest and most obvious test case will be FCS. And whether that works.

I can't think of another high profile example of LSI in my recent memory. So obviously as a significant participant in FCS, both on the armor

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side and on the software side, we're obviously watching it with great interest.

For us, it's working okay. But I can't speak for the ultimate customer on how they are viewing it. It's a lot of faith and confidence to put in the hands of one organization or organizations to manage. I'd take a wait and see on it.

CHAIRPERSON KADISH: Are you concerned at all about the potential conflict of interest in and among the industry partners?

MR. MANCUSO: It could be an issue. Certainly we were cautious in the sense that when we were bidding on aspects of the program, the LSI was also bidding on certain aspects of the program. And obviously there needed to be firewalls in place. And as I recall, there was some controversy on whether or not the firewalls were working or not working.

But I guess at the end of the day, we'll put our faith in the system and assume they are working. But it can be a problem. It could be a problem if not tightly managed.

But, again, I can't think of another example -- high-profile example other than FCS. And FCS is in that category of programs that I categorized as something that is getting a lot of attention

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because it is big bucks, consumes a great deal of the Army's budget going forward, will take a long time, and invariably become a target, potentially a bill payer if these technologies don't mature fast enough to satisfy it.

CHAIRPERSON KADISH: Do you have any suggestions or comments on the ability of the government to manage complex systems like FCS and other activities?

MR. MANCUSO: Personal opinion, certainly the government is challenged to have the personnel, capability, and training to deal with the magnitude of some of these programs and the vast amount of forces and resources that come to bear in this thing.

I can't point to any particular program where I'd be concerned about it at this point. But with so many of them out there, certainly it's going to be a challenge to the resources that the DoD can bring to bear.

Obviously just thinking in terms of the number of positions within the DoD that remain vacant while we get through this backlog issue, et cetera, et cetera, that's got to present a problem and a challenge while fighting a war.

CHAIRPERSON KADISH: Anybody else?

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(No response.)

CHAIRPERSON KADISH: Do you -- if you're going recommend to the government, one of the issues we hear from time to time -- let me start over -- is the idea that there are too many programs, too little budget to do them. Do you have any comments on the veracity of that statement? Or whether or not that is a good thing to have in the system?

MR. MANCUSO: Personal opinion, I think it is a good thing but within limits. We're constantly looking at what is next, what is next, without regard to what we have in the pipeline. Perhaps another example might be the Virginia class submarine. It is attracting a lot of attention today because of the cost of the individual submarine.

There is talk now of designing and building a smaller submarine that might cost a billion-and-a-half per copy. Well, if you look back about seven or eight years ago, the Virginia class was advertised to be a billion-and-a-half submarine at its current size and capability if ordered in quantity.

So now we've reduced the quantity, won't get the two a year for a certain point in time, and rather than managing that issue, we're now talking about solving the problem by getting a smaller

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submarine at lesser cost that might be responsive to some threat that is out there.

We've talked about going to diesel submarines as a cost-saving initiative, recognizing the threat that the Chinese may bring to bear with their proliferation of submarines kind of thing.

So we're already looking out to what is next and strategizing what is next without dealing with the issue at hand. And that is can we develop the Virginia class or get it to a point where it only costs a billion-and-a-half? And with its capability, you don't need a number of smaller submarines.

So our focus continues to change. We lose our focus on what we're doing today, fall out of love with what we're doing today. And we're all ready for something new before we've taken the current cake out of the oven. We've got to calm down and prioritize because we don't have all the money in the world to do all these things.

MR. KOZLOWSKI: What was the original production rate that they talked about?

MR. MANCUSO: It was going to be at least two a year.

MR. KOZLOWSKI: In that context, do you think -- not just you but your industry as a whole is

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doing enough to reduce production costs? There is a -- this question sort of has two facets.

And I, for one -- I'll give you the answer to the first piece -- I don't think the government -- we, in general, in the community focus enough -- and it is just never mentioned the impact of production rates. It just drives a whole bunch of things in the equation. I think the quantity issue is driven by money as opposed to unit cost estimate.

Now having said all that, I don't think personally -- and this is my bias -- that the industry as a whole, it doesn't matter what field you're in, is doing enough to just focus on reducing production costs, using American ingenuity to get defensive systems at a cheaper unit. Are you doing very much in that area?

MR. MANCUSO: We're doing a great deal of it. Now I'm not going to sit here and suggest to you that there is not more that can't be done. Certainly there's always more that can be done.

But in the competitive environment that we live in where cost is a major driver, driving cost out of the system is a paramount concern. It is something we talk about and focus on every day in every one of our business units, looking for more clever, more

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innovative ways of driving costs out of the system.

As I said, from the very size of the corporate office and the burden that that places on the business unit, it gets passed back into the government customer through the overheads to the investing of capital in capability.

We invested 250 million dollars in the Bath Shipyard after we bought it to create a state-of-the-art land level production facility.

We bought NASCO and factored in another 200 million dollars of modernization and lift capability to process ships through NASCO at a lot faster rate.

We put a COTS facility at Electric Boat to be able to test the battle management system, the combat system of the submarine, at a much faster, more capable rate to reduce cycle time kind of thing.

So industry, I think, is doing a lot. Not just General Dynamics but other members of the industry are doing an awful lot to try and reduce costs and get more efficient.

Sending people home. It's a distasteful part of what we have to do but when resources ebb and flow, you have to be prepared to deal with that. So I think industry is very, very, very cost sensitive to

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a very tight DoD set of budgets in a time of war. And doing a lot.

Is there more to do? There's always more to do.

CHAIRPERSON KADISH: Anybody else?

(No response.)

CHAIRPERSON KADISH: Well, I think we'll end the session now. I certainly appreciate you taking the time to come on over and talk to us. And I think it was very informative. At least it was for me. And we appreciate the time and thanks.

MR. MANCUSO: Thank you, sir.

CHAIRPERSON KADISH: We may have to invite you back if you don't mind.

Okay, we'll take a 15-minute break and come back at quarter after three.

MR. MANCUSO: Thank you.

(Whereupon, the foregoing matter went off the record at 3:03 p.m. and went back on the record at 3:17 p.m.)

CHAIRPERSON KADISH: I'm pleased to have Chris Kubasik from the great company of Lockheed Martin, and some better known as Lockmart. So without further ado, I'd just turn it over to these gentlemen, and we look forward to their comments.

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MR. KUBASIK: Good afternoon. I'm Chris Kubasik. I'm the Chief Financial Officer for Lockheed Martin, and Ralph Heath is our Executive Vice President of our Aeronautics Company, one of our five major lines of business, and we both report in to Bob Stevens, our Chairman and CEO.

First of all, we're pleased to participate in this public hearing on the Department of Defense acquisition system and process, and we do appreciate the growing concerns of Congress and the DOD and the public relative to the rising cost of weapons systems. We also appreciate the Acting Deputy Secretary England's initiative in establishing this panel and looking forward to the recommendations that you will provide.

Overall, we do agree that there are some potential areas of improvement relative to DOD acquisition system, and we're going to talk about those over the next few moments, both Ralph and I. We do believe, however, that there are many examples where things are, in fact, done correctly, and the common thread that we see is that where the responsibility, and the authority, and the accountability are, in fact, aligned within the acquisition system. There have been numerous

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successes.

But to that end, we believe that whatever legislative actions are taken, changes in rules, regulations, obviously ourselves and the rest of the industry will comply with those. However, we believe that some of these issues can be addressed relative to changes in leadership and behavior, and the relationship between industry and the government. Let's go to the next chart.

We're really going to focus on three major themes today, and the first one that I know several of the earlier speakers have talked about is stability, talking about the budget program and the requirement stability. I also want to talk about the workforce and the skills, and the experience of the workforce, and then talk about the contract incentives.

We do have some emerging challenges that we'll share with you on our last chart, half a dozen or so ideas and suggestions that we just want to make the panel aware of. Overall, we are concerned with some of these trends, and as a corporation, we are committed to work with you to see if we can turn them around.

The next chart, please, is really a notional chart here where we took a 10-year program

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from start to IOC which you can see on the top, and really tried to talk about the different dynamics that create the possibility or the probability of program instability. And I think when you look over this 10-year period, you see the potential clearly of political issues with elections, both at the executive and the legislative branches that have the opportunity, whether there's a change in party, or even just a change in individuals or personality can contribute to the budget instability.

We have an annual budget cycle that we're all quite familiar with, and understand the uncertainty and instability that creates. We have management changes, more so on the government side, a lot of turnover in key positions, and we'll talk a little more about some specific examples where that does create instability in the program, whether it's interpretation of requirements, terms and conditions, overall knowledge of the program, or overall knowledge of the industry partners that are working with the government. And then, of course, various decisions with just one milestone here just being DAB, Defense Acquisition Board decisions.

What we really think is critical is continuity. And as you can tell by this chart, any

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one of these creates the possibility for program instability, and the combination of all of these probably increases it to a probable state. So with that, let me ask Ralph to give some specific examples on a few programs.

MR. HEATH: Thank you, Chris. The F-16 program, there's actually several vignettes within the F-16 program that I wanted to highlight, and it's heralded, held up as one of the maybe better examples of a program that's been healthy, and has not only met expectations, but probably exceeded expectations over its life cycle for a number of different reasons.

I thought it was worthwhile to go back and dissect that, and again highlight several points. We're sitting at almost the 30 year point since the delivery of the first production F-16. It's gone through probably around 50 different unique type versions at this juncture across six major model variants, has been sold to 24 different nations around the world, and realized a spiral development that has succeeded even before spiral developments, the term was used or even conceived. That is, in fact, has been in place, and has been, frankly, one of the major sources of life blood for the program.

The three different vignettes, if you

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first look at the very beginning of the program, the Lightweight Fighter, the rules were basically thrown out, and the whole notion of lean, even before lean was -- I guess 20 years before the concept of lean was invented was, in fact, fundamental to the F-16 program. Tailoring your requirements, minimum oversight, incentives of innovation and taking some managed risk at the beginning of the program were, in fact, there, which the results of which endure today. Even though we've had the spiral development, the fundamentals that made that product what it is and what it was are still fundamentally there including, by the way, the affordability dimension. That was there from the outset and has remained there faithfully for its duration. So I hold that up as being okay, obviously, even despite the cyclical nature that Chris described in the chart, there are examples in the F-16 from its beginning, was one.

I'm going to leap to the present, nearly 30 years later, and hold out an example associated with the international dimensions of the F-16, and that's the Block 60 or F-16EF for the United Arab Emirates. This program has been a commercial contract, fixed price development with a set of requirements that led to a substantial increase in

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capability of that product. Candidly, a number of the capabilities have been a stepping stone towards the next generation, fifth generation fighters that are being fielded for the U.S. Has that program been a success, and I would say at this point it's, without question, a huge success as the aircraft begins its life in the hands of the Emirates' customer.

The points that I would draw out in the success of this program; number one, there was stability in requirements and clarity of them from the outset. There was absolute integrity, and both the customer and the industry team has been faithful to recognizing those requirements from the outset, as cast in the contract.

There has been stability of those over time. And the third piece is, there has been unambiguous accountability of our company and the industry team to fulfill its obligations under the firm fixed price contract in that development.

Now I'm not here to say that the fixed price development is the right end-state. I think in its place, in this particular circumstance where risks are reasonable and manageable, it is appropriate, and I think we've demonstrated that at this juncture.

A side bar I would make beyond the

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Emirates, again, the international dimension of this program has been invaluable. Around 40 percent of the investment modernization of the product over time has come from international customers, which the U.S. Government, the U.S. Air Force has enjoyed the benefit of either directly on its F-16s, or has been foundational to the next generation of products, as I mentioned before.

As we look ahead to the F-35 program, I think that is a point that we should not lose sight of. That has huge redeeming merit and value to the U.S. taxpayer.

I then leap to the middle of the program, and even though if you stand back and look at it from a historical perspective, this again is viewed largely as a pristine model program. Well, there was, in particular, one significant bump in the road around 15 years ago, in which we experienced some significant difficulties in being able to deliver the product. There was a loss of confidence on the part of the acquisition folks at that time in terms of the quality and our performance as a contractor, and delivering that product. And quite honestly, if you stand back, it was a classic case of a breakdown in communication, a lack of clarity of understanding of expectations.

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Expectations can evolve over time. It's more than what's in the written form, it's the interpretation of that. And it's also a focus in terms of what really is of value, and is of importance.

There was a SPO Commander that was appointed at that time, a gentleman by the name of Colonel Kadish, that came to the program, and in a reasonable period of time by forcing alignment of expectations between the government and the industry to get clarity of focus, that in the end let's not lose sight of the fact, it is the capability being delivered in the hands of the war fighter, with the reasonable expectations of how we go join our efforts to focus on that, as opposed to focusing on the differences and the disagreements that we had to focus on the common outcome, it was almost an immediate turnaround, and immediate measured in months and not years. And in my judgment, is one of the greatest success stories of the F-16 program. And I think looking ahead, and with the backdrop of the challenges that are in the acquisition process today, the leadership, the behaviors, the focus on real outcomes and expectations is critically important. It's more than what's written in the regulations. It's the interpretation of that on a daily basis that is the

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able to maintain vigilance to ensure that both the competitive interest and mechanisms are sufficient and adequate to yield the products and capabilities at the most affordable price to the customer, yet at the same time yield a benefit, which is clear in terms of outsourcing, as driven by overall reductions and pressures for reduced staffing within the government.

