

[H.A.S.C. No. 112-93]

**CREATING A 21ST CENTURY DEFENSE
INDUSTRY**

HEARING

BEFORE THE

PANEL ON BUSINESS CHALLENGES
WITHIN THE DEFENSE INDUSTRY

OF THE

COMMITTEE ON ARMED SERVICES
HOUSE OF REPRESENTATIVES

ONE HUNDRED TWELFTH CONGRESS

FIRST SESSION

HEARING HELD
NOVEMBER 18, 2011



U.S. GOVERNMENT PRINTING OFFICE

72-414

WASHINGTON : 2012

PANEL ON BUSINESS CHALLENGES WITHIN THE DEFENSE INDUSTRY

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CREATING A 21ST CENTURY DEFENSE INDUSTRY

HOUSE OF REPRESENTATIVES,
COMMITTEE ON ARMED SERVICES,
PANEL ON BUSINESS CHALLENGES WITHIN THE DEFENSE
INDUSTRY,

Washington, DC, Friday, November 18, 2011.

The panel met, pursuant to call, at 9:04 a.m. in room 2118, Rayburn House Office Building, Hon. Bill Shuster (chairman of the panel) presiding.

OPENING STATEMENT OF HON. BILL SHUSTER, A REPRESENTATIVE FROM PENNSYLVANIA, CHAIRMAN, PANEL ON BUSINESS CHALLENGES WITHIN THE DEFENSE INDUSTRY

Mr. SHUSTER. The hearing will come to order. Good morning. The House Armed Services Committee Panel on Business Challenges in the Defense Industry meets today to continue our dialogue regarding the health and the future of the Nation's defense industrial base. Today we are hearing from two experts on the defense industrial base, and both these gentlemen have extensive expertise in the issues associated with maintaining an effective industrial base. Neither are strangers to the committee.

I would like to welcome both of you back; the Honorable Jack Gansler, professor and Roger C. Lipitz Chair, and Director for the Center for Public Policy and Private Enterprise at the University of Maryland; and Mr. David Berteau, senior vice president and Director of the International Security Program at the Center for Strategic and International Studies.

Mr. Gansler's recently released book *Democracy's Arsenal: Creating a Twenty-First-Century Defense Industry*, as well as Mr. Berteau's work at the Center for Strategic International Studies on the defense industries initiative lend great knowledge and insight into these extremely complex issues.

In our hearings on the issue, we have heard from a variety of witnesses in the field and the Department of Defense about the current challenges and future projections regarding the United States defense industrial base. The conversation thus far has been very informative as each and every person we meet with brings a unique perspective about how to learn from our past failures and establish stability in the industrial base.

Today we continue that dialogue by focusing on the future. In doing so we are asking some very basic questions regarding a complex subject matter. What can we do to adapt the current environment to meet the needs of the 21st-century security strategy? What can we learn from other nations who are implementing strategies

that deal with this critical issue? What changes are necessary in our workforce and acquisition policies to meet that vision?

This panel has the opportunity to highlight the challenges and successes of the defense industrial base as we examine challenges to doing business with the Department of Defense. Our defense industry today continues to have a hard time getting clear requirements from the DOD [Department of Defense], bridging the gap between development and fielding, and surviving overly burdensome, unresponsive program management policies and regulations. Navigating these issues is difficult for large defense contractors and near impossible for small businesses.

I would like to take a moment to recommend that all members of the panel review a recent note—let me get this right so I don't quote the wrong year—to review a recent RAND report, and that is not the one from 1958 that I so happily report to people. I said to the staff the other day, did they just change the date on it? But I think there are some new and insightful findings. Each of the Members has a hard copy of the report in their packet of hearing materials.

This report reviews Federal policy regarding small businesses and implications for future DOD policies and practices. Not only does it provide a primer on basic historic background on Federal small business policy, but it also examines trends in DOD contracting practices and small business utilization. I think it will be a useful resource for the panel as we continue our work in this area.

As I mentioned in our last hearing on November 1st, the panel traveled to Congressman Betty Sutton's district in Akron, Ohio, in October. We met with small and medium-size businesses working on highly technical solutions to deliver capabilities to our warfighters, and also met with members of the University of Akron faculty and leadership to discuss their efforts to advance technology to meet DOD needs. The committee staff has prepared a summary memorandum of their discussion with the industry and has been provided to all the panel members. Without objection, I would like this to be entered into the record. Hearing no objection, so ordered.

[The information referred to can be found in the Appendix on page 69.]

Mr. SHUSTER. As I pointed out last time, our next field hearing roundtable will be happening on December 9th in Congressman Jon Runyan's district, the Third District of New Jersey. These sessions are invaluable to the panel's work, and I hope all our panel members can join us on this trip.

At this time I yield to the ranking member Mr. Larsen for any remarks.

[The prepared statement of Mr. Shuster can be found in the Appendix on page 37.]

STATEMENT OF HON. RICK LARSEN, A REPRESENTATIVE FROM WASHINGTON, RANKING MEMBER, PANEL ON BUSINESS CHALLENGES WITHIN THE DEFENSE INDUSTRY

Mr. LARSEN. Mr. Chairman, thanks for filibustering until I can get here.

Mr. SHUSTER. Traffic?

Mr. LARSEN. No. Spanish and science.

Mr. SHUSTER. Exams?

Mr. LARSEN. Middle school Spanish and science. It has been a while. I had to do a little review this morning with my 12-year-old.

But I want to thank you for putting this panel on today, and pleased to be joining the panel members here today.

This panel is charged with looking at the ways DOD can improve its business practices not only for the benefit of the DOD budget, but for the benefit of local companies who want to provide services and goods to the warfighter. Over the past month, through hearings and district visits, we have gained some pretty valuable insight from the industry, and about the industry and about the Department on the challenges our industrial partners face doing business with the Department.

In due time I am confident this panel will offer some recommendations to the full committee that will improve on some of these challenges; however, an important part of this task is understanding how the defense industrial base itself operates, and I hope the witnesses today can offer this panel a brief history of the events and factors that have shaped the current industrial base and what we should do in the future.

I believe we are all aware of the key role our industrial complexes played with providing capabilities throughout the years in support of our national security. The industrial base has risen to each challenge from World War II through responding to the events of September 11, 2001. I would appreciate hearing from you on how our industrial partners must evolve, however, to meet the current economic constraints and the 21st-century threats that we face, to include global competition.

Earlier this month the panel heard from Mr. Brett Lambert, the Deputy Assistant Secretary of Defense for Manufacturing and Industrial Base Policy. He made the point that references to “the” defense industrial base implies a monolithic entity, a reference that is inaccurate. The defense industrial base includes companies of all shapes, all sizes, resourced all around the world. I am pleased to hear that DOD is currently attempting to map and assess the industrial base sector-by-sector and tier-by-tier with hopes that we have a much better understanding than we have today of it. This will provide us and the Department a much better picture of what currently exists today, and perhaps provide some clarity on how to move forward.

The 2008 Defense Science Board’s Task Force and Defense Industrial Structure for Transmission, chaired by Dr. Gansler, noted that “the nation currently has a consolidated 20th century defense industry, not the required and transformed 21st century National Security Industrial Base it needs for the future.” So I look forward to hearing how we might get there. I look forward to hearing from Dr. Gansler and Dr. Berteau today on what steps we must take to establish a 21st-century national security industrial base.

And with that, thank you, Mr. Chairman, for an opportunity to provide opening comments.

[The prepared statement of Mr. Larsen can be found in the Appendix on page 39.]

Mr. SHUSTER. Thank you, Mr. Larsen.

And with that we will proceed with Mr. Gansler if you want to start.

**STATEMENT OF HON. JACQUES S. GANSLER, PROFESSOR AND
ROGER C. LIPITZ CHAIR, AND DIRECTOR, CENTER FOR PUBLIC
POLICY AND PRIVATE ENTERPRISE, UNIVERSITY OF
MARYLAND**

Dr. GANSLER. Thank you, Mr. Chairman and members of the subcommittee.

It seems to me it is very clear that there is a major clash coming in the next few years between the security concerns facing the United States and the shrinking resources available to address them. As Admiral Mullen, then-Chairman of the Joint Chiefs, stated in August of last year, "The single biggest threat to our national security is our debt."

The only realistic answer to this security affordability problem will be to increase efficiency and effectiveness of our defense investments, both in equipment and in manpower. Unfortunately, the recent trends are adverse to this need: Rising equipment costs, rising logistics costs, rising personnel costs.

It is also important to note that trends in the cost of weapons are opposite to the trends in the commercial world, where, for example, each generation of computer routinely provides more performance at lower cost, and suppliers traditionally introduce next-generation systems on an 18-month cycle, a far cry from our 15- to 20-year DOD development cycle. Now, these adverse costs and cycle time trends are matched by a growing concern about the U.S. losing its competitiveness and its innovation leadership due to the decline in its science and engineering workforce and, as the budget declines, the very likely reduction, which I am very concerned about, in research investments as the dollars shift to near-term needs. Obviously, the resulting loss of innovation from these adverse manpower and research trends, will be felt in decreasing future U.S. international economic competitiveness and in the loss of national security technological leadership, both of which, I think, are catastrophic.

Today the Nation faces a whole series of threats: Terrorists, pirates, irrational dictators, religious fanatics and so forth. But unfortunately, thanks to worldwide proliferation these people have a greater access to increasingly lethal weapons. For example, 100 countries have ballistic missiles that are increasingly competent. And cyberwarfare is becoming a great concern as potential adversaries develop sophisticated tools aimed at crippling not only the military and civilian infrastructures, but across the board.

Clearly today the security environment is very different than in the 20th century, as you just heard. So the Nation has to prepare for 21st-century security needs even as fewer resources are available to do the job. There are new technologies available, there are required new modes of warfare, and there are new industrial structures that have resulted primarily from the horizontal and vertical consolidations that mark the defense industry in the years following the Cold War, as well as from the rapid advances that are taking place in the high-tech commercial world. And, I would argue, critically important has been the globalization of technology,

industry and labor, and, very important, the requirement for coalition military operations in the future.

So it is necessary to address our growing security affordability problem, and one of the major ways of doing that is to look at the question of how the DOD does its business, and, I would argue, both on the demand side and on the supply side. And these steps fall into four main areas. Overall acquisition process includes what we buy, that is the requirements process; how we buy it, that is the acquisition process; who does the buying, that is the acquisition workforce; and who the DOD buys from, which is the defense industrial base issues. And I would emphasize that these four issues are highly interrelated, and that all four have to be addressed in order to achieve the required changes.

In my prepared remarks I addressed all four of these areas, and I have expanded upon them in the recent book that the Chairman just mentioned. I could briefly highlight some of these changes, but given my time constraint, I will assume that you have looked at the presented material.

Mr. SHUSTER. During the questioning period we will get you to elaborate.

Dr. GANSLER. Fine.

So then let me just simply jump to the conclusions, which is basically that two things are required to make a cultural change, and that is what we are really talking about here. One is a widespread recognition of the need for change, and the other is leadership with a vision, a strategy and a set of actions to implement that change. And that is up, as far as I can see today, up to Secretary Panetta, the White House and the Congress to implement these needed changes. There will be resistance, no question about that, and it is going to be very challenging. But on the other hand, I believe it can be done, and I think it must be done, and I think our future national security depends on it, and our fighting men and women deserve it.

Thank you.

[The prepared statement of Dr. Gansler can be found in the Appendix on page 40.]

Mr. SHUSTER. Thank you.

Mr. Berteau.

**STATEMENT OF DAVID J. BERTEAU, SENIOR VICE PRESIDENT
AND DIRECTOR OF INTERNATIONAL SECURITY PROGRAM,
CENTER FOR STRATEGIC AND INTERNATIONAL STUDIES**

Mr. BERTEAU. Thank you, Mr. Chairman, Congressman Larsen, members of the panel. I appreciate the opportunity to be with you here today. I particularly appreciated that the hearing is moved to this room. There is a certain honor to sit in front and be able to read the panel here of Article I, Section 8. I happen to carry in my pocket at all times a copy of the Constitution, and I have two phrases bookmarked here. One is Article I, Section 8. The other, of course, is Article II, Section 2. And much of our lives are spent on the interface between the role of the President as Commander in Chief and the role of the Congress as outlined in Article I.

I am also struck, Mr. Chairman, by your opening remarks about the difficulties of solving these problems. When you get to this

point in your career, and you realize you have spent a third of a century working on things that are all still just as broke in appearance as they were when you started, it can occasionally be a bit discouraging. However, my wife reminds me that if we hadn't been working on them, they would be even worse. And I take some solace in that, if you will.

I would like to summarize briefly my statement and ask my written statement be included entirely in the record.

We define the industrial base as not only the hardware companies—this is what we typically look at—but the services companies as well. And I have got a lot of data both in my testimony and drawn from our report on defense contract trends. I have provided a copy of this to the panel.

The data basically showed three key facts. One is that the Federal Government in general, and the Defense Department in particular, spends as much money on services contracts as they do on products contracts. And it is important to keep that in mind.

The second key data point is that the percentage of the defense budget that goes to contracts has essentially doubled in the last 20 years. If you go back to 1990, roughly 35 percent of defense outlays were spent on contracts. In 2008, which is the year it reached its peak, it was about 65 percent. It is back down to about 53 percent now. And when we have fiscal year 2011 data, which we don't quite yet have, we expect that to decline a little bit more, but it will still stay roughly at 50 percent. So we have a reliance on contracts and on the base that provides those contracts that is greater than it has been historically. I think that is a significant issue, if you will.

Contract dollars are roughly split between products and services. We separate out research and development as a third category. The reason is because from the Defense Department's perspective, R&D [research and development] is part of the investment because it is connected to procurement, it is connected to products. From the Government's database perspective, they count R&D as a service. So actually the single largest service contract in the Federal Government is the F-35 Joint Strike Fighter. Now, from my perspective that is not a service, that is a product, but because it is R&D, it gets characterized as a service. But we separate out R&D.

And my last data point that I would do in my summary here is that R&D is at an historic low as a percentage of total contract dollars spent. Now, the database that we use doesn't include classified contracts. We lump those in as well. It is still at an historic low.

There are three big challenges facing the industry today, from our perspective. And I should point out these are mostly my views. I use the data from CSIS [Center for Strategic and International Studies], but my opinions here are my own. The first is the impact of the plan reductions and the budget reductions that are under way. The second is the importance to recognize that industry today, unlike industry in the past, has to remain competitive in the global financial markets. We can no longer rely on just the Federal Government to provide the funding for these companies. They have got to be competitive financially. And the third is where innovation coming from in the 21st century, because we have a history of relying on defense contractors to come up with innovation. In today's world an awful lot of new technology is coming not from defense,

not even from the U.S., but from global sources. And recognizing and addressing those challenges are a critical factor for this panel to address. So I will be glad to go into those as we go into the question period.

[The prepared statement of Mr. Berteau can be found in the Appendix on page 55.]

Mr. SHUSTER. Thank you very much. Why don't you go ahead and expound upon that, what you are talking about, the financial liability globally, a little bit.

Mr. BERTEAU. The world in which we grew up in the 1970s, 1980s, 1990s for defense contractors, the contractors depended on the Government for their revenue for the most part, and particularly after the consolidation in the 1990s. It really didn't matter to them all that much whether a contract was awarded on June 30th or on June 1st, because they weren't subject to the swings of quarterly stock financial reports as much as they are today. Companies could often finance both through their own savings and through the progress payments that the Federal Government made, and so they were less reliant on the global financial market.

Today's environment, and all you have to do is listen to the quarterly analyst calls that the CEOs [Chief Executive Officers] and the CFOs [Chief Financial Officers] of the major defense companies do, they are so dependent on their standing at Wall Street in a way that they were not historically because they are part of the global financial community.

Now, global financial markets invest their money irrespective of national security. All they are looking for is return, and if a better return can be obtained somewhere else, that is where they are going to go. The net result is that if defense companies are not competitive from a margin point of view, from a cash flow return on investment point of view, from a revenue point of view, if they are not competitive in the global financial market, that means they end up paying more for their cash.

Ultimately an increasing cost to industry results in one of two things, either an increased cost to the Government or less capability for that industry to be able to provide to the Government. That, I think, is a different situation than has been true in the past. And many of the Government's rules and regulations regarding weighted guidelines for profit, regarding caps on fees, regarding how you manage contracts and negotiate contracts, tend to ignore the dependence of those companies on the global financial market. We haven't caught up in a regulatory sense with that global reality.

Mr. SHUSTER. So we need to change the regulatory burdens that were put on these companies from the DOD?

Mr. BERTEAU. I think we at least need to recognize two things. And I have actually been encouraged, because both the former Under Secretary for Acquisition, Technology, and Logistics, Dr. Ash Carter, and the current Acting Under Secretary, Mr. Frank Kendall, have stated publicly the need to recognize that we are not trying to drive corporate profits to zero, that we, in fact, need to recognize their legitimate need to be able to make money in order to stay in business.

I think you reflected on the Defense Science Board study that Dr. Gansler led on the Defense Industrial Structures for the 21st Century. I happen to be a member of that task force, and I believe we had a witness who testified before us, off the record, of course, who mentioned the difficulty of driving costs down for a Government contract. You can correct me if I am wrong, but I think his quote was something to the effect of, "it is hard for me to explain cost, so it is easier for me to actually award a billion-dollar contract with 5-percent profit than a half-billion-dollar contract with a 30 percent profit, because nobody knows whether a billion dollars or a half billion is the right cost, but everybody knows that 30 percent is excess profit."

Now, this is similar to if I went to buy a car, and I said to the dealer, I am happy to pay you twice the amount for this car as long as I know you are not making any money off of it. That just doesn't make sense from a public policy point of view.

Mr. SHUSTER. Right. And, Dr. Gansler, if you want to expand upon—well, let me back up a second and let me ask you both this question. And you have been at this a long time, and we have got this study from the 1950s at the RAND Corporation, and I think there is one from the 1970s and the 1980s and 2000. What is the key element over in the Department of Defense, or is it here in Congress, that has caused this to not be able to be fixed over the years?

Dr. GANSLER. I think it is the emphasis on cost instead of price.

Mr. SHUSTER. Value.

Dr. GANSLER. Value that you are getting. Lately there has been even more of an emphasis in terms of a technically acceptable low bid. That is just totally inconsistent with high-quality technology and high-quality services. Instead this is a race to the bottom, how cheap can we buy things, instead of how you and I buy when we buy things, we worry about performance, and we worry about price. The focus today is much more on simply low cost and trying to figure out how to drive down the cost as contrasted to get higher performance at lower cost.

We have got to focus on the results, not the process. In fact, recently there have been a number of people in the industry talking to me about the fact that the Government is focusing more on compliance than they are on results.

Mr. SHUSTER. And we have heard that over and over again. We must treat our contractors like they are criminals. Before we find out anything wrong, we assume they are doing something bad. Do you have the same view?

Mr. BERTEAU. Yes, sir. I would like to add one thing to it. I think it really is critical to focus on results. If you, for instance, are hiring a plumber to come fix a plumbing problem in your house, you don't actually put out an ad that says, please send me the cheapest plumber possible. And, if you found a plumber who actually works you tend to go back to that person because you know you are going to get value added. But it is because you know how to define the outcome that you are looking for at the front end.

I think we not only have to have that focus on the outcome, but that outcome has to be defined in the requirements, not just written into the contract. A lot of these problems stem from insufficient

attention—particularly in services contracts—insufficient attention at the front end to what it is we want to achieve here as opposed to just how many hours of time we want to buy from staff.

Mr. SHUSTER. Dr. Gansler, you used the word “capabilities.” What the end product is going to be capable of has to be clearly stated in the contract.

Dr. GANSLER. And that includes services, not just products. As pointed out, since last year 57 percent of what we bought were actually services, more than half of it. All of our rules, regulations, training, policies, et cetera, are all based upon buying goods. Buying an engineer is different than buying a tank. You don’t put them through a R&D phase and a test and evaluation phase, but you do want to count on prior performance and demonstrated experience. You wouldn’t get your heart surgeon on the basis of somebody with a degree and lowest hourly rate. You would check and see whether they have ever done a heart operation before and how well they did it, what the results were.

But we are shifting the other way, and that is partly because of the budget driving the sensitivity to cost, but it is wrong in terms of let us get high performance at lower cost. That really makes a lot of sense, and that is the way the commercial world operates.

Mr. SHUSTER. Before I yield to the ranking member, if, Mr. Berteau, you would share the headline you had, you shared with me.

Mr. BERTEAU. Mr. Chairman, I believe I put it back in my briefcase, but it is a headline from a three-star general in the Army Training and Doctrine Command, and his guidance on acquisition was “Don’t do anything stupid.”

Mr. SHUSTER. That is the headline.

Mr. BERTEAU. It is a pretty good guidance, I think; a starting point for acquisition and contracting.

Mr. WEST. I was in the Army for 23 years. It is good guidance.

Mr. BERTEAU. It is good guidance. It is sometimes hard to follow, but it is good to repeat it over and over again.

Mr. SHUSTER. With that, I yield to the ranking member.

Mr. LARSEN. Thank you.

With all these analogies about jobs, I want to point out something. If I need a heart surgeon, I probably need a heart surgeon once, right? I am not going to put him on—her on contract for my life, literally for my life once, but for the life of my life. I only need that person once.

A plumber on the other hand, yeah, if the plumber does a good job, I may go back to her several times. But the question is at what point, then, do I decide I need to go out and look around a little bit more; I mean, not to get used to this plumber too much, because maybe things are changing out there, and maybe I can get better service from someone else, and I can throw some competition into this.

That is the challenge that we are facing. Even though the dollars are being squeezed, what I hear you saying is that is going to benefit the larger contractors who already know the system, are in the system, and it is going to be a tougher time getting in some of the smaller and midsize companies that we are hearing from into the

opportunities that exist with contracting, whether they are goods or services for the DOD. Can you talk a little bit about that?

Mr. BERTEAU. Mr. Larsen, I think you are absolutely right. I mean, the thing that keeps that plumber performing is, in fact, both the threat and the reality that there is competition out there, and that there is competent competition that is cost-competitive and performance-competitive. Even in companies, commercial companies, that have long-term relationships with their suppliers, which is kind of what you would think the Government would want to get to, there is always that potential that we can pull the contract from you, we can find another supplier, we can qualify that other supplier, and we can competitively bid with that. And that threat has to always be out there, and I think it is incumbent on the Government to have it in place.

Dr. GANSLER. I would argue somewhat in the sense that there is a new suggested policy that says every 3 years we should re-compete, period. I would argue just the opposite, that we should re-compete, as you suggest, when the contractor doesn't get higher performance at a lower cost in that 3-year period. If they do, they deserve to be rewarded with a follow-on. If they continue to get higher performance at a lower cost over and over and over, that is wonderful, that is exactly what we want.

The threat of competition is a very good threat. The forced competition is actually a disincentive to do better and better. And we have to be very careful about doing competition smartly, not just for the sake of competition. A scorecard isn't the right answer. We want to reward people for good performance, and that means higher performance at lower cost. And we should reward them for doing that. We have to understand that incentivizes for industry is what should drive this whole operation.

Mr. LARSEN. How do we ensure that the incentives for industry drive the operation and that we are allowing new actors the opportunity, new players the opportunity to participate in that competition?

Dr. GANSLER. Well, one of the easiest ways, one of the most effective ways that we have had for many years now is the Small Business Innovation Research program. That forces you to go to the small companies, which is great, and that has demonstrated very effective use of those dollars. And that I would encourage to be continued, even at the expense of the fact that the budget shrinking, because that is one way—I have talked to lots of small business firms that have been very successful and grown to be big firms as a result of starting out with the SBIR [Small Business Innovation Research] program. So there are techniques we have for the small business.

Another thing I would argue is that the small business mostly fits into the lower tiers, and so requiring it as a prime contract only on the scorecard, I think, disadvantages the small businesses in many ways. I think that is a shift that could be taken as well.

Mr. LARSEN. Does DOD manage the industrial base in a coherent way, or is it service by service, agency by agency, day by day?

Mr. BERTEAU. As we have been out and looked at a number of specific programs, that is weapon systems or categories of programs, shifts, satellites, et cetera, what we have found is that an

awful lot of the industrial base, the management or even awareness—because the first element of management is actually having data that knows what is going on. The first level is left up to the prime contractors to know who their subcontractors are and what their subcontractors' vulnerabilities are. Most prime contractors have pretty good insight into the ones that are part of their contract, but not necessarily the broader industrial base.

Then at the program level, at the program manager level, for the satellites or the ships, there is less awareness, but a broader awareness inside the Defense Department.

But when you get to the enterprise level across all of DOD—that is where it falls short. There is very little integrated data, and there is no process for incorporating that data in real time in actual decisions so that when you are making a cut decision, for instance, you know what industries are going to be impacted by it.

In part, Mr. Lambert, as he testified before this panel, is expecting that his sector-by-sector, tier-by-tier analysis will provide some of that information. There are two problems with it, though. One is it won't be comprehensive because it is not every sector across the board. They selected seven. The second is it won't be timely. It will essentially be 2 years out of date by the time they have got it all rolled up. And so it won't be particularly useful, because the decisions that we are making are not backwards decisions, they are forward decisions for fiscal year 2013 and 2014. So there is a lag there that they need to address.