A second one is to incentivize the inter-dependency of Net-Centric capabilities. With the advent of the technologies that we're experiencing now, no particular program, no individual program is an island onto itself. They're all inter-dependent. There's critical linkages, even more than in the past, between platforms, and overheads, and C-4I, and weapons, and you name it in the whole spectrum.

The alignment of the programmatics of those; in other words, it's like a Swiss watch to a degree. If one part is moved, the implications and the effect on the other constituent parts, in particular when they're in a development cycle, can be problematic. You can have significant risk imposed, cost added, schedule stretch-out and misalignment relative to what Chris spoke about just a moment ago in terms of personnel resources due to no fault of performance of the contractor for that particular

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element, purely as a response or a consequence of impact from another area. So we don't offer, at this point, more than -- it's clear that this adds an order of magnitude, or maybe several orders of magnitude of additional complexity on the overall acquisition structure, and it needs to be part of the solution set, as well.

A third point, value of incumbency specifically for space systems, we think that there's an important credential in past performance that is critical. And in the interest or motivation to expand competition, a danger of an emerging issue would be to lose sight of the experience base and the relevance. Making sure that that's adequately factored into the criteria for award of contracts is critical in our judgment, and in our opinion has been challenged over recent time.

In terms of the promotion of public-private partnerships and outsourcing, it's obviously very critical that that be done. It will give the benefits, the issue or the trust factor is all-important. And it's one thing to outsource, but if that compromise is compromised and/or called to question because of lack of confidence in motivation or integrity of the industry team, then that's a

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problem. So, obviously, that's a key responsibility. As the government moves more towards outsourcing and delegates that responsibility, we need to make sure that we're stepping up and providing the necessary checks and balances, insight and otherwise, that are essential to maintain that continuity of confidence.

A final point is the trend or issue that's at hand, very much a function of the longer development cycles that we're experiencing in terms of parts, obsolescence and the need for technology refresh. I mean, we've had some real world experiences of some of the major programs that we've been responsible for of late, when you have to have a technology refresh, even within a development cycle in order to complete the development activities. The solution to that can be accommodation of one sufficient investment at the outset to have the assets required to perform the development activities, tests, and the like, populate the labs, and so forth. But also, planning ahead for when there is a need for a longer cycle, a long cycle, to accept that at the beginning and plan for, and provide the resources necessary for a technology refresh when required.

Okay. The last chart is just a summary, and I think I'll just wrap it up by saying we

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appreciate the opportunity to make a few prepared comments, and we look forward to any questions that you, General, or the panel may have for us.

CHAIRPERSON KADISH: Thanks, Chris, there are some interesting slides in that pack. Are there any questions from the panel?

MR. KOZLOWSKI: Thank you. I've got several, some of which are just clarification, so let me go through those real quick. Your parts obsolescence, is that primarily electronic components?

MR. HEATH: Not exclusively, but yes.

MR. KOZLOWSKI: Any other particular areas where you're really having a hard time?

MR. HEATH: Other components, but it's for the most part electronics.

MR. KOZLOWSKI: And that's going to be with us for a while. And could you explain when you said about promote public-private partnerships and outsourcing. I don't really know what you mean by that.

MR. HEATH: Okay. Well, in a number of realms, in particular life cycle support, sustainment there is clear trends towards outsourcing PBL-type, performance based logistics incentivized outsourcing to --

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MR. KOZLOWSKI: To industry.
MR. HEATH: To industry. Right. And the point that we're making is, it's more than that. I mean, it's also the discussion that we had on the LSI, delegating some of the responsibility for systems integration to industry, as well.
The point I was making is that that imposes some challenges and risk to the government, and I was making the point that that is something that industry needs to step up to, to make sure that the integrity and public trust is not compromised in so doing.
MR. KOZLOWSKI: The outsourcing you're talking about is the government to industry, and not your industry to go outsource.
MR. HEATH: Correct.
MR. KOZLOWSKI: Okay. In the case of LSI, you may or may not want to answer this but I'll ask it anyway. Would you prefer to see this LSI sort of charter have gone to, let's say, a consortium of federal research centers, or some are kept within the government, as opposed to the way we're going now?
MR. KUBASIK: Let me take a first shot at that. My comments on LSI, I'll use one example that deals with the Deep Water program on the Coast Guard,

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as an example. And while we and our partner, Northrup-Grumman serve as the lead system integrator, it was a competitive program, and over 90 percent of the team mates were identified in advance of the competition. And everybody understood their roles, the appropriate firewalls were put in place, in my opinion, and the organizational conflicts were identified. I think that model is working well on that particular program, and the value that industry brings, going back to the experience issue on program management, outweighs the perception or concern of potential conflicts.
I think where it gets a little more interesting is where the LSI does not have the team identified and the first thing they're engaged to do is run the procurement and selection of multi-billion dollars, or hundreds of millions of dollars of programs which, of course, they themselves are included. So my take is, from my personal opinion, is if the team mates are identified and the scope is understood for 80 to 90 percent of the program, clearly there might be some follow-on second, third tier competitions which would not be deemed material in my mind. I think it can work.
If it's the other model, and there's no

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selection underneath it, I would defer to either of the two alternatives you recommended.
MR. KOZLOWSKI: I have a different issue I was trying to get to, and that is -- and maybe I'm naive about this, but when I see the government or any other that happens sometimes in the commercial world, when I see the government taking a very large issue and throwing it out to what I'll call an independent party, doesn't matter how many players, it's sort of like the government turning over some of their responsibility to outside players. And in some respects I would rather have this global view, the global control of a very large problem, kept within the province of government. It has to do with an issue of industry will play any game that they want us to play. And I say that being primarily from industry, and on occasion I've also worn a service hat, so it bothers me to see - I think this is happening - for lack of adequate in-house capability and various other reasons - I see the government sort of handing this charter off to outsiders.
That's okay for a while, but just as in industry, people want to jump on these programs. You talked about the workforce issues and all that. The industry cats will love to see this. Quite frankly,

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I've got some of my closest friends, my children working on one of those, but where does the military - the government, military, and civilian - what do they hold on to for the next four or five years before some of this stuff materializes?
In other words, you're missing a great opportunity. The same zeal that an industrial employee might seek for a great program, that same zeal is there in the government. And when we farm some of these issues out, it scares me that the training ground for the government is being liquidated. That bothers me.
MR. HEATH: Well, the supposition is there is redeeming value or savings, in combination with the necessity to move in that direction. That's either -- for that to be the case, then that has to be the case, so the expectations need to be clear that the expected benefit to the government needs to materialize while maintaining the necessary controls to protect the public interest.
MR. KOZLOWSKI: Do you believe that benefit is there for the government?
MR. HEATH: I think we're early into it, and in the case that Chris described we, obviously, believe that that is a success to-date, and we'll see

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at the end of the day, but at least at this juncture, we believe yes.
MR. KUBASIK: I'll just add, I agree with your comment that industry will, in fact, try to be responsive to the customer and we'll go where the opportunities are. So clearly, the LSI initiative, I'm not sure was driven by industry, as much as by the government. And we're in a state of being responsive to our customer needs, which is how we have the situation, which is stating the obvious.
I agree with you relative to roles and responsibilities ought to be clear, and I think industry is responsible for managing and executing the programs, and government has a role. I think the question and definition is management, what management should we have, and how far back in the cycle do you go relative to source selection and running bids? And my earlier comments would suggest that --
MR. KOZLOWSKI: And requirements.
MR. KUBASIK: And requirements. And it's where do you draw that line? So I think it's an important issue.
MR. KOZLOWSKI: I shutter to see the day when an LSI kind of contract will come up, and it says what should the Navy be 25 years from now, what should

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the Air Force be, and everything else on the planet. So much for that.
Let me go to my fun chart. It's back to your profit chart. I've played around with this for years, and it's nice to have another CFO in the seat. Let me get into this, and you'll see my motivation. If I take publicly owned electric utilities, they are generally state regulated. Is that correct?
MR. KUBASIK: They are regulated, yes.
MR. KOZLOWSKI: And generally, their figure of merit is return on equity or return on investment and this operating margin is kind of a fall-out, so their motivation is an economic engine. The more they invest, the more they make. They don't always do that for other kinds of financial reasons, but their economic engine is quite, quite different. I've been trying to get our local electric utility to invest more, and they won't listen to me, though they're making good money.
When you come to Defense, Defense industry generally does not have the high operating margins that a lot of other markets have. You show here somewhere around 6, 7, 8 percent region. Very few Defense contracts are bid at that margin. Once in a while you go in because you want to be very, very

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competitive. My point is this, we generally historically, and it's particularly true in the production contracts where we get the biggest revenue stream and the chance for making money. Those things are bid at fairly high double digit returns, all within the weighted guidelines, but we, as an industry, don't make it. Why?
MR. KUBASIK: Let me first comment on the public utilities, the difference in the public utilities, and sometimes I wonder if we are, in fact, a sexy utility, but we've concluded we're not; is that they cannot lose money. Every single dollar they spend will show up in your electric bill, or your gas bill the next month, and you have no choice but to pay that bill, which is a little different dynamic, so we have one customer, they have literally millions of customers.
Relative to not getting what we projected, I'm not sure I fully agree with that. We'll take long-term fixed price contracts where we have to commit over a five or seven year period, we make significant assumptions and projections. We'll just talk 20, 30 percent of our cost in industry is indirect or overheads. We are projecting on some of these fixed price contracts what our variable cost

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will be in 2009. This includes unseen events, for example, or insurance costs tripled post 9/11. It doesn't sound like a big problem, but we've paid over $100 million of insurance for a variety of reasons, due to that unforeseen situation.
Pension benefits has been very well publicized throughout the industry. It's an issue in corporate America, where just about every corporation has assumed an 8 to 9 percent return, and I'm not aware of anybody in 2000, 2001, 2002, including all o our personal accounts that made money in the market. That causes a huge bow wave that we are now paying for. For example, contracts we bid fixed price in 2001 did not project the healthcare cost, the pension cost, and insurance, just to pick three off the top of my head.
We do monitor. We have processes in place. I would say on the development, the work predevelopment contracts, those tend to be more in the upper single digit range. The fixed price contracts absolutely right, they're variable. One thing I think all of industry can be criticized for is being overly optimistic relative to our interpretation of the requirements, our ability to have the technology ready, and we assume that risk. But a lot of these

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competitions, I'm aware of a couple where the award fee is 6 percent, and three of us get the RFP and it's not negotiable. If you win, you get 6 percent, at best, those types of things. It's probably best not to mention that program by name, but it's a two-way street, so I throw that in.

MR. KOZLOWSKI: In general, I agree with everything you've said, but there are some areas where I believe the public perception and those that deal in contract awards within DOD treat profit an evil thing, or profit is a way that I can really put the pressure on the contractor, because it will be backed up by a lot of people. And ergo, I'll just conclude that there has to be a way for industry to make higher margins. I have no qualm with that whatsoever. The risk-reward ratio is such that people are walking away from the defense business simply because it's better to go down the street and get into the banking business or something else. You can make a higher return. So the people that are in the defense business are generally there because they're committed to defense. It's a great place to work, whether it's aviation, ships, and things of that sort, but people are walking away from it. You can see that in the merger mania and everything else.

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Having said that, I've also participated in annual forward pricing agreements where the overhead rates get renegotiated and rejustified, and there is an inherent fear that I used to have - I've been retired since '97, so things may have changed. I hope they have. If there is a way to prove that valid cost was incurred in the prior year, I'll fold it into my cost base the next year, whether it in an overhead increase or something else, and it ups the ante. There is an inherent part of the system where - and I'll put it at the financial guys, because this is where that started in my case - somebody's got to put financial discipline. We've got to take the banker's attitude rather than the aerospace financial approach to it. You've just got to have a lot more discipline.

We generally bid 14, 15, 16 percent on these long-term fixed price contracts on a production basis, my experience. I don't know what your's is, you don't have to disclose it. But then you've got to do everything in your power to make it, and you can actually have high double digit returns in the defense business, if you do what you said you were going to do, and forget about whether it's before taxes. It's executing your contract.

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If we, as an industry, would execute better, we would have higher returns. It isn't all DOD's fault that we're not making better money. Having said that, I still believe there needs to be a door-opener for higher returns. That has to do with a general question of what part of the cost overrun problem do you think is industry's responsibility?

MR. KUBASIK: A few comments relative to cost savings. I think there need to be better incentives for industry to save cost. And the example I use goes back about five years, and it deals with excess facilities. I think the government, which is pretty well documented, has excess capacity. That's interesting, but the industry has excess capacity. And as the CFO of Lockheed Martin, I'm aware of two facilities that are half-full, and any rational commercial entity would consolidate those two.

We do not consolidate those two because it would cost us $100 million, and all the savings immediately accrue back to the customer and the shareholders, with my fiduciary responsibility, it would be an irresponsible use of money. There was initiatives five years ago to allow the contractors to share in the savings, to at least recover our $100 million. It drives -- I agree with everything you're

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saying on the commercial side. The government rules and regulations drive bad behavior. We should be able to close a facility and at least reap the returns relevant to our investment to do so.