Dr. GANSLER. I would suggest the one thing that has been misinterpreted, not by you, but often even by the press, and that is the concept of managing the industrial base. This is not picking winners and losers. It is not picking company A instead of company B or company C. What it is trying to say is what kind of a structure do we want for that industry? We want it to be competitive, we want it to be innovative, and we want it to be profitable. I mean, that is almost a dirty word for a lot of people in the Government sometimes, and that is wrong because that gives them the money to reinvest in research and in capital investment.

So I think having the structure and looking at do we have enough—enough being at least two or three firms in any given sector—for competition? I mean, the jet engine business has two, but that is enough for serious, good competition, as the great engine war showed.

And so we don't have to pick winners and losers in managing the industry. What we do have to do is worry about the structure of the industry. It is profitability, it is innovation, it is competitiveness. That is where I would focus. And make sure people understand when you say "manage the industry" what we are talking about.

Mr. LARSEN. Mr. Chairman, I will save for a second round. Thank you. I yield back.

Mr. SHUSTER. Mr. Runyan.

Mr. RUNYAN. Thank you, Mr. Chairman.

Gentlemen, thank you for being here.

Dr. Gansler, how does our U.S. industrial defense industry policy compare to our international powers around the world? Obviously

you probably think we are a little behind the ball, as your testimony says, but how does it look?

Dr. GANSLER. Well, I think one of the major and most important aspects of our industrial policy is that our speeches say we want to have the commercial world, dual use, and we have barriers to doing that. By contrast, in terms of around the world, for many years now the Japanese have had an explicit statement of dual use. I go through Japanese aircraft plants, and I see the same machine tools being used on commercial and military. The Russians have a policy now of dual use, and they can implement it. And recently, the Chinese have come out with a statement of the importance of dual-use industrial operations. This is not just taking a piece of commercial equipment, but it is having the factories integrated.

I might point out that, for example, Boeing used to build the commercial and military transports in the same plant, but as a result of cost accounting standards, they were forced to separate the commercial and military. In that case it was the allocation of independent research and development against the commercial. So it was penalizing the commercial even though they were achieving enormous overhead absorption for the military.

There are huge benefits of dual use; the idea that you get technology transfer, you get sensitivity to cost, you get higher volume for overhead absorption and all these benefits. But we have barriers to dual use today. And countries like China, Russia, Japan, others, who have an industrial policy that actually follows those speeches can actually implement that dual use.

We have recently even gone further, and now we are asking for proprietary data to recompute things after 3 years. Well, no commercial firm is going to give you their drawings. When you buy a car, you don't get the drawings in the glove compartment. Why would you want to do that sort of thing?

It is another barrier being introduced along with export controls. Most commercial firms want a world market; they don't want just the domestic market. A good example of that would be in the infrared business. We used to own the night. Because of our export controls, we no longer own the night now in the sense that the French are well ahead of us now in night vision devices because of our export controls.

We need to review our policies relative to buying commercial and having integrated dual-use plants in order to be able to achieve world-class competitiveness, because right now with the high-tech commercial, there is a big benefit to the DOD of being able to integrate plants and to buy commercial technology in the information area and a lot of other areas.

Mr. RUNYAN. Now, does security policy and intellectual property play into that and the price of it also?

Dr. GANSLER. Absolutely. You have to be aware of the security sensitivity, and you have to be aware of the intellectual property sensitivity. I mean, one of the big issues right now is cyber security because of the fact that everybody now is into the information age. Clearly we have to start worrying about protecting not just DOD stuff, but commercial stuff; I mean, the power grid and things like that. So there has got to be a greater sensitivity to cyber security,

and we do want to make sure that everybody protects intellectual property and highly classified, sensitive stuff.

Mr. RUNYAN. But is it to a point where we are just talking about globalization of the workforce? Are we afraid that we don't know what that tipping point is where security might actually cost us more, and actually prosecution and follow-up of all that intellectual property being stolen, that that might be a hurdle?

Dr. GANSLER. See, I would argue just the opposite; that our barriers today to using foreign students, foreign scholars, foreign technology, and working with foreigners is actually a barrier to us.

In fact, let me give you some examples. Enrico Fermi was not a U.S. citizen when he built a nuclear bomb here in the United States. Most of the people who founded Silicon Valley were not U.S. citizens. We allow them, by the way, to be in the Army; 3 percent of the Army are non-U.S. citizens. But we don't allow them in defense plants. If I go now to a university where a significant majority of the graduate engineering and science students are non-U.S. citizens, I think we need to take advantage of that because we are a nation of immigrants.

And you can do security checks on their family and that sort of thing, but for us to say they must be U.S. citizens to be able to take advantage of their advanced technology and to work on research programs, I mean, Ronald Reagan, not an ultra-liberal, he put out a policy, NSDD-189, that said all fundamental research should be free and open and publishable, anybody can work on it, they don't have to be U.S. citizens. But now lots of times the DOD, DOE [Department of Energy], others put into their research contracts the requirement it must be done by U.S. citizens. That doesn't make sense to me when so large a share of the really outstanding science and engineering students, and graduate students particularly, are non-U.S.

Mr. RUNYAN. Thank you for that.

I also agree with incentive-based contracting. In my past life if you didn't perform, you were gone. It keeps a lot of people honest. It keeps you very focused and motivated.

I yield back.

Mr. SHUSTER. Ms. Sutton.

Ms. SUTTON. Thank you, Mr. Chairman.

I really appreciate the discussion about sort of value-driven decisionmaking. Earlier this week we did a seminar, which I helped sponsor, related to value-driven engineering, and we should apply this in many, many realms of Government.

So one of the questions I have, Dr. Gansler, it is intriguing to me that you talk about the potential cost savings by increasing the use of diplomacy and other soft forms of power. Could you expand on that a little bit more and try to quantify what potentially we could accomplish by doing that?

Dr. GANSLER. You know, an obvious example would be China helping us with North Korea, or Russia helping us with Afghanistan, or other issues that we have where we could collectively apply pressure. Similarly, if we were able to work more effectively with even our allies so that we would have joint programs with our, say, NATO [North Atlantic Treaty Organization] allies.

When you think about the fact that 100 nations have ballistic missiles, and we want to worry about missile defense based on the fact that in the future we will be in a coalition—you can't sort of say, well, there is a bunch of missiles coming in at us, and you pick up the phone and say, Hans, you take the first, and, Pierre, you take the second one; I will take the third one. It has to be integrated and automatic.

We can save a lot of money if we did it that way as well, because we would have joint development, which they would pay for part of it, like we did in the Joint Strike Fighter. Remember, a couple of countries put up \$1 billion each? So we can save money by the economies of scale, volume production, and by integrated systems. By assuming and exercising and practicing with our coalition allies, we will actually save a considerable amount of money and be much more effective as a force, which goes to the total value point. It is not just for saving money, it is for force effectiveness.

Ms. SUTTON. Are there papers out there? Is there someplace where I can find more information about the quantification of that so that we can see the value of these alliances? Is there someplace where it is actually quantified?

Mr. BERTEAU. We have done a couple of pretty thorough literature searches on the issue, particularly of economic development, and I don't know that we have found a good set of answers there, but I will be glad to take that question and go back and look.

If I could add one more thing to what Dr. Gansler said. There needs to be a recognition of that potential value of contribution from allies, et cetera, at the requirements phase, and what that sometimes means is that the military has got to give up a little bit of what they want in order to get the contribution from those who can add value to it. So the trade-off is we might not get 100 percent of what we want, we may only get 95 percent, but we end up saving 10 percent of the cost, and so the trade-off is one that is cost effective. I can't quantify that, though, but you can find places where it did not happen.

Dr. GANSLER. I might point out that every U.S. weapon system today has foreign parts in them, and they are there because they are better, not because they are cheaper.

Ms. SUTTON. Let me ask you this: How can DOD and industry best anticipate our future threats; how should we be doing that? What are we preparing for, and how do we figure out what to prepare for?

Dr. GANSLER. I would argue that one of the biggest characteristics of future threats is uncertainty, and therefore what we need is responsiveness, and we don't have that today. We have no ability to respond rapidly to changes in threats. You may remember in the first Persian Gulf when we needed to get more Patriot missiles. The line was available, lots of excess capacity in the line, but they didn't have parts because they hadn't prepared for the need for surge in that case.

The ability to shift from one type of scenario to another type rapidly, the ability to work with our coalition allies rapidly certainly is required. I think it is the uncertainty that—the spectrum is too large. I mean, we wouldn't have thought about pirates a few years ago that we are going to worry about and on up to nuclear war.

When you think about that full spectrum, it is impossible to be able to individually prepare for every one of those because of affordability. We don't have enough money to do that. So we have to be able to shift from one to the other, and that means flexibility, and it means practicing shifting rapidly.

Ms. SUTTON. Would you say that the capacity to manufacture is also an important element that we need to maintain?

Dr. GANSLER. Manufacture and redesign. It is not just building the same thing. Whenever a new threat shows up—look at what happened with the roadside bombs. We hadn't expected that, so we weren't prepared. We hadn't designed our systems for it. It took a couple of years to just even recognize it was a new requirement going to the requirement side. And then finally, we get into the budget cycle, and that takes 3 years, and then finally you get the design process through, and then finally you go into production. That is not a fast response.

Ms. SUTTON. Thank you.

Mr. SHUSTER. We will probably have an opportunity for another round.

Mr. West.

Mr. WEST. Thank you, Mr. Chairman and Mr. Ranking Member. Gentlemen, thank you for being here today.

And as I have said, I was told don't do anything stupid quite a few times in my military career.

Vice Chief of Staff of the Army General Chiarelli implemented a portfolio review process as far as their acquisition of new weapons systems. Have you all had an opportunity to sit down and talk to him or review that process that he has, and did you find that that was something being used in any other of our Services?

Mr. BERTEAU. We had some talks with them as they laid out how they were going to approach it. I have not seen the results of that analysis yet. But one thing that I think is worth noting is they recognize, when you look at portfolios, you have to have a way of measuring capability across more than one weapon system. You can measure that capability pretty well; the hard part is determining how much is enough. How do you validate the boundary, if you will, of sufficiency? It is very hard to validate that except against something that sort of looks like a threat.

So you can't just have capability in the abstract, it has got to be capability in a portfolio against some measure of requirement.

Dr. GANSLER. I would also argue that what that is is a capability, not a platform, and there is a big difference there. Some people tend to think of it as, well, do I have to upgrade my tank, or do I have to upgrade my airplane as contrasted to what I really need for the potential threats in the 21st century, which are very different things.

The type of equipment that we are going to need in the asymmetric world of the future, you know, capability against cyberwarfare; capability against war among the people; the different intelligence capability; the benefits of unmanned systems, air, land and sea systems, and so forth, these are very different than sort of the linear projections from the past. We have to think about it in that form as well.

Mr. WEST. You bring up a great point because the Army that I was commissioned into in 1982 and the threats that we saw then were totally different than the threats that I saw in 2005, when I went to Afghanistan. So that leads me to what I think is a major thing that we need to look at.

When you read our National Security Strategy, when you read our National Military Strategy, I do not think that it really provides the ability or the focus to the defense industrial base to understand this new 21st-century battlefield, these new threats, and, therefore, the new type of weapon systems and tools that are needed on the battlefield. Do you all concur or disagree?

Dr. GANSLER. I tend to agree. We do have an institution that has a lot of institutional inertia, and it doesn't necessarily think about what might be different. And that is understandable. I mean, disruptive technologies have a lot of resistance to them.

I will give you an example. When I was Under Secretary, 2 years in a row the Air Force zeroed the unmanned airplane, the Global Hawk. I had to force them to buy an unmanned airplane, but that is why it was resistant. I mean, it was really countercultural, and that is what disruption is. It is very difficult to ask a user for something new. They will tend to think is that is something better than what they now have? But these new environments coming from the research push of new technologies, disruptive technologies, are where we have to be thinking, and new kinds of warfare, you know, new threats that people are presenting.

It is hard to have an institution that is geared around certain structure to shift to a new one. We need to emphasize that. I mean, if you recognize why DARPA [Defense Advanced Research Projects Agency] was established, it was because the Russians put up a satellite, and none of the Services have been worrying about satellites. So we created an organization that would look at things that weren't being done by the Services. And that is what we have to start thinking towards and maybe figuring out ways to have a DARPA in each Service or something.

Mr. BERTEAU. Congressman West, I would add you are right to focus on those documents, the National Security Strategy, National Defense Strategy, National Military Strategy, the report of the 2010 QDR [Quadrennial Defense Review]. There is a lot of good in there, but it doesn't have the precision to allow you to prioritize and make trade-offs, particularly as the budget is coming down.

Congresswoman Sutton asked about the information for industry that would come out of those. It is not in there. If you look back, last summer the Defense Department submitted to this Congress a report on China military capability out to 2030 and beyond. We have more precision in what we say China is going to have in 2030 than we have about what we are going to have in 2030. That is not quite balanced.

Mr. WEST. Thank you very much, gentlemen.

I yield back.

Mr. SHUSTER. Thank you.

That satellite question is once again a failure of the Intelligence Community to be able to predict accurately what occurred over and over again from the last 60 years. They haven't been quite right on predicting what the future holds.

Dr. GANSLER. There was a lot of resistance in the Intelligence Community to the establishment of IARPA [Intelligence Advanced Research Projects Activity] for the same reason.

Mr. SHUSTER. Right. Well, that was an earmark by—my understanding—Congressman Hunter and Congressman Lewis forced the Air Force and forced the military to go develop and buy those [Unmanned Aerial Vehicles]. So thank goodness for that, and thank goodness for earmarks.

Ms. Hanabusa.

Ms. HANABUSA. Thank you. Thank you, Mr. Chairman.

I think General Dempsey said when he appeared before us that the only thing we know is that we have been 100 percent correct in not being able to predict anything.

On that note, Dr. Gansler, I started to read your book, *Democracy's Arsenal*, and one of the things that struck me was why the choice in the title of "Democracy's Arsenal" versus "America's Arsenal for the 21st Century", or something along those lines? In your testimony just recently about the concept of the joint development and the fact that our allies—or we would have to begin to look at development in terms of coalitions working together, was that part of your thoughts in talking about the arsenal of the future just being democracy's arsenal; that we would be required to pull together our allies as opposed to just being United States-centric in our views?

Dr. GANSLER. That is a very good point. In fact, as you know, in the book I try to emphasize the importance of global. I was just doing a play on words about Eisenhower's statement about the reference to the arsenal of democracy, which was the industrial base.

But the emphasis actually, if you want to use the title, is the subtitle, *Creating a Twenty-First-Century Defense Industry*, not simply preserving a 20th century industry. That is the important difference that we are talking about here. And I think that emphasis of shifting to the 21st century is the focus. Part of that does have to do with the commercial world and the global world, and to the extent we can shift to recognizing the global benefits, democracy or not, that is really the focus of what I was trying to get at.

Ms. HANABUSA. One of the portions of your book that I was intrigued by, and this is something that we have been looking at, is that we do not have or we are losing that industrial base, that industrial base that, like you said, General Eisenhower said, made the difference in winning the war. Yet we know that China, for example, is building ships a lot quicker and potentially better than we are because we are losing that knowledge in this process, but at the same time China is the rising threat in the Pacific.

So how do you see us getting to a point of a global situation of joint development, or is it one basically that we have to focus on with our allies and relaxing things like ITAR [International Traffic in Arms Regulations], for example, and being able to do that kind of joint development and dual use and everything in a more efficient way?

Dr. GANSLER. Well, that was partly the question that Ms. Sutton raised relative to soft power, to the extent that I think we should try to stop treating China as a threat and treat them as a partner in achieving peace and stability in the world. And to the extent we

do that, we will be far better off in getting that help, if you will, with, say, North Korea or other places where they could be of assistance to us. In terms of dealing with our allies, stop thinking as much about building walls around America, but thinking in terms of what is the most effective solution for the world.

To the extent that I think ITAR and other barriers that we have can be addressed, we need to really focus on that. And in many ways that is that soft power issue, working with our allies instead of trying to each separately compete.

Ms. HANABUSA. Mr. Berteau, I think on October 24th, one of your colleagues, Mr. Chao from CSIS, appeared before us, and in that testimony I was asking him the question about, you know, we don't know what the future is. Even to 2020, we don't have any idea what that military is going to look like. How can we then start to plan, because we are talking about the budgets every time that are before us? One of the coined phrases that I came up with after that was that we are setting policy by acquisition. In other words, we are making acquisition decisions now, and that are going to affect us 15, 20 years from now, and that seems to be the policy of our vision of the military in the future.

Do you agree with that?

Mr. BERTEAU. That is absolutely a clear view of what goes on. I happened to be with Secretary Cheney after the launch of Operation Desert Storm in 1991 to move Saddam Hussein and the Iraqi Army out of Kuwait. He placed two phone calls after the initiation of those activities. One was to former Secretary of Defense Cap Weinberger, the other was to former Secretary of Defense Harold Brown, so both a Republican and a Democrat. And what he said was the capability we are use using today is thanks to the decisions you made 10 and 15 years ago. And I think that same thing is true for today.

The hard part is not recognizing that looking backwards. The hard part is recognizing going forwards what the 15-year implications of the decisions we are making today. And inside the Department of Defense, the past is far more powerful than the future, and it is always trying to kill the future.

Congressman West commented about the very different Army of today than in 1982. That Army of today is shaped by the people whose mentality was created 15 and 20 years ago, and the past is resonant in them. I think it is incumbent upon you all to be thinking through the filter of what is going to be important 15 or 20 years from now; how do we work backwards from that and use that as a way of shaping today's decisions.

Ms. HANABUSA. Thank you very much.

Thank you, Mr. Chair.

Mr. SHUSTER. Mr. Schilling is recognized.

Mr. SCHILLING. Thank you, Chairman, and thank you, gentleman, for showing up. We are getting a lot of good things out of this today.

What I would like to just ask, I just really got three or four questions if I have time for them. So how do you define industrial preparedness, and then how can Congress help promote it?

Dr. GANSLER. Well, the point that came up much earlier, which is preparing to be able to do something that was unexpected as

contrasted to something that was really expected, is the difference that I think we lack today. This is the difficulty of predicting the future. I guess Yogi Berra's is the most popular statement about that one: "Forecasting is so difficult, especially about the future."

It does seem that we need the flexibility and responsiveness, and we lack that. Even in the budget process, you know, there is no money set aside. The only reason we were able to do some responsiveness in the last decade has been because of the supplementals. That is sort of a slush fund. If we didn't have that, we would not be able to rapidly respond to changes that are required.

So we need to think about how one could do something rapidly, including getting the money for it, and also to be prepared in terms of the procurement practices and the policies. In some cases it requires us just taking action rather than going through the formal process that we do, which tends to take 3 to 5 years before you get the procurement and the budget and everything else all lined up to do something that requires a fast response.

That is the preparedness area that I think we have to spend most of our attention on and which we don't have today. The process is not responsive today.

Mr. SCHILLING. That is a very good point. Who knows what is coming at us, and if we can respond quickly enough.

I would like to ask you, sir, do you believe that the future of defense, the industrial base basically, would be stronger if it is allowed to partner more freely with the military organic base?

Dr. GANSLER. I would argue that the word "partnering" is a subset of competition. If you think of it as a sole-source partnering, I would say we will not be more efficient. If you think of it as a form of the competition—I think back to one competition where we ran—the DOD ran a competition for maintenance, and it was won by a public sector, actually Warner Robins in that case, but they gave 60 percent of it to the private sector in order to win. That makes sense. I mean, there are some very competent, qualified and capital-provided-for public-sector operations.

When we compete public against private, what we find is that on average, no matter who wins, the savings are over 30 percent, and the performance goes up, but Congress has passed laws against doing that. You don't allow that anymore, the A-76 competitions. Now, my view would be you should allow the A-76 competitions and allow partnering on those so when the public sector bids, they can have a private-sector subcontractor or vice versa. Take full advantages of the capabilities in both the public and private, but do it in a competitive environment, not a sole-source environment. That is the difference. You have eliminated that competition.

I find it hard to believe that when you can show the data overwhelmingly favor the idea of competition in the public-private sector—and I should emphasize only for non-inherently governmental functions. The Government obviously should be doing governmental functions. But a lot of things, like wrench turning; read the Constitution, it doesn't mention wrench turning in the Constitution as an inherently governmental function. Therefore, that should be allowed to be competitive. And to the extent that it is competitive, the public sector will often win some of those, and they will win

them often in a partnership. That is fine. I have no problem with that at all.

But on the other hand, the inverse of it is mandating that it be done in the public sector. That is sole source. That is monopoly. That doesn't usually get low cost and high performance.

Mr. SCHILLING. Very good.

Mr. BERTEAU. Could I add two short things to that and then let you get the rest of your questions? One is I think we have a definition of core requirements, true in the maintenance business, implied in engineering and R&D as well. I think it is actually a very good time to revisit that question, because I think the view of "core" is again a view of the past from a mobilized conventional war perspective, and I think there is a 21st-century way of thinking about what core capability do we need to have inside the Department of Defense. I would urge that the panel and the committee take a look at that question.

The second is investment in future capability. Partnering is fine, but I don't think it makes sense for the Government to facilitate capability that is already present and resident in the supplier base where you have a global supply chain already in place. So that is an area where you could save money and focus your investment on the places where that core is really needed, and I think it is a good time to take another look at that.

Mr. SCHILLING. Very good. Thank you, gentlemen.

Mr. SHUSTER. If you have any further questions, we are going to do a second round, and we will start with you, if you want to finish up, if you have another question.

That last question, can you give us a concrete example on that last question about what you are talking about?

Mr. BERTEAU. Probably my best concrete example would be the new K-46 Air Force tanker, which is based upon a commercial derivative airframe that has a global supply chain already in place. This would have been true, by the way, regardless of who won that competition. Both competitors had an existing commercial airframe with a global supply chain in place.

I don't think it makes sense to spend, say, \$4 billion facilitating depots to do commercial airframe repair work. The Air Force ought to focus on the military-unique capabilities that it ought to have the capability to perform in house. That is one where I think it would merit a hard look.

Mr. SHUSTER. Thank you.

Mr. SCHILLING. Actually, they answered my last question already.

Mr. SHUSTER. Sorry about that. Thank you.

With that, we will go to a second round. If we want to start with Mr. Runyan, I will finish up last. Do you have any further questions?

Mr. RUNYAN. Just kind of to make a point, we have been sitting here talking about whether it is core capability force strength versus our ability to respond to what is happening today. What is more important? I know there is a value to both of them, but, I mean, moving forward?

Mr. BERTEAU. This is kind of the historical dilemma of national security. I think that, in general, the military has tended to want

to pay more attention to protecting their long-term investments, again based upon their current view of what those long-term investments ought to be.

It was instructive to watch the dilemma that Secretary Gates had when he came into the Department of Defense and recognize he is the first Secretary we have ever had who spanned two Presidents and two parties. It took him 2 years to get the military to focus on actually winning the wars that we are fighting today.

He had to personally intervene to get MRAP [Mine Resistant Ambush Protected] vehicle procurement on the table. He had to personally intervene to increase the Air Force's development and deployment and use of unmanned aerial vehicles across the board. It took the personal, strong, repeated intervention of the Secretary using his full title and authority to make that happen. So the inertia of the institution mitigates against it.

That said, their vision of what that future is, that they are trying to protect the investment in, is so muddled and so unclear, and General Dempsey is absolutely right, it is unblemished by predicted success here.

So there needs to be a third way, and that third way needs to say we need a clear articulation of what the future is we are aiming at, but it needs to be flexible enough that we are okay standing up tomorrow and saying, okay, we are smarter now than we were yesterday, so we are going to make a little bit of an adjustment. That is not present in the institution at all. It is kind of a lousy answer to your question, but it is the only way I can see to go forward.

Mr. RUNYAN. I think also what we have raised here and also in past hearings we have had, when you have that intervention, the process of whether it is a contract or anything to execute that and get it out there is one of the major obstacles, because even if the response is there to execute it, it may have changed by the time you get it to the field.

Dr. GANSLER. You also need to worry, it seems to me, about the exercises that you run. One way of trying to be prepared for unexpected things is to put them into the exercise. The problem, of course, is that that messes up the exercise. When they would want to prepare for Navy operations, the mines might mess it up. Or if you want to prepare for an Air Force operation, electronic warfare might mess it up, or cyberwar attacks and so forth.

What we need to do is be creative in the exercises in order to see how we would respond to command and control decisions and to other use of current equipment in unexpected new ways. There are two different approaches here for solving the unexpected, one of which is to get some new equipment for that unexpected area or some new service. But the fastest way is using the current stuff in a new way, and we ought to introduce that into the exercises, I think.

Mr. RUNYAN. Thank you both.

Chairman, I yield back.

Mr. SHUSTER. I do mention the MRAP and up-armored "Humvees" [HMMWV, High Mobility Multipurpose Wheeled Vehicles]. It was a big surprise to the military, but talking to the Special Forces community in Somalia, they learned the lesson. They

had an up-armored [Humvee] from some country, South Africa or somewhere, that they utilized, and when they came back, one of the lessons learned was if we are going to go in an urban environment, we need an up-armored vehicle. That fell on deaf ears until we started seeing people being killed.

Dr. GANSLER. That is a good example of the multinational design. The underneath part of that is a South African design, the shock absorbers are a German design, the armor is an Israeli design, and some of the electronics are Asian. We take full advantage of that, including having the Secretary of Defense as the program manager to get it fast.

Mr. SHUSTER. Right.

Ms. Hanabusa.

Ms. HANABUSA. Thank you, Mr. Chairman.

In that same meeting that General Dempsey said what he said, Leon Panetta also said how that we prepare for the future is we've just got to be damn flexible. The problem is what are you being flexible for?