I can assure you, I probably know by name every program in Lockheed Martin making more than 10 percent, and they're far and few between; notwithstanding your comments on forward pricing. I do believe it's a competitive environment, and whatever we negotiate we have to include in our bids. We would not be winning business if we were just completely inefficient and gaming the system. We would be losing to GD, Northrup, Raytheon, and we wouldn't be around, so there is a competitive nature to that.

On the forward pricing rates, not to get into a whole lot of accounting here, but there's two parts. You've got the actual cost, and the more significant part, and the bigger challenge is the base, and that is, this is just a simple what is the rate, what are you costs divided by your base, and think of your base, what's your revenue going to be in 2008? So we'll use Ralph's business here, where you tell me how many F-22s, JSFs, F-16s, C-130s and C-5s to put in my 2008 outlook, regardless of what my costs

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are. We make our best estimate, and unfortunately, again I believe we tend to be overly optimistic, and the rules don't really allow us just to game the system. In fact, all the savings we get on the top line, our biggest inability to forecast the future is the shrinking base. PB-753, they're legendary, so anyway.

MR. KOZLOWSKI: You're right on the mark, and I'll stop this, but I think we're getting to a very productive point. If you have any specifics where government regulation is preventing you from being an efficient commercial enterprise, such as the property closure issue that you talked about, please document those, get them into us and we'll look at them.

MR. KUBASIK: Absolutely.

MR. KOZLOWSKI: I think that's one of the fundamental root causes, the government doesn't understand how industry works, and vice versa. And there's lots of people who help us go break those laws, rules, regulations, whatever if they would just understand the magnitude of the problem, and how both sides, both the commercial side and the government would benefit in the long run.

The next step that you just started

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talking about is the --

MR. KUBASIK: Predictability.

MR. KOZLOWSKI: Well, maybe that. The cost accounting role and all that entourage of things, which someday I may read before I retire, but I got lost after I got passed page 1. If in all of that there's a different way of setting up the accounting system and changing the rules so that if the government changes the rules of the game in your business-based projections, you want to be compensated for it. That's my view. If they change the rules, you can't come back and then get blamed for a unit cost escalation, because your overhead rates went up.

MR. KUBASIK: I agree.

MR. KOZLOWSKI: On the other hand, if the person dictating the quantity change understood our priority, and this is where they don't, what they're really doing to their own programs, or their own budget structure, their own dollars and how they're using taxpayer's money in the long haul, I think the behavior would change.

Now there are a lot of reasons why quantities change that go beyond this economic argument, but I don't think people really understand the economics. All the engineering folks that I

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worked with throughout my career, they didn't begin to scratch a comprehension of what they were doing to economics. Engineers are sort of like what industry is saying here to the government, we'll do whatever you want us to do, but the engineering team eventually the guys generally end up being program managers, so you have to run things, and then you find out money drives this whole world for a whole bunch of reasons. End of story.

CHAIRPERSON KADISH: Anybody else?

MR. PATTERSON: I've got one question. It's a quick one. What's the penalty for Sarbanes-Oxley, and have you figured that out, and is it significant?

MR. KUBASIK: We spent $25 million complying with Sarbanes-Oxley in 2004.

DR. BRANDT: I actually have a follow-on to someone's point. You mentioned in your answer that sometimes you're not sure that you're not a regulated utility, and there are those who would actually characterize the big defense contractors as regulated utilities. But you also said at the same time that you believe it's a competitive industry, and yet the economics of the industry, which I do understand, mitigated against closing over capacity within the

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industry.

In a competitive commercial environment, companies would close those facilities because of commercial pressures. You operate, obviously, in a much different environment. Is there a competitive environment that you operate? What are those competitive pressures, and what could the Department do to actually enhance the competitive situation so that some of those decisions you would not be reliant only on government regulation or understanding to help in the area of profit or profitability?

MR. KUBASIK: I think one of the components in the programs and contracts that ultimately may be more influential on the profitability, just the negotiated fee, or the proposed fee, are the underlying terms and conditions. I, personally, believe that it's personal opinion that a standardization of terms and conditions across all the services would be the best interest of both parties because sometimes in the details, there's clauses and other variations to the standard contracts that we negotiate or need to agree to, that ultimately may be the root cause to the profitability being different than what we had expected.

Competition, I'm thinking through the --

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If both sides are under-estimating the risk, for whatever reasons, then they're not honest brokers at the table, so to speak.

MR. FRANKLIN: I think that you have a situation on both sides where the government team members have a lot on their plate. The industry team members have a lot on their plate, and I would guess that your experience is when you ran into a problem, you had a group of people that you said these are the wizards. You could bring three people in that could do the job of 30 because they had a broad experience base, they had real depth, real technical competence, and they could look at something and say within a matter of hours here's the issue.

Now it may take longer to lay out the fix, but I think everybody is stretched thin on that level of competence, so I think you have a challenge in both cases. That's why if you were to move this business of better understanding the requirements up front, and better interaction between industry and the government about how do you go balance those things, I think you'd have a better situation.

I'll tell you internally in all the programs that we look at, I would say 80 percent of them that are in trouble are in trouble because they

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don't understand risk; and, therefore, they don't understand how to manage it. And since government hasn't taken effective action, I'd conclude they don't understand either.

MR. HAWLEY: And your response suggests that there are incentives built into our acquisition system that motivate people to accept this kind of ambiguity up front, to under-estimate risk. One, could you help us understand what it is about our system that incentivizes people both on the government side, and industry, to buy into this relatively high degree of uncertainty that gets programs off to a bad start? And then do you have any ideas about what kind of incentives it would take to more frequently get programs off on the right foot?

MR. FRANKLIN: I don't think people knowingly do this. I think it's an outgrowth of a weakness in the experience base, and I'm really the wrong person to ask about incentives, because you never got an incentive in your career, and I never got an incentive in my career; yet, we went and did our jobs. I think we don't talk about leadership enough, but I see a lot of disincentives primarily on the government side, because there's a mismatch between things like the press for speed and innovation, and

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the oversight process. And I don't think we think about the disincentives.

Contracting, I remember after I first got to industry, going back to SAF/AQ and saying hey, we've got this program and we're headed down this track, and it's really the wrong track. And there are all sorts of contract alternatives, but the contracting officer says you can't do those. I said what about the acquisition reform that AQ has been preaching? And the answer was very interesting, because I said acquisition reform hasn't gotten to the level of implementation in the field, and the answer was we're not surprised. So I would say to you as you work acquisition reform or change, just like in industry when we go work a change, it's got to be something that goes down to every level. It has to be measured on a regular basis, and people have to be held accountable. So I think the disincentives -- what are the incentives for people to take risk in the government? There aren't any.

By the way, I'll tell you one story. When I first got into Raytheon, I wanted to build a surface launched AMRAM that I could take and field. It wasn't going to be perfect, and the guys said it'll take two years. I said I'll give you 90 days. We negotiated

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to six months. They ended up doing it in five months, but because they had been trained everything has to be heel-to-toe, every square has to be filled, it's going to be two years. Now because I was the boss, I could incentivize them in a negative way. I don't have a great answer.

CHAIRPERSON KADISH: Of those 80 some odd programs you looked at, in a general sense, could you give us some idea of how many actually executed the program they proposed, as opposed to being changed soon thereafter, after the source selection?

MR. FRANKLIN: I don't have the detail on when they were changed, but I will tell you we have changed the way that we look at programs in Raytheon. And one of the warning flags for risk is re-base lining the program. All of those programs, or almost all of those programs had been re-baselined more than once, some of them four or five times.

Re-baselining is one of those things that we have come to believe, to know actually, is really a cardinal sin, and it's a way to hide a program that's in trouble. It's a way to slow effective corrective actions. And by the way, re-base lining occurs as a partnership between the government and the industry program office.

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CHAIRPERSON KADISH: Yes, I was asking a little bit different question than that. There's some indication based on what you said about the source selection process not understanding risk, that we in the name of competition in the source selection, we set up that process to select a contractor. And then when we baseline the program the first time, we change a lot of what was proposed, all that planning going out the window. Did you see any indication of that? MR. FRANKLIN: We didn't look at it to that level of detail, so I really can't answer your question. I could tell you later on the structure of that program changed, both in content, and schedule, and cost.

DR. BRANDT: You said something before about both sides probably under-estimate the risks, and that for this system to work, you need to have a good buyer and a good seller. Yes, in that order, a good buyer and good seller. You've worked on both sides of the table in this. What would you say were workforce issues for government and for industry? Do you see deficiencies, do you see something that could be done on either side or on both sides that could make us a better customer, and perhaps industry a better seller in terms of that misunderstanding?

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MR. FRANKLIN: Well, there are several things. What I was trying to say earlier was the earlier industry -- industry is funny. I shouldn't say that since I'm in industry, but I will. It's funny. It has a mindset that says once you've announced you're going to have a competition, industry seems to say well, we can't ask any intelligent questions in public forums, so they close the door. So you say well, how do you get out of that? And it would seem to me the way you get out of it is you make industry a partner earlier in the process before you get to the point that this becomes an actual source selection. They really understand what the operational needs are, they understand the pressures on cost. They understand what is the situation in Iraq and Afghanistan on IEDs?

I'll give you a personal experience, on Operation Iraqi Freedom, this isn't an acquisition in a way of source selection process, but in Operation Iraqi Freedom, I had the Patriot Program office under me. I got a call one day that said did you know that every day the chief, General Shinseki, gets briefed on the status of every patriot unit, and you guys are causing us major problems? I said, "News to me." Here we are. We had committed to the Army we would provide them whatever they needed.

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Now if you do that in war time, where you've got what I call the quiet mic syndrome, we got that in the case where it's not something that -- it may be something that affects war, it may be somethin that's intended to be bought later on, but trying to do the trade-offs, that's a place where you can put the resources on early-on to do the kinds of hey, what if we push the edge of the technology this far, what does that do?

Now you've got enough people in industry, I think, that would give you interactions on that in an intelligent way, that says well, if you want to do the radar cross-section down 30 more dB, here's the impact. Or if you want to increase, or on occasion Don Kozlowski, if you want to increase the number of paratroopers you can get out of the C-17 in half the time, what's the impact of that?

Those things don't occur early on, and it would make us a smarter seller because we understand the program you're working on, but it would help you be a smarter buyer in the sense that when you come up and solidify those requirements, solidify time lines, there would be a better understanding of what the technology readiness levels were, and what things

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drove the cost, and so forth.

On the other side, how do you help industry, and how do you help the government? I think we both are suffering from, if you look at the demographics, and I think it's true across all of industry, you look at the demographics, you got a by-mode distribution of people. There's a hole in the demographics people let's say 10-20 years experience, there's a lump of people 20-30 years, and then you've got an up front piece, so you're losing on both I think the government and the industry side. You're losing some of those real senior people, and so what we're trying to do, at least in Raytheon, is we're trying to identify those things. We're trying to find ways to do a mentoring program with those, and accelerate, but that's a slow process. I think you've got to do the same thing in industry.

One of the things we're doing in Raytheon is we made a list of superstars that have retired, and we're working to make sure that we pull those people back in on a consulting basis, but you've got to be careful there because of the pension issues.

MR. PATTERSON: By way of fortifying what you said, I think that we were pretty successful from the government side when we called individual

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companies in to talk about IEDs, and we figured out exactly what they had to offer, and we could make a reasonably informed choice as to how to go about working with them. And it seemed like early-on, before we even knew what we were after, I thought it was pretty helpful.

MR. FRANKLIN: Helpful, and then it went into the piece of the system that's QRC. QRC hands-off to a normal acquisition process that's not graded on QRC, and it becomes sluggish.

MR. PATTERSON: We call that bureaucracy.

MR. FRANKLIN: Yes.

MR. HAWLEY: Just the nature of the beast means that programs often experience unstable funding from the government, that we started out with one funding profile, and two years later we say well, we didn't really have enough money, so you're going to have to restructure and adjust to a different profile. How big a problem is that? Is this a big contributor, modest contributor, minor contributor to the cost and schedule problems that we experience?

MR. FRANKLIN: It's a top seven item. In the look that we did now at over 110 programs, the third item on our list was funding stability either at the beginning of the program, or during the program.

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And tied with that was requirements uncertainty and stability, and it voiced itself in a number of ways. It voiced itself in the government wanting to hold a schedule in changing the profile. It voiced itself in the way of money getting taken out, still hold the schedule, hold the requirements, so I just give you the shorthand version.

In this company evaluation team that I run, we felt our value was to try to look at the bigger picture items. And part of what we were trying to do is keep programs out of trouble. But when they got into trouble, understand early they were in trouble and accelerate the fixing piece.

Four things came up, well, seven things came up. One of them was strategic programs, which I've talked about a little bit earlier. The other one was fixed price development contractors, and fixed price -- the first units being fixed price production are, interestingly enough, cost-type development contracts with the first production units being fixed price, and that didn't seem to make sense. If you want, I'll tell you why.

The next item was this business of requirements and funding stability, or uncertainty. There are enough contracts that are signed where the

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requirements are TBD. And interestingly enough, we signed this.

The fourth item was difficult customer to work with, and all that was primarily for international. Politically correct we would not say difficult customer to work with, but it had to do with customers that once you're on contract, they want to change things, and not necessarily want to stay within the structure of the contract. And the classic is on cost-type contracts where some customers say why do you care? It's a cost-type contract. This is what we want. We're the customer, do what we want, or else you'll be impacted, and you pick the impact.