I represent Hawaii, and I met with one general there, and I said, here is the Pacific, the theater of the century. What is the threat going to look like? And he proceeded to say, well, counterinsurgency here, counterterrorism here, maybe follow-up force here. And I said, you are naming everything that we have had from the past to now. But, I said, the fortunate part is that people like—I will speak for myself—people like me, who don't understand necessarily all the nuances, are the ones that are going to make the decisions on what gets funded.

So the reality is we have to be flexible, we have been terrible in predicting, we are setting policy by acquisition, and we should work for a democracy's arsenal that should be a joint development.

But the real issue is kind of like, okay, let's put that all together, and how do we do that? I think we need to understand what people foresee as the future. Unless we know what the future is, and no one knows, I understand that, what is the best guess that you have as to what we need to look like or what we need to prepare for? Because, as you said earlier, it is the budget that is going to determine that, or the lack of the flexibility within the budget that is going to cause our potential—not necessarily our demise, but at least set us back for 5, 6, 7 years.

So does anyone want to take a stab at that? So when I cast my vote I can think, oh, Dr. Gansler said this, or Mr. Berteau said that, and maybe I will go with that.

Dr. GANSLER. The one thing you didn't list in your list of characteristics you would like to have is low cost. In order to have the flexibility that you need, it has to be affordable also. And especially with the budgets shrinking, affordability becomes a very important characteristic.

One thing we don't do in our requirements process most of the time is to have cost as part of the requirement. Now, that is a military requirement, because quantity is determined by unit cost, and if we can get the flexibility that comes from having distributed sensors, distributed shooters, netcentric operations with low cost nodes in that system, we can actually afford to have the flexibility to handle all these unexpected things.

Well, the way to do that would be to make cost part of the requirement. We have done that, at least in one or two programs, successfully, like JDAM [Joint Direct Attack Munition]. I have a handwritten note from the Secretary of the Air Force—Chief of Staff of the Air Force, I am sorry—saying he has only three requirements for that precision guided missile; that it should hit the target, it should work, and it should cost under \$40,000 each. Today it hits the target, it works, and costs \$16,000 each. Now we can afford to get enough of them, and if we need more of them, to buy them, we can afford to do that.

But in other programs we have lost that flexibility. I mean, the Joint Strike Fighter was going to be a \$35 million airplane. We kept that in the name, it is now the F-35, but it now costs over \$100 million. We have lost the emphasis, and that is understandable. In the last 10 years we have been living in a rich man's world. Cost wasn't important. Now cost has to be the driver, and affordability for all of those constraints that you placed on it I think are right. That is just one more item, but it is going to be a critical one.

Ms. HANABUSA. But some of that will be taken care of if you have economies of scale to offset it, because what we tend to do is hold it close to our vest, and therefore we can't kind of sell it on the open market.

Mr. Berteau.

Mr. BERTEAU. I would like to expand on that, and that is that the part of cost that is most ignored is lifecycle cost, the total cost of the program. The Defense Department resists putting a number on this and giving that number to you because they say it is uncertain. Well, it is all uncertain. Give me your best guess, give me a range, give me the probabilities associated with that range. That is a tool that you can use on every vote on every issue and for each program.

It is even true for services contracts as well as for hardware. Force them to do that, because the Defense Department has an infinite negative value of money. A dollar today will not be spent to save \$100 down the road, because that dollar today is worth more than that \$100 down the road. The only way that you can offset that is from the Congress.

Ms. HANABUSA. Thank you. Thank you very much.

Dr. GANSLER. That is actually a design characteristic, the lifecycle cost. So Dave is right. Build it in by designing it to be maintainable, for example.

Ms. HANABUSA. I know Ms. Sutton will probably talk to you about corrosion, which, broadly defined, is anything unintended that deteriorates. But thank you very much.

Mr. SHUSTER. Thank you.

Ms. Sutton.

Ms. SUTTON. Well, I did just say to him that is what corrosion mitigation and prevention is all about.

Ms. HANABUSA. I didn't hear you, but I knew you were going to say it.

Ms. SUTTON. But it is, and it is a good example of how we can enhance value for the taxpayers. We are losing \$400 billion a year

in our economy to the cost of corrosion, some 32- or 36-, I can't remember—billion—

Ms. HANABUSA. Twenty-two billion.

Ms. SUTTON. Twenty-two. See, I have got these guys on message. I am so glad. And, of course, we are doing work to try and build in prevention and mitigation up front, which just makes sense. So it is a commonsense thing.

Okay. So we had a discussion about the value of working together with allies in many capacities. Now, I come from Ohio, a place with an extraordinarily strong manufacturing base, built in no small part through defense work. You know, I am the daughter of a boilermaker who worked in a factory that made boilers for our—you can guess who that is. So there is nothing more important to me.

Obviously our defense is important, but also jobs are really important. So let's talk about the other side of that coin and the interest that we have in, as we develop our industrial base policy, the commitment we should have to jobs and putting our people to work, because I know it is a bit complicated and a trade-off.

So could you both comment on that?

Dr. GANSLER. Well, one of the things that I think is really important is to recognize that technology, industry and labor are now globalized, and that means that foreign investment in the U.S. creates jobs and creates exports, in fact, in many cases greater than U.S.-owned but foreign-located here in the U.S.

For example, the sixth largest defense company domestically located is BAE. The headquarters happens to be in London, but the workers are in the U.S. And they do an enormous amount of export as well, and that creates jobs. So the equity coming in and the exports going out from these foreign-owned companies is a benefit to the U.S. in terms of jobs and taxes.

Ms. SUTTON. I know that it can work that way, but it doesn't always work that way. Again, here is the problem of the complexity of these policies.

Would you like to comment, Mr. Berteau?

Mr. BERTEAU. There is a lot that we suspect, but don't know here. We are pretty sure that there is probably some contribution made by defense manufacturing to sustain or enhance the competitiveness of the U.S. manufacturing in the global economy, but we don't have very good places where we know how to spend our dollars so it sustains that. Let me give you two examples.

In the shipbuilding business we have evolved now to where U.S. shipbuilders fall into one of three categories basically. They are either building warships for the U.S., and we still build by far the best warships on the planet. They are also the most expensive. I am not quite sure where the trade-off is there.

The second is Jones Act trade, where we are required to have U.S. hulls in order to do intercity transfer.

And the third is where we are actually globally competitive, and that tends to be in businesses like oil services, small vessels, small high-speed vessels, et cetera, where we actually have a globally competitive manufacturing base that is as good or better than anybody else and is cheaper and competitive.

There is no relationship between where the Navy has spent its money on those major warships and where those small high-speed vessels and oil services businesses are globally competitive. That is not by design that there is no relationship; it has just evolved that way. There are opportunities to see where that can happen.

Now, let me give you the other example. The other example, commercial communications satellites, right? The U.S. Defense Department is absolutely dependent on commercial communications satellites for all of its communications. Ninety-five percent of bandwidth downloads in Afghanistan are over a commercial market floating overhead. It just happens to be the capacity there. We need to pick our next war spot carefully and make sure there are enough satellites over it.

But we have no responsibility for making sure those satellites are up there. We assume they are there because there is a global commercial market that provides it. One of those satellite operators said to me, woe unto you, DOD, if Princess Diana and Michael Jackson happened on the same weekend, because you don't have enough money to buy time anymore.

Ms. SUTTON. Thank you.

Mr. SHUSTER. Mr. Larsen, do you have further questions?

Mr. LARSEN. Dr. Gansler, how should the Department weigh efficiencies achieved through contract consolidation against the potential that such consolidation can eliminate small business opportunities?

Dr. GANSLER. Let's see, there are two things in that question. One relates to small business alone, and the other relates to competition per se.

One of the things that I think—the second half of that is easiest, is why don't we compete things when we know the benefits of competition; for example, on the second engine for the Joint Strike Fighter. Hopefully you have all read *The Great Engine War* [*The Air Force and the Great Engine War*], and you are familiar with the fact that by having the two engine suppliers in the U.S. both build them—

Mr. LARSEN. It wasn't enough that we lived it, that we had to read it, too?

Dr. GANSLER. The reality is you want to make sure you got the benefits of it, you know, the fact that both of them got higher performance at lower cost and higher reliability as that program went along because they competed for share of the business. Now we have the largest program in history, and we are not doing it. It makes you wonder. It affects employment as well as it affects everything else. But most importantly, it affects how many we can buy with higher performance and higher reliability, so why wouldn't we do it.

Now to go to the second half of your question about the small business effects of competition. It seems to me that if you think about where the small business has its biggest impact on the large programs, it is at the lower tiers, and therefore, trying to encourage small business participation in the large programs is a big benefit for the small business, and it is a big benefit for the primes who can manage those small businesses.

Now, what we do find too often, unfortunately, is that the small business is just a front for the subcontractor activities, and that is asking them to manage the larger contracts below them. I don't think that is a necessary benefit to us.

So I think we do want to think more about the small business at the lower tiers as part of the contractual discussions and making that maybe part of the incentive for awards, but doing it carefully, not just as a scorecard basis again, but making sure we are getting small businesses that do a good job. So past performance for them counts just like past performance for the large ones.

Mr. LARSEN. Let me give you a specific example, not of this issue, but a specific example of a company that is in my district that came up at our roundtable we had in August.

This particular company does a service for one of the Services, and they were asked to basically develop the requirements, develop the how-to, the manual, just develop everything. And then in order to compete for the job, they had to hand over everything. Then the Service went and competed that job so that all the competitors for this particular small business, locally owned, had to compete for the work that they did for this particular Service, and the competitors got to see all the work and then compete for it as well.

Is there a way to protect that intellectual property in the contracting process?

Dr. GANSLER. Yes. Actually, one of the things that has been happening that really bothers me is the trend to not having the unsolicited proposal being awarded because it doesn't count as a competition. But when someone comes in with a really good idea, why wouldn't you fund it?

We used to do that, and it made a lot of sense, and the small businesses were usually the ones that came in with these good ideas. And they would just simply say, here is a great idea; would you just pay for the development of it? And then you can later have a competition for not the design, don't give out the drawings, but for the function. You can have functional competitions, and they make a lot of sense.

But I would encourage the idea that when a small business has a good idea, they get it funded on a sole-source basis. There is no risk to that. It is small money, and usually that is the way to get disruptive ideas in.

Mr. LARSEN. Mr. Berteau, any thoughts?

Mr. BERTEAU. I think there are three challenges that have to be tackled before you can fix the problem that that company faced there.

One is that the Defense Department just fundamentally doesn't have enough good data about particularly the second- and third-tier suppliers, and that is where those guys started from, if you will. They may have gotten up to that point—in part because the Government no longer pays for that information. And because the Government doesn't pay for it, and most of the contractors only operate on a cost-reimbursable basis, they don't collect that information either. So the data is just simply not there.

And that is in both directions; that is, small businesses that have large businesses as their subcontractors, and large businesses that have small businesses as their subcontractors. So you don't really

have a good picture of the true universe, and that makes it very hard to make any policy judgments or policy decisions.

The second is the difficulty that any individual procuring contracting officer has making a decision that recognizes the reality that you described there, a reality that says, this actually isn't fair. This doesn't make sense. They have got to have such an amount of justification and documentation that warrants a decision that looks like a violation of the rules, but really isn't, because the rules are written to permit that, to permit judgment.

This gets back to the question of the acquisition workforce, which I think was alluded to earlier both in statements from you all and in Dr. Gansler's testimony. We don't have the experience base in our defense acquisition workforce today. And if there is only one thing that this panel does, you have got to reinforce the need and the efforts to rebuild the capability of that workforce, because we rely on their judgments in making those contracting decisions. And you don't get that experience except through the passage of time, and you can't work 10 times as hard for 1 year and come out with 10 years' worth of experience, although we tried that.

And I don't think you have—in your case, I think if you peel back the layer, you will see that there is an inadequate amount of information, and so they err on the side of, well, let's just protect ourselves. There is an inadequate experience level in the workforce, so they err on the side of let's just follow the checklist. And there is an inadequate willingness on the part of the leadership to let them take them take a risk and say, you know what, we deserve to pursue it is the right way here. I don't think you have any of those present there, and you got to tackle all three of those.

Mr. LARSEN. Thank you.

Mr. SHUSTER. Let me follow up on that.

So we are lacking that. Why are we lacking it? There has been folks leaving that part of the defense, or we don't know?

Dr. GANSLER. You passed the law about the 25 percent reduction is one of the reasons—Congress did. This was Duncan Hunter. What happened was in the period—in the post-Cold War period, the dollars shrunk, and the DOD properly cut back, and then you passed a law, another 25 percent. So we had a huge reduction. Then when the budget went way up, the DOD undervalued the value of this acquisition workforce.