The next item was the lack of use of real management tools, such as EVMS. And, by the way, I believe that based on some discussions I've had with folks in the building, it's not just an industry issue. I believe it's a government issue, as well, a real lack of understanding of how to use the tools, so robbing themselves of the use of tools.

The sixth item was re-baselining, and I mentioned that earlier. And interestingly enough, the seventh item was one of what is the customer saying about us, either through CPARs, letters, telephone calls, other, that are early warning signs that there

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is an unhappiness with the customer, where we may or may not take corrective actions. It's not quite as formal as some of the other things. Those were the seven things that we saw out of those programs, and nothing has changed. In the way as we look at more programs, all those still hold.

MR. KOZLOWSKI: What was your first one, you said strategic programs?

MR. FRANKLIN: Strategic programs. Strategic or investment programs.

MR. KOZLOWSKI: What do you mean by that?

MR. FRANKLIN: It's a large program. It's a program that the government says is ultra important, we say is ultra important. You get into the process of being optimistic on everything. You do dependencies on other programs, for example. You know, the software on Program XYZ, that is very similar. We'll lift that software and only do MODs to it, those kinds of things.

MR. KOZLOWSKI: Can I translate then through this discussion that the program in question being a strategic program, does that correlate with its image and its prestige, is akin to trouble down the pike? Is that what you're saying?

MR. FRANKLIN: Here's what I'm saying.

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What we's said internal at the company is these are all warning signs. It's like you go to your doctor and he says you're overweight, and you smoke, and you don't get any exercise. It doesn't mean you're going to have a heart attack, doesn't mean you're going to die early, but it means the risk is higher. That's what I'm saying.

MR. KOZLOWSKI: I get that, but it's because this program is so damned important, people are more prone to over-estimate, get over-zealous, and so on?

MR. FRANKLIN: Sure.

MR. KOZLOWSKI: Okay.

MR. FRANKLIN: Then you've got to really scrub the assumptions.

MR. HAWLEY: Gets back to incentives. The incentives to get the program on the books are very high because it's a strategic program; and, therefore, it drives people to e optimistic.

MR. FRANKLIN: So in our context, the higher the program is on the dollar list, or the priority list, or on the --

MR. HAWLEY: The higher risk is.

MR. FRANKLIN: The more risk. Means you probably push the requirements, too.

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MR. HAWLEY: How often do you run into this difficult customer issue? I mean, it's on your list of top seven How frequent is it?

MR. FRANKLIN: With some services it's fairly frequent. It is very common in the international arena. Roughly, 18-19 percent of our work is international. And the message we try to give internally is you really need to understand your customer's characteristics, so as you go and bid that program, you need to bid it understanding what that customer's characteristics are.

MR. KOZLOWSKI: You need to know the culture from which it comes.

MR. FRANKLIN: That's right.

CHAIRPERSON KADISH: Do you see any holes in the government workforce in these indicators? We have some indication that the workforce isn't what it used to be. Are you dealing with less experienced people; and, therefore, you get some of these behaviors out of government. Is there a clear case to be made i that regard?

MR. FRANKLIN: Yes, but our view is, if you ask me for hard data, I wouldn't be able to give you hard data, but our view is that there's a clear difference between the average competence level of the

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Government Program Office these days, and the capabilities of that Government Program Office. And you see a clear change in the interactions that you have where you've got a very experienced Program Office on the government side, kind of interchanges you have the ability to make tradeoffs, the issues you could bring forward, communication chains and so forth. As you get the less experienced team, it becomes more of a program management by the numbers. It becomes more of hey, you can't talk to this person. You can't bring this issue up. We won't do those kind of trades. This is a hard contract requirement whether it is or not, so there is clear -- and on the industry side, in fairness on the industry side, I mentioned the by-modal distribution. What we're seeing on the industry side is when we have less experienced Program Offices, there is a reluctance -- they think the government Program Manager is God, I mean literally God.

CHAIRPERSON KADISH: I never felt that.

MR. FRANKLIN: No, I know you didn't, and I didn't either. But what we're seeing is there's a lack of elevation, timely elevation of issues so that you can, indeed, have more sensible discussions. So my opinion is, in part on the government side, you

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need a good career path.

I remember an operator one time telling me that he thought the toughest job in the Air Force was being a Wing Commander until he got stationed in AQ, and then he found out - he said Wing Commanders have good days. Program Managers get beat up every day. They never have a good day, so there's got to be some reward there. In fact, I told Mr. Welch one time when he was the Acquisition Executive, I was at Eglin running AMRAM, and I had a prisoner did my yard work This guy was in for $4 million of tax evasion, and I called him up one day and I said -- I was always a little - well, I wasn't always Christian about things, and I said, you know, Mr. Welch, I've been noticing I've got this prisoner. He goes to work at 8:00, he gets off for lunch, he leaves at 4:00. He knows what the rules are, he knows who his friends are. I said, I'm working seven days a week. I don't ever take a lunch break, and I don't ever take a dinner break. I don't know who my friends are, and I sure as hell don't know what the rules are. What's wrong with the site picture? And he said, "Go back to work."

CHAIRPERSON KADISH: That actually was a true statement.

MR. FRANKLIN: You remember that. You

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were his Exec.
MR. HAWLEY: This experience issue which affects both government and industry suggests that we've got some A Teams out there.
MR. FRANKLIN: Yes.
MR. HAWLEY: And then we've got a lot of C Teams.
MR. FRANKLIN: Yes.
MR. HAWLEY: Not many B teams.
MR. FRANKLIN: Yes.
MR. HAWLEY: In your experience in industry, are there ways, given this problem that you can't do much about since it takes five years to get five years worth of experience, is there a way to better leverage the A Teams than maybe we've done in the past?
MR. FRANKLIN: Yes, we have increased the use of the grade bearers, putting teams into areas either up front or in the programs that are starting to go off track. We're also doing the business of, as I noted earlier, keeping track of -- cataloguing those people that are really superstars that have retired, bringing them back as consultants, and using them. And we use them extensively.
We probably need to do more in that area,

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but that has been effective where we've been able to do it. What we find is that the breadth of experience in those A Teams is usually bigger. It's better than in the B or C Teams, so they may have experienced more programs.
The other thing we're trying to do is we are trying to really strengthen the functional organizations. The classic wisdom is the functional organizations tend to be bureaucracy, and there's some truth in that, but the pendulum swung so far to IPTs, that we started to take away the advantage of functional organizations. And what we're trying to do, in fact, what we're doing is, we are pushing the pendulum back towards center on functional involvements because the corporate knowledge both in the way of what's been done and where to go can be accelerated by the functionals, so finding that balance is a critical ingredient.
MR. KOZLOWSKI: I agree with that one 110 percent. Do you think you'd ever resort to -- take one of your A-Teams, take that program manager and now make him let's say a PEO, and give him two or three programs; in other words, get double duty of triple duty out of a good team. And yes, that increases work load, but you can bring on some of the younger talent

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and sort of mix it up a little bit. Have you tried that yet?
MR. FRANKLIN: Yes, we do that. In our vernacular, that's what the product line vice presidents are. And under those product line vice presidents, we cluster a number of programs. For example, in Ron's old job, missile defense under a guy named Rick Hughes, we ended up clustering all of the efforts for missile defense under Rick Hughes. And the other thing we're doing along that line is -- what we have found is that every product line vice president isn't of equal capability, so we are realigning it where it's clear that you don't have somebody that can do that mentoring, that can force a discipline, and that can develop those people, use the right tools, so we're doing that, but that's slow process.
MR. KOZLOWSKI: A totally different target for this question, and you don't have to answer it here. You can take it home and get your folks to maybe answer it.
In our last presentation, I had a little bit of a discourse on the profit motive and profit margins, and all that sort of stuff. And in the course of that discussion, he identified some things

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where they, as a company, were inhibited from executing an internal cost reduction scheme, and it was because of federal regulations or something to that effect. So if there are any federal regulations that you know that inhibit your cost-cutting ability, or inhibiting your profit margins, I think the panel would love to know about it. Now that's a fairly complicated question, and you can take it ad infinitum, I suppose, but if you can answer here, that's great, but I would certainly love a good answer.
MR. FRANKLIN: Let me give you a piece of an answer, and then we'll kibitz whether we can expand on this constructively. We don't slow down cost reduction initiatives because of government rules. Now it's true, there's always this thing about gee, if we've got a fixed price contract, we do this cost reduction initiative this year, next production lot we're going to have to give that back. That's true, and that is a disincentive. But I will tell you that whether it's closing facilities, consolidating them, Raytheon for the last five years has been very, very strong on 6 Sigma. Every business has a cost reduction goal associated with 6 Sigma. So that says there is a mandatory productivity improvement that

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we're working on everything. So at the top level, I'm not aware that we slow things down.

We focus on the profit side by performance. We really look, we put a spotlight on award fees. We are, as part of my team, we have highlighted -- there's two pieces to performance. One of them is effectiveness, and that is whether you're getting the product out. The other one is efficiency, and so we have for a long time focused on effectiveness, now we're focusing on efficiency, because there are hidden costs when you don't do things in an efficient way. You may be very effective, and so that's forced us to go look at a lot of things. It's forced us to look at time constants for fixing problems. It's forced us to look at overheads, return on investment. It's forced us to change the focus on capital.

MR. KOZLOWSKI: Have you applied the 6 Sigma program to internal processes, as opposed to product? I mean, it's obvious where it applies to the product, touch labor operations, that sort of stuff, but has it moved back up, even up into the marketing stream, or the engineering quality and that sort of thing?

MR. FRANKLIN: It is applied to processes.

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It's applied to engineering. It's applied to all the processes. And, Tom, in a marketing arena, I think all of your guys have 6 Sigma projects.

MR. CULLIGAN: They do.

MR. FRANKLIN: So it's across the board, and it's tied to other things, so our view is -- one of the beauties of 6 Sigma is it causes people to think about issues in a different way. Now it drives them to look for facts, it drives them to say there must be a better way of doing this, so that even if you didn't have dollar advantages, there's some real tangible advantages of doing it.

CHAIRPERSON KADISH: Okay. Thanks for your time. And, as usual, we got a lot of insight from you. We might ask you to come back.

MR. FRANKLIN: Thank you. Okay.

CHAIRPERSON KADISH: So thanks. We'll be adjourned until one five.

(Whereupon, the proceedings in the above-entitled matter went off the record at 5:09 p.m. and went back on the record at 5:27 p.m.)

CHAIRPERSON KADISH: Sorry for the technical delays here.

DR. SUGAR: Well, I think it was probably on our side, Ron, but it's good to talk with you. And

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this way I didn't have to wear a tie.

(Laughter.)

So you didn't have to look at me without a tie.

CHAIRPERSON KADISH: Well, good. We're all dressed up here waiting with bated breath to see what you're going to say, so --

DR. SUGAR: Let me quickly get my notes organized, then.

Thank you very much for being willing to listen to us. Ron, what ground rules did you want to use? Timeframe? What process would you like to use here?

CHAIRPERSON KADISH: Well, there's two things I like to tell you, is that we've probably got 45 minutes to an hour.

DR. SUGAR: Okay.

CHAIRPERSON KADISH: If you want to take that long. And it is an open meeting with many people present.

DR. SUGAR: Okay. Is it a public meeting, or is the meeting just for the committee?

CHAIRPERSON KADISH: It is a public meeting.

DR. SUGAR: Okay. All right.

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CHAIRPERSON KADISH: So with that, we have Don Kozlowski, Dave Patterson, Dick Hawley, and everybody else on the panel here as well. So why don't you just take it away. And if we can -- we hear you fine through this machine.

DR. SUGAR: Okay, terrific. First of all, I've asked John Young to join us. John is our corporate Vice President of Contracts and Pricing and has been in this game a long, long time, and has been heavily involved on behalf of our company, both in our internal activities as well as with AIA and other industry organizations and government industry working groups. So he'll be here for backup, so he'll jump in and help me here as necessary.

Let me just preface it by saying, this is informal, I don't have a formal briefing, but let me run through some thoughts that might be useful to you all here. And I'd like to bring it from the perspective of a company which is now engaged in virtually every aspect of acquisition -- hardware, software, services, logistics, you name it. So we sort of touch all of this.

Over the last 18 months or so, we've been working very closely with the Army, the Navy, our industry peers, and also the Air Force to look at some

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of the root causes, because we're as equally troubled about these issues as everybody else is, and we've got to find a way to do this better.

We have looked at about 20 relevant studies, and, you know, this is obviously not the first study being undertaken. It's a little bit like Ground Hog Day for you guys I know. It is for us as well. But if you take a look at the studies, a lot of things come back again and again.

Let me share some of my personal perspectives on it. I've been in this game for 35 or 38 years, or whatever, and from the various perspectives of being a proposal manager, a program manager, a division manager, and a CEO.

Let me talk about maybe a half a dozen things which are probably the root causes of the issues, and then talk about maybe a half a dozen ideas of things we might try and do better jointly, and maybe take it from there. And jump in here if somebody has a question or they're confused about what I was trying to say.

Let me start with what some of the common root causes are as you look across these programs. First, maybe a lack of technology maturity -- that is, you start on a program before you really are quite

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sure that the technology that you're counting on has been demonstrated sufficiently, and there will always be unknown unknowns.