For example, the Army had five general officers with contracting background. When I did that commission for Secretary Gates, they had zero in 2008. Defense Contract Management Agency had four general officers. They went to zero. They went from 25,000 people to 10,000 people.

Now what I am seeing is each of the agencies are starting to bring in interns, in fact, over 1,000 interns, and only 3 highly qualified experts, so-called, that you allow. And they are the people with industry experience, and they would bring a lot more than the 1,000 interns. A thousand interns will be great in 15 years, but in terms of the near-term acquisition problem, we are not filling that gap as much as we ought to do, I think.

Mr. BERTEAU. I think the record should show that for about the last 3 years, maybe 4 years, the Defense Department—because I think it actually preceded the current administration—the Defense

Department has put a considerable amount of energy into hiring and training and retaining the beginnings of that workforce. But it is going to take years to build it back up.

Mr. SHUSTER. Is there any way that we can go to the private sector and get them to help in this—in outsourcing the acquisition people to come in?

Dr. GANSLER. As long as you avoid the conflict-of-interest issues. First of all, they shouldn't do work that is inherently governmental. You have to be very careful of that. Secondly, they should not be writing the requirements and then bidding on it.

Mr. SHUSTER. Right. UPS [United Parcel Service]—they do business with the Government, but they are not bidding. But I am sure they are out there. I know they go out there and they acquire trucks and tires and all kinds of complicated systems. Is that in the realm of possibility, in your minds?

Dr. GANSLER. Well, that is what the highly qualified experts are. You hire someone from one of those companies to actually do the inherently governmental work and assist them with contractors to do analysis or data gathering or things like that, but not decision-making. That is inherently governmental.

Mr. SHUSTER. When I think about that, I use UPS because I read in one of your testimonies of a logistic system, and there is a huge \$200 billion in it.

Dr. GANSLER. It is not world class by any means in terms of reliability, in terms of responsiveness, in terms of cost, in terms of labor and so forth. That is an area we need to modernize.

Mr. SHUSTER. FedEx or UPS could come in and turn it into what they do.

Dr. GANSLER. Or bring some of their senior people as highly qualified experts and then contract with them to do some of that work. But I would do it in a competitive fashion even, public-private competition.

Mr. BERTEAU. But we need to keep in mind there that UPS is the distribution system, but they don't actually set the requirements. In other words, Walmart may rely on UPS and FedEx to make sure they get everything, but only the demand that comes out of Walmart is what sets the requirement. So it is really a marriage of UPS and Walmart, if you will.

Dr. GANSLER. Those companies today like UPS and FedEx, they don't think of themselves as transportation companies. They think of themselves as information companies. They do total asset tracking. We don't have total asset visibility in our system. That is shocking. We should have that.

Mr. SHUSTER. Right.

And could you comment on the impact of the failure to have a long-term reauthorization of the SBIR program?

Dr. GANSLER. It is shameful. That is my honest assessment. I mean, that program has been demonstrated to be successful. Why wouldn't you extend it?

Mr. BERTEAU. I completely agree. I probably wouldn't use the adjective "shameful," but my thesaurus runs dry right now.

Mr. SHUSTER. Also a question, we have learned through these hearings and these roundtables, of a situation as Mr. Larsen pointed out, intellectual property rights are having to be given up to

compete. But also when the auditing comes in, and you have got a company—and we heard in his district also—a company of five people, and when they come in, it is like they are dealing with Boeing. I mean, you have got five people.

In your view and your experience, and I don't know how much experience you have with that part of the process, but how do we make it so that—there is almost a need to have a two-tiered approach. The big contractors are going to have a much more robust group coming in from the Department of Defense to audit them versus these small companies that virtually they are shutting down. They have to tell people to stop working and start doing compliance.

So is there anything in your view that could change that, an idea to put forward?

Dr. GANSLER. Again, I think it is focusing on price, not cost. I talked to one semiconductor manufacturer who was a world-class commercial supplier. I said, why aren't you supplying to the Defense Department also? He said, because you care about accounting for every dollar against each part, and we care about reducing the price of our parts. And it is a very big difference in attitude. We should care about being competitive in terms of performance and cost; not just cheap, but performance and cost.

Mr. BERTEAU. Mr. Shuster, we have actually taken an extensive look at the question of Defense Contract Audit Agency and its interaction both with industry and with contract administration. We haven't yet produced the results of that assessment, but I expect that we will have something coming out perhaps even before your 6-month window is closed, and I will be glad to share that with you when that is done.

Mr. SHUSTER. That will be great.

Let me put an idea out there. There are industries in this country that self-regulate. The financial industry has FINRA [Financial Industry Regulatory Authority]. The CPAs [Certified Public Accountants] in this country and the bar for the most part, they regulate themselves.

Is there a potential to have a self-funded mechanism by defense contractors, especially the small and medium-sized ones, to go in and almost self-regulate themselves? Obviously with oversight of—you know, with FINRA, the SEC [U.S. Securities and Exchange Commission] is always looking over their shoulder. But is that something that has any merit to look at, or is that something that is completely out of the realm?

Dr. GANSLER. I think you do need oversight, but not more oversight than competence. You know, the problem that we have—I found in Iraq and Afghanistan we had more auditors than we had people writing contracts, and yet we had a large number of contractors, a larger number than military people over there.

I do think that the best regulation is the market. Through competition you are going to get—if you focus on performance and cost, not just cheap, that using the market as your regulator through competition, you will get higher performance at lower cost without having to audit it.

Mr. SHUSTER. With that being said, do you also believe, as a number of people have testified, and I don't know if you have read

it or wrote it in your studies, but this is not a free market—our defense industry base is not a traditional free market?

Dr. GANSLER. No. But you can create a market. It is not a free and open—in fact, there is an argument and a lot of data to show that free and open is less effective than effective competition, even limited competition to those who are qualified. Now, that does eliminate a lot of the small businesses, so you have to figure out some way to get them into it as well. You don't want to just have people who have done it before. But, on the other hand, for the larger programs or the fast response, prior experience matters as well.

Mr. BERTEAU. Across the Government and in the Defense Department, we have a surprisingly high percentage of contracts that are listed as competitive, but only have one bidder. Now, that merits some further investigation, in my opinion. Something like 20 percent of contracts are competitive contracts with only one bidder.

Now, either that means there really is only one legitimate bidder, and we are only putting up the illusion of competition so that we that don't have to write a justification for a sole-source contract, or we are not doing a good enough job of making sure that we are soliciting input from legitimate competitors.

Mr. SHUSTER. What about the idea that I said about the self-regulation, setting it up, like a FINRA with the SEC overseeing it, and letting the Defense Auditing Agency take care of the Boeings and the Lockheeds, but have this organization that understands small business, but yet has strict regulatory—the rules are in place and the oversight is there?

Dr. GANSLER. The industry has been proposing to do more of self-regulation ever since the Packard Commission. That was one of the things that they proposed at that time to us. And I think certainly self-control, if you remove some of the current regulation, but adding more external regulation and then expecting the cost of that, you know, it is going to be forgotten or ignored. Because I remember years ago when a detailed study was done by Coopers & Lybrand comparing the same item being built in a defense plant and in a commercial plant, and then the difference was an added 17 percent. Today it is even greater because of regulation.

Mr. BERTEAU. Mr. Chairman, I don't think I would support self-regulation in the sense that you described there, but I think there are a couple elements of that idea that merit very serious attention. One is one that we have tried in the past and abandoned for a variety of reasons, historical, GAO [Government Accountability Office] has written about this, and that is that what contract auditors would do is certify the system, and then the results of the system would essentially be accepted as valid, so that instead of verifying and validating and auditing every single data element, you certify the process and the results of that process. That is an element of what would be essential to self-regulation, and I think that is an element that merits attention, if you will.

The second is, in fact, the idea that not every potential problem is of equal value and importance. Actually if we have a limited number of resources and a limited number of contract auditors, and we do, we ought to focus their attention on the things where the risk is the highest and the pay-off is the greatest.

Contract auditors measure their success by the numbers of costs that are questioned and the amount of those questioned costs that are sustained. What they really ought to measure their success by is the timeliness and value of the ultimate delivery of the results of those contracts. They are independent and separate from that. And in that sense, that is where the market issue has to come back into play.

Mr. SHUSTER. Thank you.

Does anybody have any further questions?

Thank you both very much. This was a very enlightening and an excellent hearing. I appreciate your insights and look forward to seeing the results of that study you are doing on the Defense Auditing Agency. That is what it is focused on. You anticipate in the next month or two?

Mr. BERTEAU. Our ability to predict the future is actually no better than DOD.

Mr. SHUSTER. Is that because you have been working with them for so long, you have caught that cold?

Mr. BERTEAU. We do reflect the reality that we operate in, I am sorry to say.

No, I don't have a specific timetable, but knowing the interests of this panel, I will go back and take a look at that and let you know.

Mr. SHUSTER. As I said earlier to you, you know, and I think you confirmed this, we are chartered for 6 months, but as one of you said, at the end of 6 months, you might just be starting to ask the right questions, which I fully believe that this is going to be a multiple-year project to be able to really drill down in, get the right answers, and come forward with significant policy directives to change the culture over across the river.

So, again, thank you all very, very much for being here. I just remind the Members December the 9th in New Jersey. We can take the train up. It should be pretty easy, and everybody can fly out of Philadelphia. And also take a look at that January 8th to the 13th. I would like to get confirmations or denials right after we get back from Thanksgiving.

So, again, I thank everybody for being here. I thank you for spending this time with us. Thanks.

[Whereupon, at 10:40 a.m., the panel was adjourned.]

A P P E N D I X

NOVEMBER 18, 2011

PREPARED STATEMENTS SUBMITTED FOR THE RECORD

NOVEMBER 18, 2011

Statement of Hon. Bill Shuster
Chairman, House Panel on Business Challenges within the
Defense Industry
Hearing on
Creating a 21st Century Defense Industry
November 18, 2011

The House Armed Services Committee Panel on Business Challenges in the Defense Industry meets today to continue our dialogue regarding the health and future of our Nation's defense industrial base. Today we are hearing from two experts on the defense industrial base, and both these gentlemen have extensive expertise in the issues associated with maintaining an effective industrial base:

- The Honorable Jacques S. Gansler, professor and Roger C. Lipitz Chair, and Director for the Center for Public Policy and Private Enterprise at the University of Maryland; and
- Mr. David J. Berteau, senior vice president and Director of the International Security Program at the Center for Strategic and International Studies.

Dr. Gansler's recently released book, *Democracy's Arsenal: Creating a Twenty-First-Century Defense Industry*, as well as Mr. Berteau's work at the Center for Strategic and International Studies on the defense industries initiative lend great knowledge and insight into these extremely complex issues.

In our hearings on this issue, we have heard from a variety of witnesses in the field and in the Department of Defense about the current challenges and future projections regarding the United States defense industrial base. The conversation thus far has been very informative as each and every person we meet with brings a unique perspective about how to learn from our past failures and establish stability in the industrial base. Today we continue that dialogue by focusing on the future and in doing so we are asking some very basic questions regarding this very complex subject matter:

- What can we do to adapt the current environment to meet the needs of a 21st-century security strategy?
- What can we learn from other nations who are implementing strategies to deal with this critical issue?
- What changes are necessary in our workforce and acquisition policies to meet this vision?

This panel has the opportunity to highlight the challenges and successes of the defense industrial base as we examine challenges

to doing business with the Department of Defense. Our defense industry today continues to have a hard time getting clear requirements from the DOD, bridging the gap between development and fielding, and surviving overly burdensome, unresponsive program management policies and regulations.

Navigating these issues is difficult for large defense contractors and near impossible for small businesses. I'd like to take a moment to recommend that all the Members of the panel review a recent RAND report on Small Business and Defense Acquisitions. Each of the Members has a hard copy of the report in their packet of hearing materials. This report reviews federal policy regarding small businesses and the implications for future DOD policies and practices. Not only does it provide a primer on basic historical background on Federal small business policy, but it also examines trends in DOD contracting practices and small business utilization. I think it will be a useful reference for the panel as we continue our work in this area.

Statement of Hon. Rick Larsen
Ranking Member, House Panel on Business Challenges
within the Defense Industry
Hearing on
Creating a 21st Century Defense Industry
November 18, 2011

This panel is charged with looking at ways DOD can improve its business practices, not only for the benefit of the DOD budget, but also for the benefit of local companies who want to provide services and goods. Over the past month, through hearings and district visits, we've gained valuable insight from industry and the Department on the challenges our industrial partners face with doing business with the Department of Defense.

In due time, I'm confident that this panel will offer a few recommendations to the full committee that would improve on some of those challenges; however, an important part of this task is understanding how the current defense industrial base operates. I hope the witnesses offer the panel a brief history of the events and factors that have shaped the current industrial base.

I believe we are all aware of the key role our industrial complex has played with providing capabilities throughout the years in support of our national security. They have risen to each challenge from World War II to responding to 9/11. I would appreciate hearing from you on how our industrial partners must evolve to meet the current economic constraints and 21st-century threats, to include global competition.