Now, having said that, part of the reason this country is a great military force and the greatest in the world is that we're willing to push the envelope, and we're willing to make sure we're more aggressive in this regard than other countries. And, certainly, if you look at the earlier days and the '50s and the '60s and the '70s, some of us have memories of those -- some of those days, some don't -- this country was probably much more risk tolerant and able to push the envelope.

I know in the ICBM program and the rocket programs we would typically go with four or five launches, which would fail on the pad. One would get off about 20 feet, and the famous quote was, "We've now proven it can fly. We just have to work on the altitude."

(Laughter.)

So, you know, the fact is is these kind of things do happen. Anytime you're pushing the envelope you're going to get it. But lack of technology maturity when you enter a program today is a fatal flaw, because you're basically sitting in a situation

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where you're almost doomed from the beginning, because there's an expectation, and maybe a right one on the part of Congress and the buyer and the military service, that you actually could do what you said you would do in the proposal, even though it's out on the edge.

Second root cause would be the insufficient program funding from the very start, and the funding perturbations that occur throughout. So why is there insufficient program funding? Often the funding is kind of invented, pulled out of the air far in advance of understanding and defining the technology requirements.

And, frankly, in some cases it's a market-based funding estimate. It's how much you think this kind of a system would cost, how much could we sell on the Hill, how much could we sell on the POM. And it sort of becomes that's the number, and it becomes almost an original sin, because that's the number, and then the only other variable is all the requirements and technical complexity to get the job done.

But you do tend to have to work your way out of that hole, and you always have to track to it. And I've almost never seen a case where, from the original estimate, one was ever going back to say, "We

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think we can do it for less than this. We think we can get it done faster than this."

Third, and this is a specific issue relative to naval shipbuilding, the requirement to fully fund ship construction at the time of contract award versus an advance appropriations approach, does create what I call budgetary anomalies, which then cause other bad things to happen, where you have to totally fund a ship.

You may not even have the ship designed yet, but you're basically going to put the money for it and fully fund the ship, which is I think the law for shipbuilding. It's not the law for other things. And you find yourself in a -- in a difficulty there.

A fourth root cause that we see are unrealistic cost estimates, overly optimistic budget estimates on the part of the government, and clearly optimistic estimates on the price to win proposals by those of us in industry. And one of the challenges we have here is that we have a fundamental structural problem in that the objective of the proposal manager in a corporation is to win the contract.

It doesn't help you a lot to say we had the best design, and we could have done it better than the other guys who won. You've got to win. So you

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have an interesting dilemma where you have believers on one side in terms of the government that want to believe that industry can do it for a certain price, and you have desperados or deceivers, or whatever you want to call them -- it's a pejorative term.

So you have believers and deceivers, or believers and desperados, structurally are set in a position where they have to find a way to push the envelope to the point where they can provide the minimum credible cost to do a program if everything goes right. And so you have another -- a second original sin after the initial budgetary estimate a few years earlier in the cycle when the actual proposals go in.

And, of course, you will then fund the program around the proposals, because you can't award it to company X and say, "We really should use the higher cost of Company Y." Sometimes that can be done, but often it's the basis for a protest.

A fifth concern or a root cause would be uncontrolled requirements growth. And this is a classic issue; it has gotten a lot of attention. Lack of program discipline by both the contractor and the customer -- I've always told our guys that we need to be responsible contractors, not just responsive

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contractors.

And what I mean by that is just because our customer asks us if we can cram an additional capability in, we all want to be responsive and say, "Yes, we can, and we'll try," but we also have to be responsible and say in a very timely way, "We can, but here is the consequences on cost and schedule and other implications on the mission."

The very slow feedback loop between the absorption of new requirements and presenting the bill back to the customer is a source of enormous frustration and creates almost a compounding effect, an unstable feedback loop if you will. We see this on programs over and over again.

I use the analogy of when I was building a house. I was the acquisition official, I had a general contractor, and my wife was the operational user. She was the person who basically defined the requirements at the end of the day, because she was going to be the one to use the house fundamentally, because I was always on the road.

And I found that I was always sort of in the middle between what it is I thought she wanted and what it was I think the contractor told me that they could do. And I've gotten caught in that feedback

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loop personally and have been surprised and stung.

We might as well do this, we might as well do that, we might as -- and it turns out that a very tight loop between her, me, and the contractor would have done an awful lot to have eliminated some of the unpleasantness that came about when we were building our house.

A sixth item, and this is very, very important I think in my view, is across industry, and particularly in government now, a lack of experienced program and contract management people. That's not to say we don't have good people. We have great people, particularly in the government, and they work hard, they try hard. But we have a structural system here which is very difficult.

If I took a look at my corporation, if I were to tell you what are the most cherished resources in my company, there's lots of folks. But program managers who are really good and system engineers who are really good -- that's the coin of the realm at Northrop Grumman. And so we work very hard to attract them, to nurture them, to development -- to develop them, to grow them, and to really compensate them and give them significant up side, because in my company program management jobs are the toughest jobs, and

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they're the ones that make or break us.

We have 30,000 contracts in this company, and if we -- you know, we've got to perform on every one of them, but it takes a lot of folks doing that. If you stand back and say, "Okay. That's great. Now let's talk about the government's side of the equation where we have to have a partnership," what I see is structurally almost every disincentive you can imagine for a capable individual to want to be a career government program manager or a career government system engineer for that matter.

In the civilian side, of course, there's not a lot of up side in terms of pay differential. It's enormously challenging. The frustrations of the job are horrific. The legal constraints, the regulations, the potential breaking the law, is serious. It can be career-limiting, it can be career-ending. It could, frankly, cause you to end up with legal or even prison concerns.

You take a look at the military folks who are assigned to run programs, and there it's very difficult because you're basically on a rotational basis to move forward in your military career. The time constants of the programs, or, that is, the life cycles, are substantially longer than the time

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constant of a career assignment in the career of a military individual who is moving up the ranks appropriately. So you have a major mismatch there. I don't have an answer for that one, but you can see there's a structural problem.

So kind of to wrap the root causes, and there's probably nothing you all don't know, but maybe you're hearing it through my wording, is the issue of the technological maturity, really knowing what you're doing before you really jump into the pool. The concern about the structural problem of the cost estimates are almost always wrong going in, and create an unexecutable program.

And then, finally, the structural problems associated with program and contract management, on both sides but particularly exacerbated on the government's side I think in recent years.

So with that as background, maybe some thoughts about what we can do better here, several potential solutions we've thought about. And first of all, with respect to the technology maturity issue, I think we really do need to continue to expand the use of evolutionary acquisition and spiral development, and introduce risk incrementally.

I know the term "spiral development" was

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a fad for a while, and maybe now it's not the fad. But the fact is you can't take everything in one big bite. I've worked on many spacecraft programs where as long as you're going to do this you might as well add this, you might as well add that, you might as well add this additional downlink, you might as well have this additional readout. And before you're finished, you've got this -- everybody wants to catch the bus before it leaves, and sometimes it's hard to do that.

On the other hand, you don't want to build something which has no growth path in it as well. So there's a -- there is a very thoughtful way which experienced and capable people -- the government and NCSI working together can work to create an evolutionary path for a weapons system or a program which could allow you to bite off chunks of risk.

And, Ron, I think one example we got as we talked to some of our guys, you will remember on the FTSS program I think there was a variety of folks who wanted to jump in and say, "As long as you've got to FTSS up there, you could do other missions with it, and add this and add that."

And I don't know if it's true or not, but it's attributed to you that you basically said you

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drew the line and said, "No, we've got to build a basic system to the mission we have. And if later people want to use the data for other things, so be it." And that program is actually moving along pretty well right now relative to most.

A second suggestion on the budgeting programs, we would propose budgeting these things to the CAIG estimates. The CAIG is not that far off usually, and I think source selection boards ought to perform detailed risk analysis.

I've discovered, to my surprise, in some of our very large ship programs that we inherited when we acquired Newport News and Lytton that the ships were targeted -- or budgeted to target numbers, and that targets, as you go back and talk to people on both the government side and industry side, everybody said, "Well, we knew we couldn't do it for that. That's why we had the share line."

So that at the end of the day the contractor could get some kind of a return on his investment, and we could get the program sold and started. And yet as you get toward the end of the program, there's shock, disbelief, horror, recriminations that, my God, you've exceeded the target. And did you know that we only funded it to

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the target?

And then, you think, "You did what?" And, in fact, you have a structural problem within the budgeting/funding process. So here budgeting to a most probable outcome, which in my view should be nothing less than an 80/20, maybe a 90/10.

We all talk about 50/50. I have never seen a 50/50 estimate in this industry ever happen. Ever. I mean, it's not like 50/50. It's like 100 percent of the time it never happens. So when people say, you know, "We're going to fund this thing to the 50/50, or we've got a 50/50 plan," I think we should all be -- it's obviously jaundiced.

In addition to this, we have a problem in that you really do have to put management reserve in at several levels to make sure you can run the program, and control the decisionmaking at the lowest level possible, so that you don't have a situation where all management reserve is stripped.

The program is then executed in the beginning, and the first blip one year into the program becomes a matter for congressional staffers to get involved in. And congressional staffers have enormous power, intellect, and ability to penetrate, but you cannot effectively run a complex weapons

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system program from the congressional offices.
And so what you really do need to have is management reserve at the contractor level that is understood and responsibly managed, and management reserve at the program office level which is not directly in the contractor's purview, and then you have a total commitment you have to make to Congress and our taxpayers on what we're going to do this thing for. Otherwise, you're basically starting the program up guaranteed to fail, and most do because of those reasons.
With respect to the third comment I had on ship construction, there I think there's a variety of approaches to do advance appropriations, and those ideas have been around for a while. The problem with ship budgeting is that ships come in large lumps in aircraft carriers, a $4-, $5 billion lump. It swamps a budget.
And even though the outlays are routable over multiple years, the budgeting process is highly contorted, and it creates, you know, almost self-inflicted budgetary wounds, because you can't fund anything else, and you create -- even though you don't have an outlay problem in subsequent years, you create a budgeting problem.

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Fourth comment here in terms of risk management, we talk about doing a -- you know, a CAIG estimate or most probable estimate on cost. We should do a technical estimate of technology risk as well before we launch a program. And particularly, after the proposal is over, it's almost like getting a period of amnesty. You know, you've won the job, everybody is giving each other the high fives, you're ready to move out and really think about putting together a process where everybody comes clean and says, "Okay. Now, how are we going to execute this program?"
Just as an analogy for you all, we've acquired 22 companies over the last 10 or 12 years, and each company makes a presentation to us of how good they are and all the great things they're going to do, and how good their contracts and profits are.
After the acquisition is closed formally, we then bring everybody here to headquarters, and we have basically a confessional where you say, "You get one mulligan. Tell us everything we need to know before we get going." And it's amazing. Things come out that you're going to find out sooner or later, but you'd rather know them sooner and then you can basically deal with them and mitigate them. You

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almost need to do that.
And I recognize the procurement regulations may create a difficulty around that. But when you have a procurement system which puts an enormous premium on the most credible-looking proposal, which even though it may not be completely executable wins, then once the day is over where the decision is made on who is going to do it, you've really got to have an executable program.
So the fifth item here, which we've tagged onto that, is to execute post-award government contractor jointly based on requirement reviews in order to -- to add to the integrated baseline reviews you have, really stand back and say, "Now, what do we really need? What do we really want? And how does that loop back with the cost?"
One of the things I found when I was a system engineer working on some complicated programs is that if we could very quickly come up with ROM estimates of cost and schedule impact for the "what if" questions in a very fast loop, the acquisition person who was trying to satisfy the needs ultimately of an operational user or requirements generator would have a much better sense of whether it was bigger than a bread box or it could fit inside the bread box, and

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would know whether to really push back and test the requirement.
All requirements come -- in my experience, they're all important. At the end of the day, you know, life is a compromise, and nobody wants a program that's out of control, cost or schedule-wise. And so a technique of the game here, a tool of the trade, is to have really good system engineering, a rapid loop to quickly assess changes, potential changes and give consequence to them before we say we're going to go do them.
This would be a normal change control board or configuration control board process. The problem is that it takes sometimes months and months to come back with the answer. And when you get the answer you say, "Holy cow, I can't afford that requirement. Why are we doing that?" And already you're moving on with implementation.
Let's see, final comment is regarding program management training and certification. Clearly, doing more work there in terms of joint contractor and government program management training. Certainly, the industrial -- I guess what do we call it, the War College, we call it the --
MR. YOUNG: DAU?

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DR. SUGAR: Yes, Defense Acquisition University. Yes. Those are good programs, and it's great to have people from both industry and government together in them. But I think there's another issue that has to be looked at, and it's a serious one, and that is: why in the world would any really capable person choose to make a career -- I'm not being cynical here, but we should ask the question: why would a really capable person choose to make a career of being a government program manager?

What would be the inducements for doing it, the psychic income, the monetary income, and what would be the personal risks in terms of your health, the stress, the potential ruin of your career? And how do we put that more in balance, so we can really encourage and create a cadre of folks who are willing to do that?

I mean, if you think about it, even being able to create a mechanism where people who were successful program managers in industry would be willing to serve in the government for a few years, doing that, maybe in a different area, so there wouldn't be a conflict of interest, would bring enormous value.

And somehow with all the regulations and

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rules and oversight we've got to find our way through this, because at the end of the day we can do these things I suggested, and we can improve processes, but the caliber of the people has to be high, their motivation has to be high, their morale has to be high, because at the end of the day they have to be sophisticated. And if they're not sophisticated buyers, we're going to fail.