Earlier this month, the panel heard from Brett Lambert, the Deputy Assistant Secretary of Defense for Manufacturing and Industrial Base Policy. Mr. Lambert made the point that references to "the" defense industrial base that imply a monolithic entity are inaccurate. The defense industrial base includes companies of all shapes and sizes resourced all around the world. This will provide us and the Department a much better picture of what currently exists today, and perhaps provide some clarity on how to move forward.

The 2008 Defense Science Board's Task Force on Defense Industrial Structure for Transformation chaired by Dr. Gansler noted that "the nation currently has a consolidated 20th century defense industry, not the required and transformed 21st century National Security Industrial Base it needs for the future." I look forward to hearing from Dr. Gansler and Dr. Berteau today on what steps must be taken to establish a 21st-century defense industrial base.

STATEMENT BY

THE HONORABLE JACQUES S. GANSLER, Ph.D.¹

**PROFESSOR AND ROGER C. LIPITZ CHAIR IN
PUBLIC POLICY AND PRIVATE ENTERPRISE
SCHOOL OF PUBLIC POLICY
UNIVERSITY OF MARYLAND**

BEFORE THE

U.S. HOUSE OF REPRESENTATIVES

COMMITTEE ON ARMED SERVICES

PANEL ON BUSINESS CHALLENGES IN THE DEFENSE INDUSTRY

CREATING A 21ST CENTURY DEFENSE INDUSTRY

NOVEMBER 18, 2011

**NOT FOR PUBLICATION
UNTIL RELEASED
BY THE COMMISSION**

1 Dr. Gansler is a Professor and holds the Roger C. Lipitz Chair in Public Policy and Private Enterprise at the University of Maryland's School of Public Policy; where he also directs the Center for Public Policy and Private Enterprise. He is a former Under Secretary of Defense, responsible for Acquisitions, Technology and Logistics (1997-2001); and is the author of "Democracy's Arsenal: Creating a 21st Century Defense Industry" (MIT Press; June, 2011). He recently has served as the Chairman, "Commission on Army Acquisition and Program Management in Expeditionary Operations;" and as the Chairman, "Defense Science Board Task Force on Improvements to Services Contracting."

Thank you for inviting me here today to talk with you about the nation's defense Industry. I would like to begin by complimenting the Subcommittee for focusing on this critical issue; a most important and complex matter that will impact our ability to provide our fighting men and women the systems and support they need.

There is a clash coming in the next few years between the multiplicity and complexity of the security concerns facing the United States, and the shrinking resources available to address them. Unfortunately, solving this growing mismatch between national security needs and declining budgets is being made far more difficult by costs trends within the Department of Defense (DoD). Almost across the board, including in equipment and personnel, the costs have been rapidly increasing. At the same time, the trends for the federal budget are probably heading downward, driven by growing interest in controlling and even drastically cutting the nation's spending.

To put this problem into a larger perspective, numerous historians and economists have highlighted the strong relationship between a nation's security posture and its economic strength. Yet the escalating and huge projected costs of paying for retirement and health care for senior citizens is beginning to put enormous pressure on all other government spending, including spending for long-term investments in economic growth and national security. Every day, 10,000 more people become eligible for Social Security and Medicare. With the projected growth in nondiscretionary expenditures, and the need for the nation to borrow in order to pay its tab, by 2017 the annual payment on the national debt will equal or exceed the defense budget. As Admiral Michael Mullen, then-Chairman of the Joint Chiefs of Staff, stated in August 2010, "The single biggest threat to our national security is our debt."

The only realistic answer to this security affordability problem will be to increase the efficiency and effectiveness of our defense investments—to get more bang for the buck. Congress and DOD must recognize this, and indeed there are some signs that this is happening. There also are a number of specific actions that DOD and government can take to become more cost-effective while also increasing the nation's capacity to ensure its security.

Problems on the rise

The list of security price tag creep is long. The costs of a number of weapons systems, already high, are rising rapidly. The next-generation fighter plane, the F-35, was to have cost \$35 million each, but now is expected to cost more than \$100 million each. The costs of supporting troops and equipment, more than \$270 billion in fiscal year 2009, using inefficient legacy logistics systems, are high compared with world-class commercial logistics operations. The costs for

supplying energy to the defense establishment are high and rising; in 2009, DOD paid \$20 billion for fuel.

Costs associated with supporting the military labor force are also increasing. Among various factors, medical costs are growing at twice the rate of the national average. Costs for providing health care for retirees, and their families, hit more than \$50 billion in 2010, up from \$19 billion in 2001.

Some of these costs, such as those for providing health care for an aging workforce, are matched in the overall economy. But the costs in weapons acquisition are opposite to trends in the commercial world. For example, each generation of computers routinely provides more performance at lower costs. Suppliers typically introduce next-generation systems in 18-month cycles, a far cry from the 15-20 year DOD weapons development cycles.

Beyond immediate costs, another problem is of growing concern: the nation's international economic competitiveness. Fewer and fewer U.S. students are enrolling in science and engineering programs in the nation's universities. Roughly 35% of graduate degrees granted at U.S. universities, in these fields, are going to foreign students on temporary visas. At the same time, other countries, including China and India, are encouraging and supporting students going into these fields. The United States is already seeing the results of this loss of competitiveness in the downward trend in its high-tech trade balances.

Clearly, the United States needs to encourage more of its students to go into science and technology. And, why does the nation require foreign graduate students to sign a document agreeing to leave when they get their degree? Instead, the United States, after performing necessary security checks, should essentially staple green cards to their graduate degrees and encourage these students, along with their U.S. counterparts, to seek work in fields related to national security. Realizing that Enrico Fermi was not a U.S. citizen when he worked on the Manhattan Project, and that many of the founders of high-technology startups Silicon Valley are immigrants, it only makes sense to put these talented newcomers to work where they can best help the United States. (We do, of course, allow non-U.S. citizens to serve in our military; but not to work on defense contracts.)

These education trends are almost certain to reduce innovation across a range of commercial and military areas. What makes this critical is that for the past half-century, the United States has based its strategic security on maintaining technological superiority. History has shown that the first area to be affected in a budget decline is longer-term research. In addition to the human capital challenge, the declining budgets will (if historic trends are any indication) also have a huge impact on university science and technology innovation, and on innovation in industry. Small firms would be particularly hard hit, because of the expected shrinkage of programs such as the Small Business Innovative Research (SBIR)

program. The impact of this loss of innovation will be felt in decreasing future U.S. international economic competitiveness and technological leadership.

Yet even as economic pressures increase, the list of critical security concerns continues to grow. Instability worldwide is increasing; brought on by global economic turmoil, dissatisfaction with corrupt and incompetent dictators, the actions of fanatical religious groups, natural disasters (perhaps exacerbated by climate change), and other factors. In 2010, the former Director of National Intelligence, Dennis Blair, stated that the number one external threat to U.S. security was this growing worldwide instability; which could easily draw the nation into conflicts for moral, humanitarian, or security reasons. As witnessed in the horrific events of Sept. 11, 2001, these instabilities can create threats that cross the ocean barriers that previously had protected the continental United States.

Today, the nation faces not only terrorists, pirates, irrational dictators, and the like, but these adversaries have greater access to increasingly lethal weapons. For example, about 100 countries now have ballistic missiles that can reach more and more distant targets. Cyberwarfare is also becoming a concern, as potential adversaries develop sophisticated tools aimed at crippling military and civilian infrastructures and networks. (For example, every day DoD computers receive 6 million penetrations; obviously, of varying concerns.) And, there is the growing threat of biological warfare (by individuals, groups, or nations).

Responding to changing times

Clearly, today's security environment is very different. Increasingly, civilian and military leaders, beginning with then-Defense Secretary Robert Gates, have begun to recognize that the nation must prepare for 21st century security needs; even as fewer resources are available for the job. There are new technologies, including information technologies, biotechnologies, nanotechnologies, robotics, and others. There are new modes of warfare. There are new industrial structures that have resulted from the horizontal and vertical consolidations that marked the defense industry in the years following the Cold War and from the rapid advances in the high-tech commercial world. Critically important, there has been a globalization of technology, industry, labor, and coalition military operations.

In light of such globalization, it is apparent that the United States must use "soft power"—diplomacy, foreign aid, media campaigns, language and cultural education, and the like—along with the "hard power" of its military. The United States also must learn to work more closely with other nations in solving the new and emerging security concerns that cannot be addressed solely by any one nation. Signs of success are appearing, as multinational alliances have addressed conflicts in Iraq, Afghanistan, and Libya. Similarly, the United States will need China's help with North Korea, and Russia's help with Iran.

Such international cooperation can have significant positive security and economic effects in a variety of ways. First and most obvious is the geopolitical benefit of a common interest in peace and stability in the world. There also are obvious potential benefits that come from the co-financing and co-development of weapons, from the economies-of-scale that flow from the larger volume of common weapons produced, and from the sharing of technology, both economically and militarily. There is not a single U.S. weapon today that does not have foreign parts in it. This is because those parts are better, not because they are cheaper. Of course, the United States must remain mindful of the potential vulnerability of too much sourcing from abroad, but the presence of these parts gives the nation's weapons higher military performance. Additionally, this sharing of technology among allies can, and should, result in the nations being able to operate together with each other's weapons when fighting side by side against a common enemy; thereby greatly enhancing their combined military effectiveness.

There is obvious potential for cost saving as the United State and its allies share development, production, and support of weapon systems; and the savings could be of significant help in addressing each nation's budget problems. But there are equally obvious concerns, with numerous historic cases to back them up, that such multinational efforts will be resisted by the United States, as well as its allies. For example, there is fear that weapons or technologies will leak to non-ally countries and be used by opponents in future conflicts; and fear that the technologies will be used by other countries in commercial applications and thus harm competitiveness. There is political fear, within each country's government, of losing jobs; compared with the jobs that will result from going it alone. There is fear that a partner will back out of the joint effort, as when Israel counted on France for its common weapons, but France (for geopolitical reasons) stopped the supply; forcing Israel to develop its own defense industry.

There also are more practical concerns, such as institutional differences in procurement rules, budget cycles, and changing monetary exchange rates. In addition, designing weapons for common purposes sometimes can face conflicting goals. For example, one country may want aircraft that fly faster while another may want aircraft that fly higher. Producing aircraft that fly both faster and higher will add design complexity and cost.

Another area of potential cost savings is the increasing use of diplomacy and other forms of soft power in addressing U.S. security needs. As one illustration of such growth, the U.S. Southern Command and the new African Command have appointed civilian deputies from the State Department who are responsible for civil-military activities. To carry out soft-power activities, however, the State Department will need more money to support added civilian and military personnel overseas and significantly more money for foreign aid, language and culture

education, and media investments. One way to address the current mismatch between available resources and staffing needs is to significantly reduce the large number of U.S. troops stationed in Europe (more than 79,000), and in Japan and South Korea (more than 62,000). Although maintaining some troops in these areas may be necessary to show allies that they have U.S. support, the size of these standby forces could perhaps be reduced, while still representing a credible deterrent.

Steps toward security

To address its growing security affordability problem—to get more national security capability for less money—the nation will have to take steps to change how DOD operates. These steps fall in four main areas: what the DoD buys (the “requirements process”); how the DoD buys (the “acquisition process”); who does the buying (the “acquisition workforce”); and who the DoD buys from (the “defense industrial base”). These are highly interrelated; and all four must be addressed to achieve the required changes.

□ **What DOD buys.** The government must make unit cost a design requirement. This is the common practice of the commercial world—meeting the price the market will pay—but it has not been the normal practice for DOD. It has been accomplished in at least one case: development of the precision-guided, air-to-ground JDAM missile. The Air Force Chief of Staff issued a three-part requirement, calling for a missile that would work, would hit the target, and would cost less than \$40,000 each. The missile was successfully developed for under \$17,000 each, making it affordable to be bought in the quantities needed. This missile fits in with commercial computer trends of higher performance at lower costs and shows that it is clearly possible for DOD to achieve similar performance.

Changing what DOD buys also will require overcoming the cultural resistance of the military and the defense industry. With the support of Congress, these sectors continue to buy the ships, airplanes, tanks, and other weapons of the 20th century, rather than shifting to the weapons required for the 21st century. The new century will see more asymmetric warfare that incorporates features such as new intelligence equipment, information systems, unmanned air, land, and sea systems, antimissile systems, and networks of land warriors outfitted with advanced weapons and other technological tools. Additionally, new equipment will need to be designed with the assumption that it will be used in what has been termed a “net-centric” system. Such an integrated system will include distributed sensors and shooters, rather than requiring every weapon to be self-sufficient; and, therefore, extremely complex and expensive. In this way, secure information technology can be used as a force multiplier to achieve increased military

effectiveness. At the same time, the lower cost of individual elements will enable far larger numbers to be acquired, thus lowering their costs still further through economies of scale. The bottom line is that the military will gain greater numbers of distributed sensors and shooters in the most affordable way possible.