I've always said I'd rather be working with a government program manager who is tough, hard as nails, experienced, and smart, than one that is really friendly and nice and will do what I say, because at the end of the day we won't get the job done. So at any rate, those are some initial thoughts, and maybe I should stop talking at this point and open it up for any questions or critique.

CHAIRPERSON KADISH: Ron, that was very helpful and very, very well done in terms of going through those things. Let's open it up for questions. Anything from the panel?

MR. KOZLOWSKI: I've got one. Dr. Sugar, do you think there would be any benefit in trying to totally separate cost in the source selection process? To a certain extent, people try to keep it as a separate issue as opposed -- in contrast to evaluating

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your ability to perform and evaluating the technical content.

But to avoid this incentive that's at least implied in my terms, for both the government and industry to buy in early, to sell the program, you end up with low estimates from both sides, and perhaps even a little bit of optimism from the CAIG. Is there any mechanism that you can see to take cost out of that evaluation process and then bring it in at a later date and say, "Okay, guys, now let's talk dollars."

DR. SUGAR: Well, there are two thoughts that come to mind there. One is -- and, again, I'm not an expert. John Young could probably help me here. But one is that in the good old days I do remember some black programs. We would win the program, and then we'd have our sit-down meeting, and the program manager would say, "Okay. You guys -- it was a great proposal. Here's how much money I actually have. Here's how much I'm going to hold back. I want you to build a program around this.

"We're going to give you a couple of ECPs, so you can do this, but I want you to, as you do this, carve out adequate management reserve as we give you these incremental costs, so that you can realign your

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program budget, so that you have an executable program and you never have to come back and bother me. But I'm holding a cushion, so we never have to go back and bother the Congress."

Now, that's difficult to do these days, but, you know, that's one possibility. Let me give you a side analogy, and this is -- for those of you who have worked with the NRO years ago, which I did, and I apologize for being a little bit -- this is a little bit cartoon, but it's almost true. We would be building a highly classified satellite program. The NRO would come to us and say, "What do you think it will cost?" We'd sit there and we'd say, "Well, we know these guys have a lot of money, and they want to get it done right, so it'll cost X."

And the NRO would say, "Thank you very much." They'd go back and tell the Congress 2X. We would then diligently execute our program that we thought we had covered pretty well at X, and come in at 1.5X. And the remaining .5X would be reallocated continuously by the NRO for incremental improvements, for advanced technology on receivers and deployment mechanisms, and so that the -- you had kind of a reinvestment account, and they'd come in totally at 1.9X and Congress would think that's great, and

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everybody was happy.
And that was until they discovered the building, which, as you know, that's a different story.
(Laughter.)
But for those of you who know what I'm referring to down in Westfield -- now this story, I hate to be quoted, but this is the way it was. And, you know, for many years the NRO was cited as the paragon of virtue in terms of how you really run programs.
But I will also tell you that the contractual incentives in our corporation -- and I was a TRW guy in those days, one of our predecessor companies -- the very highest returns for our company could be made on that. The most exciting advanced technology was being pushed by that. And as a result, the A team only found its way onto the NRO programs, and I thought that was kind of interesting.
Now, sometimes that's not always true anymore, and every company says they only have A teams, but the reality is that that's what happened.
A second reaction to your question is we've gone through a source selection a couple of years ago for the kinetic energy interceptor. Ron

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knows this. There was a very interesting model used there wherein part of the source selection process was kind of living together for a while.
So, in other words, the premium on being able to write the absolute spiffiest proposal was not anywhere near the sole criteria for award, as it often is. We and the other team basically ran in parallel, and the program manager worked with us, and his team worked with us. They even have -- they assigned an ombudsman to us, whose purpose it was to be our guide to help us to try and have us understand what the government was really thinking.
And by the time, at the end of the day, the source selection team could make a decision not only on what they had in front of them -- and they didn't have a huge proposal. I don't think we killed any forests. I think there were some briefings and some obligatory cost stuff. But they really knew who they were working with, how we thought, what we did, and they knew what they were getting. And cost was somewhat of an independent variable from that.
So that was a second way to do it, and I would -- and I think the program is going fine with respect to that. Obviously, we're trying to get the Congress to fund more of it. I thought that was a

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unique approach. I'm learning -- I learned today that for the crew excursion vehicle that NASA is looking at doing they might do something similar.
I don't know if they picked this up from MDA or they just invented it themselves, so they might actually work with both teams for six or eight months hand in hand to know what the hell they're getting. But that's, you know, a long answer to your question of how you might decouple costs in two potential ways.
CHAIRPERSON KADISH: Ron, let me put you on the spot. We're kind of asking everybody the basic question about the cost overruns. And you outlined it here in your discussion, but I'd like to go back in terms of responsibility or accountability for the overruns on programs. Could you reiterate a little bit more about what the industry's accountability for these troubled programs are?
DR. SUGAR: Well, it's significant, and I will be the first to tell you that we are a big part of the problem. Let me talk about the industry problems here. First of all, it starts with the structure of the initial contract, which is often what I call the original sin.
And even if we weren't in a highly competitive situation, we would probably naturally

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find ourselves being optimistic, because you don't plan something to be a failure. You plan something to be successful, and engineers believe they can do things, and everybody is mindful and conscious of cost and that sort of thing.
You just don't know about the unknown. You can precisely measure the things you know. You can't measure the unknowns and the unknown unknowns. So there is a natural human tendency there.
There is often a sloppiness on the part of companies once you win the program not to put your own gate reviews in place to make sure at 60, 90, 120 days that you really have done what you said you'd do in the proposal. That is, you've staffed it up in the staffing curve correctly, you got all the right A team players in the right jobs as soon as you said you would, you've got clarity from the government that the requirements are what they are, you've agreed to a master schedule that -- in some cases that you've pushed responsibly back on your customer to make sure the GFE and the other kinds of things they're going to come with are going to come, and that you have tested the requirements to make sure that you're not off designing something at the corner, corner, corner condition of a spec envelope, which will cost a

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fortune but not add any significant additional value for the system.

And then, frankly, there's just good program management and bad program management. You know, everybody talks about TSPR was bad, and, you know, every single construct that we've had has been good and bad. And sometimes the difference has just been the quality of execution by a given contractor on a given program.

There are some programs which are just badly executed, because the team wasn't the right team or they were busy or they had other things in the company, or the company didn't have a good system engineering culture. So that, you know, one of the biggest problems we have on several current programs, certainly a state program I'm familiar with, is that the system engineering was never really done.

And so with inadequate system engineering you will spend a lifetime trying to dig out from under that, and not enough attention paid at the front to that by either the contractor or, frankly, by the government demanding it. So we're guilty.

And, frankly, our objectives are to make things work and deliver good stuff, and also to make sure that our shareholders, you know, keep our company

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in business. So we have to make a return on these things.

I will tell you that there are -- the incentives for the business are not significant. If you look at the profitability of the industry relative to most other industries, you can see why we garner the low price earnings multiples we do. And as long as we have some predictability in what we can return to our shareholders, we'll have a shareholder base.

If you go back to the days when we had fixed price development contracting, and everybody was betting their company on the next airplane contract, I mean, that was a disaster. At the end of the day I don't think it saved the government any money. There were certainly a lot of lawsuits. I know we had a bunch. We still have some pending.

But there is significant accountability on our part for overruns, failing to do what we said we would do, and being too optimistic in going into it.

MR. YOUNG: If I could just add one comment to that, because I think if you go back, even before Ron's original sin, it really starts with the amount of funding that has been budgeted, not necessarily funded on the program but actually initially budgeted in a POM.

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And I think collectively we share responsibility there in developing numbers that aren't well thought out, don't have a rigorous process for developing those numbers. It's done well before requirements are even defined by the user, and yet that really forms the basis for everything going forward -- the RFP that comes out, the funding lines that are in them, and the program execution that pays the bill for delivering the products.

So if we had a much more rigorous process for developing the budget that goes into the POM, I think we would start out with a funding level that is more commensurate with the requirements that are being developed.

CHAIRPERSON KADISH: Okay. That --

DR. SUGAR: One final comment I would make is if I look at all the programs that I've been familiar with over the years, and try and integrate over those, you know, I think you had some statistics I saw in some of your literature that the average program overrun is like 25 percent or something like that, maybe 50 percent in some cases.

And then, there's the really bad ones, and those are the ones that are really painful for all of us, and they're the horrible ones. And those horrible

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ones often tend to be the ones where the technological maturity or understanding was not quite there on the part of the contractor. And, again, the government has a -- or should be a sophisticated observer, was not able to really penetrate down to that level.

And then, when you get into a situation where the technology can't quite get there, you can't have a cost and schedule baseline. I mean, you really don't, because you're kind of waiting for the next breakthrough. In my old days, I was the chief engineer of the MilStar payloads, and then the program manager down at TRW.

And we had requirements that, you know, we came in in the morning saying, "Holy shit. How are we going to invent this -- this is a new invention." And we had about 10 of those going at the same time. And we got through it eventually.

The program was supposed to be launched four years and three months after award. And it was launched I think 11 years after award, and it cost at least two or three or four times as much as was initially -- it was horrible, but there was enormous technological uncertainty in it.

Other programs where you have the 20 to 25, 30, 40, 50 percent, tend to probably not be as

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technologically driven. They're just -- just the normal bad management issues.

CHAIRPERSON KADISH: Yes. Let me turn to workforce a little bit. One of the things that we see and maybe assert is that the rise of the acquisition strategy in LSI, for instance, is a remedy for the government, or at least a perceived remedy for the government for lack of this type of workforce and talent. What is your view of the LSI type constructs that people are contemplating and using? And can you give us your perspective on what would make them work, or is there another approach?

DR. SUGAR: Yes, I think you're right, Ron. I think LSI is a remedy for perceived, and probably real in some cases, lack of workforce talent or talent retention or experience in a government organization.

You know, it -- there's not a lot of good ways to do -- let me take an example, which is not DoD. It's the Coast Guard. Tremendous service, most dedicated people you'll ever work with. Every 30 years or so they have to recapitalize the fourth largest Navy and Air Force in the world. They're in the process of doing this now in Deep Water.

And, you know, clearly the Coast Guard has

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not carried for 30 years the acquisition infrastructure of the DoD. And so they've had to go to an approach like that, which they've gone to, and even that's getting questioned by some. You know, there may not be any other choice. In the case of FCS, the Army made a decision that for something of the scale of FCS they had to go to an industry LSI, the Boeing/SAIC combo.

You know, for smaller programs, there's only a certain number of super-major intergalactic programs. I think it's certainly in the government's interest to have as much capability on its side of the fence as possible, even if it uses LSIs, because you're going to have to have people who are able to go toe to tie with the LSI. And I don't mean that in a combative sense, but, you know, again, to be a responsible buyer as well as, you know, a responsible seller.

I think this workforce talent is a plague throughout the industry. I will say that in the industry side we worry about attracting and retaining the best and brightest people in our industry versus other places they can go. The only thing that does that is exciting work and not overly burdensome or grueling down side relative to what they end up having

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to deal with every day in terms of, you know, bureaucratic oversight.

I can't imagine how we solve the problem on the government side, because we have not been able to use pay as an enormous differentiator. I think we have some places where pay is being used as a differentiator. Career advancement, career recognition, and particularly for the uniformed services -- I think the Navy has an engineering duty officer track. I'm not sure if the other services have quite the same level of ability to keep moving people up through their ranks.

And certainly for an officer to stay in a program for four to five years, to be able to see the life cycle consequences of the decision they made, see how it plays out, that's -- you know, that's a rare enough commodity in industry. But, you know, you think about guys two years on and off, over to the next guy, here are your viewgraphs, you brief it next, you don't have any clue what decisions you've made and what it has done.

CHAIRPERSON KADISH: Yes.

DR. SUGAR: And LSIs do provide the continuity, so maybe it's a necessary evil for the biggest of jobs.

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CHAIRPERSON KADISH: Okay. One final question from me, and it has to do with competition in the industry. As we look at the restructure of the industry over the past 15 years, certainly you have been in the middle of that, and it -- and there has been a lot of vertical integration in the process.

Under those circumstances, do we, in fact, have viable competition in the areas we need it?

DR. SUGAR: Well, I certainly feel we do. We feel like we're in the arena every day, and feel significantly that every day we've got to go out against not only our -- we, Boeing, and Lockheed are the three majors, and we're always up against them on something. But we operate at other levels as well. We are always up against Raytheon, we're up against SAIC, we're up against CSC, we're up against -- you name it -- General Dynamics.

So with the exception of a few programs like aircraft carriers, which since the late '50s there's only been one place you can build them, because it's not cost effective to have multiple yards, we're in a competition mode all the time. We've structured our company, while we have the capability to be a systems player, we also have the capability to be a subsystem provider.

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And so what we've done is we've established a model where we are a merchant supplier as well as a subsystem -- a system-level competitor. So we've told our -- for example, our electronic systems folks in Baltimore, who build radars, that they are in a position where they ought to be able to figure out how they can not only support the rest of Northrop Grumman but support a Lockheed or a Boeing on a competition.

And we were doing that before a consent decree was put in place after we acquired TRW to that regard. We think that's a vigorous model. So I think the answer is we sure feel a whole lot of competition, and we sit here looking at a declining pot of investment account money. And I think we and my peer CEOs are all saying, "How do we ensure that we get more than our share of it?" So I think competition is alive and well.

CHAIRPERSON KADISH: Anybody else?

MR. HAWLEY: Yes, I've got one I'd like to add. This is something that you may want to take as an action item and then follow up with the panel in writing. But one of the things we're beginning to ask all the industry participants: is there anything that you know of in the regulatory arena, whether it's Cost

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Accounting Standards, DFARs, FARs, whatever, that would inhibit your investment or the financial moves you make within your own preparation that would reduce cost?

And the second part of it is, same question relative -- what's inhibiting you or helping you in terms of making a decent profit?

DR. SUGAR: Yes, those are great, great questions. Let me give you an off-the-cuff and do a follow up with a more fully thought out -- we think a lot about this.

You know, let me give you an example. We have pumped hundreds of millions of dollars of capital investment into our shipyards in the last several years in anticipation of the rejuvenation of the United States Navy from a 200-and-some ship fleet back to a 300-and-some ship fleet, only to discover that that's not going to happen.

I can't tell you how difficult that is for me and our shareholders and our investors as I try to explain why we've had to put so much capital into a business which has -- you know, it's going to be our slowest growing business, maybe a declining business, because the number of ships purchased, highly capital intensive, unstable predictability of funds, and,

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frankly, profit margins are not great. They're certainly not great relative to other things our investors could do with their capital.

So certainly stability of funding and programs would be very helpful, and that's one of the issues that we're undertaking with the Navy at the senior level to say, "Hey, can we establish for, say, shipbuilding a certain amount of money each year we're going to use to build ships and hold the program constant, so we don't have to hire and lay off thousands and thousands of people every other year."

There's a variety of other things in terms of impact on this, such as the issues of the Safety Act where, you know, we had this 85804, the Safety Act has been passed. And it does provide some additional risk to the corporations where you're not going to bet your corporation to go do something, even if you want to be patriotic about it. And we can follow up with some information for you on that.

You know, I will tell you that while -- from the government's side a contract has executed a certain number of dollars for fee, the fee associated with that is part of total cost. For us, the returns or the margins are the basis for which our investors will invest in us.

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And we need to find a way -- we have to perform better, of course, but we need to find a way structurally to make the returns more attractive, so that we will be able to attract capital more -- at more favorable rates, and, by the way, attract human capital along with that.

And that is a national security imperative, because over time if the industry is not more profitable -- and I know everybody is concerned about the fact that defense contractors have cash, but I will tell you that on the basis of what you and I could invest in as we choose mutual funds or companies, it ain't the best investment.

If we can make it more profitable, over time we'll get more capital attractive and better human capital. And if we don't, we'll see an erosion and a hollowing out, and that will not be good for the nation in five to ten years.

So there -- that's a short answer to your question, but why don't we take that aboard and shoot you a little more thoughtful result.

MR. HAWLEY: And I encourage you to be innovative or just open the box when you look at it. Such things as if the government doesn't fund you as you anticipated in your long-range strategic planning

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at some minimal level, then maybe there has to be a way for you to recover some of that investment.

DR. SUGAR: Yes, that's the risk we would typically take. And if it's a pure program cancellation, you have term liability, although you don't always get well on that. You just kind of -- you hope you can break even, but it's almost like you're talking like a pro rata term liability consideration.

And, by the way, if that were the case, it would probably put a great deal more discipline in the funding of POMs and the future planning that goes on inside the building, because people would know that there might be consequences to the fact that every single program has a growth wedge, all of which can't be sustained five years from now.

MR. KOZLOWSKI: One final note. Tell Mary Simmerman I said hi, and I congratulate her for moving up in the Northrop organization.

MR. HAWLEY: And who is this that's speaking?

MR. KOZLOWSKI: Don Kozlowski.

MR. HAWLEY: Oh, Don. Okay.

MR. KOZLOWSKI: She used to work for me on the C-17.

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MR. HAWLEY: Oh, great. Yes, Don. Yes, well, she has done a terrific job and we're really happy to have her.

MR. KOZLOWSKI: She's quite a gal.

CHAIRPERSON KADISH: Okay. Dr. Sugar, thank you for your time and interest in this. It's been very helpful. We may come back to you with some specifics, but it was well worth your time as far as we're concerned.

DR. SUGAR: Okay, Ron. Well, I was happy to be part of it. We've all got to make this thing better, so don't hesitate to call us again.

CHAIRPERSON KADISH: All right. Thank you very much.

DR. SUGAR: Okay. Bye.

CHAIRPERSON KADISH: Okay. We'll take a 10-minute break.

(Whereupon, the proceedings in the foregoing matter went off the record at 6:14 p.m. and went back on the record at 6:25 p.m.)

CHAIRPERSON KADISH: I'd like to welcome Jim Albaugh, who I don't think really needs an introduction to this group, from the Boeing Company. And we welcome you, and also appreciate you being here at this late hour to talk to us on this very

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interesting subject.

What's amazing to me is we're not losing our audience.

(Laughter.)

So it must be an interesting session. But welcome, Jim, and appreciate your -- you participating at this. So please proceed, and then we'll ask you questions.

MR. ALBAUGH: Okay. Well, thank you, General, and thank you members of the panel. I do not have any charts, so what I thought I would do is just read a statement here that has some of the issues that we think we need to take a look at, and then, again, open it up to questions and answers.

You know, first, thank you for providing Boeing and our industry with the opportunity to share our insights, perspectives, and recommendations as you review and assess the Department of Defense's acquisition process. The subject of how the DoD acquires the necessary capability to carry out its mission is always important.

And, clearly, as we sit here today, there's an added sense of urgency given that we are a nation at war -- a war that is challenging how the DoD is organized, how it's equipped, and how it fights --

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fundamental issues that the Secretary of Defense and each of the services is dealing with on a day-to-day basis.

In this regard, it's essential that the acquisition process be relevant in terms of timing, efficient in terms of resources, productive in terms of outcome, and open and honest in terms of process. We must have an acquisition process that is fast. By that, we mean getting products and systems developed tested, produced, and deployed to the warfighter quickly; reliable, which means securing systems and services that perform; flexible, and by that we mean adapting to the changing circumstances and threats; efficient, which means paying no more than is absolutely necessary; and accountable, which assures the procurements are consistent, open, fair, and honest.

I know the panel will dive deeply into specific programs, processes, organizations, and charters. In the interest of the late hour, I'd like to focus just on three general themes if I could -- speed and adaptability, performance and results, and public accountability.

There's no question that today's threat environment demand speed and adaptability. Everyon

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wants the process to move faster, to be more efficient, and to provide the right capabilities. To this end, the process should limit unnecessary constraints. We must create more trade space and not less.

Programs and contracts need flexibility to effectively deal with evolving technology, requirements, and program risks. The ability to trade capability for cost and schedule can lead to faster fielding of capabilities at a reduced cost.

The current process is designed to make all development and procurement fit a common mold, and there is minor tailoring, but it really isn't set up to be as flexible as it needs to be. What is needed is a process that is risk-based with focus on managing risk as balanced to a schedule cost and requirements drivers.

In addition, the process should enforce the use of open systems and common standards. Open systems and common standards will maximize the number of potential competitors, and, thus, the number of potential solutions. Common standards and open systems will also minimize single-point failures or being locked into one particular approach requiring costly redesign for upgrades. It will also drive the

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needed interoperability and support jointness.

Finally, we must invest in critical skills and retention incentives to ensure that the acquisition force is knowledgeable of the constantly-changing circumstances of the technology operations and business practices, and that they are empowered to make decisions.

Moving on to performance and results, any process is ultimately judged by the results it produces. Our presence here today reflects the view that performance and results can, and should be, improved. And let me touch on a few areas for improvement.

In our view, the acquisition process should establish a limited number of success measures, set realistic performance requirements, and identify risks, and then budget to realistic estimates. In each area, the government and contractor must be partners at some level versus adversaries. The common goal is to deliver the required results.

First, establishing reasonable measures of success, mutual expectations, respective responsibilities, and clear metrics is a key. Second, having realistic and achievable performance requirements while addressing upfront risks, including

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the maturity of technology, are essential ingredients to success.

My experience is that the regrettable irony of new programs is that after award the customer often feels a sense of buyer's remorse, and, thus, drives to get more for less. And the contractor, and I count ourselves as guilty of this in the euphoria of a win, is willing to assume and promise risk away. The result: the beginning of mutual disappointment.

Third, budgeting to realistic estimates is absolutely essential to meeting expectations and delivering the capability necessary. In this regard, the CAIG estimates are a useful starting point. Related to this, major programs need a mechanism to avoid funding of all contingent liabilities.

Creating funding reserves at the expense of program scope and schedule to cover liabilities with very little probability of occurrence limits program flexibility and often results in inefficient and short-sighted decisions, and in my experience has been the money generally comes out of risk reduction.

Creating a global reserve above the program level would be preferable and more effective. And, of course, funding stability is a major factor to success.

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Finally, and perhaps most important, it's essential that the implementation of a new acquisition process restore public trust. And let me say here that the Boeing Company clearly understands that trust is earned and can be lost, with great impact on individuals, companies, and the defense establishment as a whole.

Accordingly, it is clear that the process must be transparent, allowing policymakers and the public to have faith that tax dollars are being spent wisely and honestly. Past performance, company conduct, objective metrics, are critical components of this transparency.

In parallel, however, it is also important that the process ensure appropriate return for good performance. Clear measures of success, fair assessment of risks, and award fee potential consistent with risk and performance are essential to a profitable and capable defense industry that has the talent, technology, and management to provide world-class capabilities.

In summary, the acquisition process should be adaptable and geared to meet immediate, short-term and evolutionary needs, built around realistic achievable requirements, performance-based, and

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designed to address risk, and open and honest to restore public confidence in the process.

Boeing is very privileged to be a defense contractor and very willing to be part of this process that we're starting today. And in closing, I'd like the panel to convey my thanks to Secretary England for chartering this assessment, and our pledge to assist in this endeavor to whatever degree is necessary.

And I think we're providing you a copy of that, and there are a couple of charts that we'll provide as well.

CHAIRPERSON KADISH: Okay. Thanks, Jim. Questions, please?

MR. KOZLOWSKI: Jim, a number of people have suggested starting out with like CAIG estimates as perhaps being more realistic or the most probable cost going out. Suppose we do that, and we get over the dilemma of unreasonable or optimistic pricing on the part of contractors and government program managers.

Now, once the industry or the government knows what the upfront price is, what's to inhibit the people involved from exceeding that estimate? It has been my experience over 40 years in the industry that once a figure is out on the table there's always

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somebody around who will exceed it.

MR. ALBAUGH: Well, I think there's a supposition that contractors aren't trying to meet the goals that they've set. And in my -- you know, my view has always been that we do not turn in cost estimates knowing that we're not going to be able to meet those.

I think often times we get, you know, very optimistic in our ability to meet those numbers, and I think based on the kind of proposal that we're asked to turn in, we oftentimes do not include risk money to address all the possible known and unknown risks that we might get to. But, you know, I would have to argue with you that we have a contractor community that sets a bougie and then knowingly overruns those numbers.

We get paid for performance, and if you look at the award fees that we get, if you look at the fixed price contracts that we have, we are incentivized to perform. And I think that the customer can send a very powerful message to us by -- by not giving us compensation for a poor job and only compensating us for a job well done.

MR. KOZLOWSKI: I certainly wasn't implying any deliberate attempt. I'm just talking about people being people. Once there is a figure

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there, somebody wants to start nibbling away and say, "Hey, I can get a little bit more."

On the government's side, requirements creep would be an issue, particularly if they know that maybe there is a difference going in between the optimistic estimates, which we used to use but now we use the CAIG estimates. He feels he's got a little bargaining room. He's going to go in and maybe ask for some. I mean, people are people.

It's one thing to use the more realistic, more probable cost. But how do we make sure that that's held fixed and people don't nibble away at it? I certainly wasn't implying anybody is going to go out and deliberately exceed it.

CHAIRPERSON KADISH: Anybody else?

DR. BRANDT: I actually have two questions. One, we've been talking about lead system integrators with a variety of contractors from the perspective of the companies and some of the issues that it raises within the industry, perhaps on the second and third tier contractors, and perhaps conflicts that arise. And also, perhaps something that it says about the capabilities of the DoD workforce that we are substituting large system integrators.

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You're in the middle of one. What would you say about that? And how is it -- now you're in the middle.

MR. ALBAUGH: We're in the middle of a couple of them. You know, first of all, I think, you know, maybe lead system integrator was a poorly chosen, you know, name for what we're trying to do. If you look at a prime contractor, they -- they integrate, you know, subsystems to provide a system, and what we're doing on a number of the programs we're having is just doing the integration, you know, one level higher.

And to a large degree, it really is the same task, doing trades to come up with the best solution for the customer.

I think another misconception about the lead system integrator role is that we are doing the job of the government customer. This is not a TSPR contract that we have. This is a lead system integrator contract that we have, and it's one where all the decisions that are made are made jointly, you know, with our customer, not made arbitrarily, you know, by the Boeing Company.

To the issue about second- and third-level contractors, I think that sometimes people again mix

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up LSI with vertical integration. And I think the responsibility that a company has as an LSI is to bring the best of industry, not to bring the best of their company. And, certainly, you need to have fair competition in order to let everybody that has a capability bid for the different elements of a program.

And one of the things that we've tried to do is make sure that good firewalls are in place, and there is fair competition, and that we bring not just the best of Boeing, but the best of industry, to the program. And, you know, rather than stand up here and give you a sales pitch on how good a job we've done on that, you know, we have looked at literally thousands of proposals and done, you know, hundreds of awards, and we have not got a protest yet. We've got one letter of concern that was withdrawn the next day.

But I think it's incumbent on any prime contractor, or at least system integrator, to bring the best solution to their customer, and that means not bringing the best of their company. We've worked very hard not to do that.

DR. BRANDT: I've got one more question on a slightly different subject. You have a healthy and vigorous commercial side of your business, which many

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of our contractors don't have. You develop complex products on that commercial side. What could we learn from how you handle risk, cost, schedule, performance, technology, on the commercial side? Or is it simply so inapplicable in terms of the way that we do business that it's very difficult to translate some of the things that you might do on the commercial side?

MR. ALBAUGH: I will tell you it works both ways. It really does. You know, we have been able to improve the productivity of many of our military airplane lines by going to the moving line process that they used so effectively up in Retton and up in Everett. And we've been able to reduce our costs dramatically as a result of that.

By the same token, you know, we had problems in the late '90s with our commercial airplane production of not knowing what airplanes cost. And by putting in earned value in some of the disciplines from the military side, we've been able to get a much better handle on the cost of airplanes.

The satellite side as well -- the technology going back and forth between defense programs and commercial satellite programs. And then, of course, you know, the whole issue of commercial derivative airplanes which affords the government to

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get an airplane without having to invest in the development cost of, for instance, a, you know, 767 or a 737 in the case of the E-10 or the P-8.

DR. BRANDT: But do you assess risk differently? One of the things that we've heard is that sometimes both industry and government are overly optimistic or don't assess risk appropriately at the start of programs? Is that -- is there something differently that you do on commercial programs in terms of that risk assessment that we do or don't do or perhaps, again, not applicable or --

MR. ALBAUGH: Well, I've never worked on the commercial side of the Boeing Company. And since joining the Boeing Company seven or eight years ago, we have launched one new commercial development program, which is the 787.

We have tried to put in place, you know, all of the program management best practices learned from prior commercial development efforts as well as defense development efforts to make sure that we can bring that thing in on cost and on schedule.

You know, we've spent a lot of time, you know, looking at programs that succeed and programs that have issues. And we have tried to instantiate a set of program management best practices into

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everything that we do, and these best practices we apply both to commercial as well as to military programs.

And while they help, I think a lot of it comes down to the leadership of the program and having good, trained, experienced program managers in those roles. And, you know, as General Kadish knows, and we've talked about this before, you know, I love program managers that are always telling me the cup is half empty, because then I know they're really thinking about risk and they're thinking about what can go wrong versus those program managers that like to tell me things are always going well.

CHAIRPERSON KADISH: Go ahead.

MR. HAWLEY: Jim, you've emphasized the requirements, issue, as many others have, and you've talked about a risk-based system. One of the things that has been put in place recently, not necessarily to better evaluate the risk associated with our requirements but to ensure that the joint perspective is honored, is the JCIDS process.

I'd be interested in your view of where we are with that today, and whether or not industry has an avenue to influence the JCIDS process, and whether or not you see the JCIDS process including some

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measures to make sure that we do adequately consider the risk associated with some of the requirements that evolve out of that.

MR. ALBAUGH: Well, I think it's certainly a step in the right direction. And I, like I'm sure everybody who talked to you today, you know, applauds what you've tried to do with that. But maybe just a couple of points I could make.

You know, jointness and interoperability certainly is something that our customer wants very badly. But we also find that when we propose a program or a solution that depends on another program, our number, our proposal gets risked up, which in essence the program managers want to be able to control their total program, and I can understand that.

But at the same time, it drives us towards building programs in silos as opposed to building programs that have the interoperability capability that I think the JCIDS process is really driving towards.

You know, one of the things that I talked about in the intro was the fact that we need to have, you know, common standards, and there's a consortium that I know you're familiar with -- 70 or 80 of the

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contractors are involved in it -- but provide a common information and communications architecture that goes across all programs, and then let the contractors compete at the operational level, at the functional level, as opposed to at the COM and information level.

I think that would go a long way in driving this interoperability that you want. Compete at the applications layer -- level.

MR. HAWLEY: Could you talk a little bit more about what you mean by a risk-based process?

MR. ALBAUGH: Yes. Early on in a program, as you take the requirements from the customer, as you flow those requirements down through your systems engineering process, you know, assess risk for every element as you go down, and then build it back up to come up with what you think the risk for the program is.

And I think there are known and there are unknown risks that you need to quantify as you do your systems engineering task. And what we try to do is put together a risk matrix to try to put mitigation plans in for all the known risks, and then to have, you know, some level of contingency in place for the unknown risk that we know is out there in a development program.

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And what happens in our zeal to come up with a low number that can win is I think sometimes we shortchange the unknown risk in putting the right level of unknown risk into the proposal.

CHAIRPERSON KADISH: Jim, the industrial base over the last 15, 20 years has become much more vertically integrated, partly at the behest of the government, obviously. We had 20 primes in 1985, many thousands of airplanes at work. Now we're down to, what, three or four, maybe five, and many less activities.

And this vertical integration activity, among the big primes, could potentially have problems with competition and those types of things. Is there any -- and you mention this in your LSI discussion, the idea that we could actually separate out through the OCI issues and firewalls the right kinds of decisions.

But where is it going to end up in the process? More vertical integration could get us in a position where we really don't have a competitive situation in the areas, especially when we get down to the subsystems. Can you give us any insight --

MR. ALBAUGH: Yes.

CHAIRPERSON KADISH: -- into that?

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MR. ALBAUGH: Well, let me give you just a Boeing perspective, and then I'll try to give you an industry perspective. You know, our view is one of having a strategy where we are not vertically integrated. And our view has been that by not being vertically integrated you can bring the best of industry to any proposal that you turn in.

If you're vertically integrated, one, there's a large cost of keeping your technology fresh in all of the different areas that you may be in. And, two, is it possible to be, you know, world-class in all of those different areas that you're vertically integrated in? You know, our view is if you bring the best of your company to a proposal, you're going to have a sub-optimal solution. If you bring the best of industry, you will have an optimal solution.

Now, you know, backing up and taking a look at industry as a whole, I think one of the things that drives people out of this marketplace, or drives many of the acquisitions that we have, is the feast or famine cycle that we have of government funding. And every time we have a famine we drive people out of the business.

Some people would say we need more work to do. I think more important than that is we need a

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stable environment in which to operate in.
And I really believe in capitalism, if you will. I think if there's a market, and there's an opportunity for good returns, you will have competition and you will have people, you know, entering, you know, these disciplines, these technologies, these capability areas. But I can tell you that our strategy is one that is contrasted to some of the other primes.
CHAIRPERSON KADISH: There is a thought that says, or a point of view that says, if you're not vertically integrated to a large extent you're not going to be able to maintain the systems of systems engineering expertise, because you're not touching hardware. Do you have any --
MR. ALBAUGH: Well, yes, that's -- I get that question from the engineers all the time, as you might guess. And, you know, I think we learned a lesson. When you outsource something, it doesn't mean you get rid of your engineers who provided support to that discipline when you had it inside the company.
Just because we're not machining doesn't mean that the support people who supported machining go away. Instead of working in our internal factors, if you will, they're working in our external factors.

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And one of the lessons learned that we found out early was that you have to make sure that you're providing the same level of oversight, of engineering interface, of industrial engineering, of manufacturing engineering, regardless as to where, you know, that factory may be or who that provider might be. But we do think about that one a lot.
CHAIRPERSON KADISH: You think you can manage that.
MR. ALBAUGH: So far. And I think the other thing that you have to do is always assess, you know, what are the capabilities that you need to be successful? And where you have capability gaps, you know, there are really, you know, three avenues. One, form an alliance with somebody, develop the capability internally, or do an acquisition. And our strategy has been alliances and taking advantage of the industrial base that exists.
CHAIRPERSON KADISH: Anybody else?
MR. PATTERSON: I have just a quick one. In the reviews that we've done, and the people who have come to talk to us, a fairly persistent theme of an eroding engineering and science and technology base has been a fairly consistent comment. How difficult is it for -- to be very specific, for you, Boeing, to

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bring on highly qualified, highly skilled engineering staff, when you have to suddenly field a workforce?
MR. ALBAUGH: Yes. Well, that's a huge issue, and it's a bigger issue than Boeing or aerospace. I think it's really all about the intellectual disarmament of the United States of America. I mean, look at the number of engineers that we're graduating in this country -- 50,000, 60,000 a year.
If you compare that to China, 6- or 700,000, and, in India, you know, 300,000, and the technological edge that we think will maintain our standard of living for years to come I think is very perishable if we don't drive more kids, you know, into, you know, the kinds of industries that we've been in for years.
You know, looking at Boeing, you know, our average age of an engineer is about 50. The average aerospace worker is 53, 54. We've got a very bimodal distribution, new people coming in, older people. How do you transfer that knowledge? We're working that one very hard.
I look at the young kids that we bring in, and we've been pretty successful to date -- in fact, you know, very successful bringing people in, and I

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think it's because of the broad range of projects that the young graduates can work on. But what we find is they leave.
They leave after four or five years, and I think that our industry is one that rewards people based on seniority as opposed to one that rewards people based on ability and proven performance. And I think one of the things that we have to do is start bringing our young people along and giving them challenging work, challenging assignments, and rewards at an early age, because they're seeing the kids that they went to school with, you know, getting rewarded and getting promotions in other industries that compete for our talent.
But, you know, if you step back and you think about, you know, why people want to go into different fields of work, one of the big reasons is because it's important. And we can really provide those young students with very important, meaningful work to do, and in a vast array of different things to work on during a career.
But I think we've got to bring them along a lot faster, and we have to -- you know, we need to have another Apollo program, or another space race, to get the young kids interested in the kind of business

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we're in today.
MR. PATTERSON: One of the things that we've noticed is that the -- all of the folks who got their degrees under the National Defense Education Act of 1958 are suddenly going away very quickly. And there's an initiative in the conference now for a -- for NDEA for 2006, which we probably ought to support that.
MR. ALBAUGH: Yes, absolutely.
CHAIRPERSON KADISH: Anybody else?
MR. KOZLOWSKI: Yes, I've got one. The same one I've been giving out the last couple -- you hear a lot of people complain in this business about not making decent profit margins. And one side of that I'll put in myself, and just say I think part of it is because industry doesn't earn what they bid.
Be that as it may, my question to you -- and you may want to take this home and have your people research it a little bit -- is there anything that your corporate structure can think of, either by way of tradition, regulation, CAS standards, FARs, DFARs, whatever -- that impedes your ability to make wise cost reduction decisions?
One guy talked to us about he was inhibited from closing the facility, because he

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wouldn't get any of the benefit of it.
MR. ALBAUGH: Yes.
MR. KOZLOWSKI: The other go-round is, you know, is it the weighted guidelines, or is it some other thing that -- that's stifling the ability to make a reasonable return? Anything you can suggest to the committee that we might pursue is -
MR. ALBAUGH: Well, I think that that answer that you got about sometimes not being incentivized to work to reduce capacity, I think that's a very true one. And I'll take that one back and talk to some of our contracts people about it, but there are two things that do come to mind relative to FAR and requirements that I think we really need to think about.
And, you know, the requirement to have to cover all the termination liabilities by program, I think we often, you know, take the money out of areas that we should be funding on programs. And as I mentioned in my remarks, I think we take, you know, much of the termination liability funding out of risk reduction efforts that would certainly allow us to bring those programs in. And if we could cover termination liability at a level higher, more globally, I think that would be good for industry.

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Another issue that we have seen, especially in the Department of Homeland Security, but we're starting to see more and more in the Department of Defense, is RFPs that come out that don't have Safety Act coverage. And the indemnification issue will become a greater and greater one I think as time goes by.
You know, companies are going to be very hesitant to bet their balance sheet, and it's going to be hard sell to their board of directors. And the identification coverage that we've had extended to us in Department of Defense contracts I think is one that, one, the Department of Homeland Security needs to look at, and, two, we need to review some of these proposals that are coming out without it. But we'll get back to you with some more information on that.
CHAIRPERSON KADISH: You know, as I recall, the termination liability requirement to fund it is a financial regulation, not a statutory requirement. But I may be wrong on that. That's something you ought to look into.
MR. ALBAUGH: Okay.
CHAIRPERSON KADISH: Anybody else? You're getting off easy, Jim.
(Laughter.)

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MR. ALBAUGH: You guys must be tired. The other guys wore you out. I'll send them a thank-you note.
CHAIRPERSON KADISH: As we went down our checklist of things, we've actually covered everything.
MR. ALBAUGH: Okay.
CHAIRPERSON KADISH: So there's nothing left for us at this particular session. We might ask you back.
MR. ALBAUGH: All right. I'd be happy to come back, and I know you're talking to some of our program managers, and they're looking forward to it. And anything we can do to help.
CHAIRPERSON KADISH: Okay. Thank you very much.
MR. ALBAUGH: Thanks.
(Whereupon, at 6:59 p.m., the proceedings in the foregoing matter went off the record.)

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