It must be emphasized that the largest share of the overall acquisition dollars go to logistics support; and it is also the most critical for readiness and responsiveness. Yet the current DoD logistics system (while costing over \$200 billion per year) is not world-class—by any measure (e.g. reliability, responsiveness, asset tracking, cost, information systems, manpower, etc.). Clearly, there is a crying need for modernizing the DoD logistics system.

In logistics and elsewhere, one of the greatest barriers to cost savings and performance increases is the current Congressional mandate against “competitive sourcing” (i.e. public/private competitions) for all non-inherently-governmental work currently being performed (sole-source) by government workers—in spite of the overwhelming historic data and independent studies (e.g. by the CBO and GAO) indicating the significant cost-savings and performance benefits (no matter who wins) of allowing these “A-76” competitions to take place.

Finally, we must recognize the role of contractors in the warzone. They are necessary (for their skills, flexibility, and significantly lower total-costs—again, on non-inherently-governmental work); and in Iraq and Afghanistan, they have represented more than 50% of the “total force.” But, contractors are still not routinely part of the deployment planning, or pre-conflict exercises—and they should be, since they will undoubtedly be required in future operations.

□ **How DOD buys.** Congress and the administration must change the way the government does its business. It must shift from a “compliance mentality” (that is, relying on thousands of rules on how to do something) to a “results mentality,” in which flexibility and experimental judgment are encouraged, in order to achieve the desired outcomes in performance, cost, and schedule. In order to foster such a shift, the government should establish incentives and rewards for industry’s innovation, in products and processes, that result in continuous performance improvements, at lower and lower costs.

Note that the acquisition objective must not be solely low cost, but a combination of high performance and low cost (i.e. “best value”). Unfortunately, the current budget pressure has caused many DoD procurement organizations to shift to “technically acceptable, low-bid” for their awards. This “race to the bottom”—to buy the cheapest—is simply not acceptable for high-performance goods or high-knowledge-content services.

Additionally, continuous competition aimed at achieving “best value,” not just lowest cost, is the demonstrated model in the commercial world. But even

today, DoD is resisting continuous competition on two of its biggest procurements, both for the Air Force: the second engine for the F-35 advanced fighter plane and the KC-45 refueling tanker aircraft. DoD still apparently clings to the belief that “this time the government will get it right” and will hold down costs in the face of program changes driven by new technology, new threats, new mission needs, and the like. But history has shown repeatedly that such cost control is unlikely to happen in a monopolistic environment. On the other hand, it is very likely to happen in a continuously competitive environment, in which industry is given incentives to reach goals in performance and cost. (This was clearly the case in “the great engine war”—for the share of the engines for the F-16 and F-15—where both producers got higher performance, and higher reliability, at lower and lower costs; with an acknowledged net savings, to the Air Force, of billions of dollars.)

In addition to lowering procurement costs, DoD needs to shorten its development cycles. During the Cold War, it was acceptable to take a decade or more to move new equipment from development and production, to full deployment in the field. There was little security risk, because the Soviet Union moved just as slowly. But today, technology advances much faster. Moreover, U.S. military expeditionary operations frequently face the need to obtain new lifesaving or mission-saving response capabilities within a matter of days. Clearly, government’s acquisition and budgeting systems must be revised in order to be far more responsive, whenever the need requires it.

Finally, perhaps the most glaring motivation for change is that today the DoD buys more services than goods (last year, services represented 57 percent of DoD’s total dollars spent on goods and services). Yet the government’s policies, rules, practices, etc. are based solely on the purchase of goods—and buying an engineer is clearly different than buying a tank (e.g. there is no prototype, production, or T&E phase). So, a whole new set of buying policies, processes, metrics, etc., are required.

[] Who does the buying. The government needs to build a workforce of experienced, smart buyers. In the years following the end of the Cold War, Congress and DoD began to greatly undervalue the importance of the acquisition workforce and took steps to significantly shrink it. In 1996, Congress mandated a further 25% reduction. Even after the 9/11 attacks led government to greatly expand its defense and national security spending, DoD continued to neglect the acquisition workforce. For example, in 1990 the Army had five officers who held the rank of general and had backgrounds in contracting; in 2008, it had none. During the same period, the Air Force cut in half its complement of acquisition officers and civilian members of the Senior Executive Service who followed acquisitions. The Defense Contract Management Agency went from having four

general officers to none, and from having 25,000 employees to 10,000. Only recently has this shortcoming been recognized, but it will take many years for it to be fully corrected. A short-term fix would be to bring in experienced people from industry, under the government's allowable category of "highly qualified experts" (HQEs). However, in one recent study, they found that over 1000 new interns had been hired, but only three HQEs.

[] Who DOD buys from. Because of the consolidations within the defense industry following the Cold War, the number of major system contractors fell from 50 to five. Additionally, because of the vertical integration that also took place, at the critical subsystem level, there often was a shift from a competitive-buy mode to a sole-source award to a captive division. And, the vertical integration also largely eliminated the independent firms who formerly competed for support to the DoD on unbiased systems engineering and architectural design of complex systems.

Two other dramatic changes in the industrial world also occurred during this period: the explosion of high-tech commercial companies, particularly in information technology; and the globalization of technology and industry. As a result, the government's laws, regulations, and practices—historically unique to DoD (and often driven by the Congress)—increasingly have served to isolate the military from the best available performance and lower costs of goods and services in the commercial and global markets. In order to correct this, the government needs to improve its laws, regulations, and practices in a number of key areas, including export and import controls, procurement practices (including data rights), and specialized accounting. The transformed system should provide industry with incentives that will reward companies that achieve higher performance and lower cost results. International firms also can be encouraged to participate, by removing the legal barriers they now face.

President Dwight Eisenhower, after warning of the "military-industrial complex," stated we could not have won the war without the U.S. defense industry. Yet in 2008, the Defense Science Board stated, "We currently have a consolidated 20th-Century Defense Industrial base." To get state-of-the-art equipment quicker, at lower cost, and with high quality, we must be able to draw on both a transformed, healthy, and competitive defense industry, and on commercial and global markets. We will have to make significant changes to current policies, laws, and practices to allow this to happen.

I might note that, while we have legislative and regulatory barriers to combining commercial and military industrial operations (i.e. "dual use"), Russia, Japan, China, along with many other countries, have explicit national policies to encourage dual-use operations—thereby gaining the significant benefits (such as

rapid technology-transfer; a low-cost design focus; overhead-absorption; counter-cyclical efficiencies; high volume; etc.).

Cultural change ahead

Making changes in these areas will require an overall cultural change—which, of course, can be expected to receive significant resistance. Fortunately, the literature on culture change is clear. For it to happen, two things are required. First, there must be widespread recognition of the need for change. Second, there must be leadership that clearly articulates a vision, a strategy, and a set of actions; and backs up the commitment with appropriate assignment of responsibility, shifts in resources, and designations of milestones and metrics for assessing change.

Most of these requirements are being initiated today. There is widespread recognition of the need for change, and the then-Defense Secretary Gates articulated this vision for DoD when he stated, “the need to do more, without more.” Now, it is up to Secretary Panetta, the White House, and the Congress, to implement the needed changes. Certainly, there will be resistance, and the job will be challenging. But it must be done, and it can be done. The nation’s future national security depends on it; and our fighting men and women deserve it.

Much of the material here comes from Dr. Gansler’s recent book, “Democracy’s Arsenal: Creating a 21st Century Defense Industry” (MIT Press, June 2011); and an article “Solving the Nation’s Security Affordability Problem” (Issues in Science and Technology, the Journal of the National Academies, Summer 2011, pp. 42-50) with permission of the University of Texas at Dallas, Richardson, TX.

The Honorable Jacques S. Gansler, Ph.D.

*Professor and Roger C. Lipitz Chair
Director, Center for Public Policy and Private Enterprise
School of Public Policy, University of Maryland*



The Honorable Jacques S. Gansler is a Professor and holds the Roger C. Lipitz Chair in Public Policy and Private Enterprise in the School of Public Policy, and is the Director of the Center for Public Policy and Private Enterprise. Additionally, he is the Glenn L. Martin Institute Fellow of Engineering at the A. James Clarke School of Engineering and an Affiliate Faculty member at the Robert H. Smith School of Business (all at the University of Maryland). He also served as Interim Dean of the School of Public Policy from 2003 to 2004, and as the Vice President for Research for the University of Maryland from 2004-2006.

He is a member of the National Academy of Engineering and a Fellow of the National Academy of Public Administration. He is also a member of the Defense Science Board and of the Comptroller Generals' (GAO) Advisory Board.

Previously, Dr. Gansler served as the Under Secretary of Defense for Acquisition, Technology and Logistics from November 1997 until January 2001. In this position, he was responsible for all matters relating to Department of Defense acquisition, research and development, logistics, acquisition reform, advanced technology, international programs, environmental security, nuclear, chemical, and biological programs, and the defense technology and industrial base. (He had an annual budget of over \$180 Billion, and a workforce of over 300,000.)

Prior to this appointment, Dr. Gansler was Senior Vice President and Corporate Director for TASC, Incorporated, an applied information technology company, in Arlington, Virginia (from 1977 to 1997). From 1972 to 1977, he served in the government as Deputy Assistant Secretary of Defense (Materiel Acquisition), responsible for all defense procurements and the defense industry; and as Assistant Director of Defense Research and Engineering (Electronics) responsible for all defense electronics Research and Development.

His prior industrial experience included: Vice President (Business Development), I.T.T. (1970-1972); Program Management, Director of Advanced Programs, and Director of International Marketing, Singer Corporation (1962-1970); and Engineering Management, Raytheon Corporation (1956-1962). Dr. Gansler serves (and has served) on numerous Corporation Boards of Directors, and governmental special committees and advisory boards (e.g., the FAA Blue Ribbon Panel on Acquisition Reform; member of the Federal Emergency Management Agency (FEMA) Advisory Board (10 years); senior consultant to the "Packard Commission" on Defense Acquisition Reform; and as a Chairman of the "Commission on Army Acquisition and Program Management in Expeditionary Operations").

Additionally, from 1984 to 1997, Dr. Gansler was a Visiting Scholar at the Kennedy School of Government, Harvard University. He is the author of 5 books ("The Defense Industry" (1980); "Affording Defense" (1989); "Defense Conversion" (1995); "Democracy's Arsenal" (2011) [all MIT Press]; and "Ballistic Missile Defense" (2010) [NDU Press]; a contributing author of 25 other books; author of over 100 papers; and a frequent speaker and Congressional witness (particularly on government acquisition, innovation and commercialization).

Dr. Gansler holds a BE in Electrical Engineering from Yale University, a MS in Electrical Engineering from Northeastern University, a MA in Political Economy from The New School for Social Research, and a Ph.D. in Economics from American University.

**DISCLOSURE FORM FOR WITNESSES
CONCERNING FEDERAL CONTRACT AND GRANT INFORMATION**

INSTRUCTION TO WITNESSES: Rule 11, clause 2(g)(4), of the Rules of the U.S. House of Representatives for the 112th Congress requires nongovernmental witnesses appearing before House committees to include in their written statements a curriculum vitae and a disclosure of the amount and source of any federal contracts or grants (including subcontracts and subgrants) received during the current and two previous fiscal years either by the witness or by an entity represented by the witness. This form is intended to assist witnesses appearing before the House Armed Services Committee in complying with the House rule.

Witness name: Jacques S. Gansler

Capacity in which appearing: (check one)

☒ Individual

☐ Representative

If appearing in a representative capacity, name of the company, association or other entity being represented: _____

FISCAL YEAR 2011

federal grant(s) / contracts	federal agency	dollar value	subject(s) of contract or grant
W911NF0920028	ARL – Army Research Lab	\$1,400,000.00	"Maryland Proof of Concept Alliance" - Technology transfer/research grants
N002441110005	Naval Postgraduate School	\$119,523.00	Fixed-Price Development Research
N002441110006	Naval Postgraduate School	\$119,523.00	Cost as a Military Requirement

FISCAL YEAR 2010

federal grant(s) / contracts	federal agency	dollar value	subject(s) of contract or grant
W911NF0920028	ARL-Army Research Lab.	\$3,005,485.00	"Maryland Proof of Concept Alliance" - Technology transfer/research grants
N002441010036	Naval Postgraduate School	\$119,998.00	Labor Cost for Government vs. Contractor
N00244-10-1-001	Naval Postgraduate School	\$119,998.00	A Review of the Acquisition of JTRS

N002441010037	Naval Postgraduate School	\$119,998.00	Systems of Systems Governance
N002441010041	Naval Postgraduate School	\$119,998.00	Effective Acquisition Strategies for SETA
N002441010042	Naval Postgraduate School	\$84,999.00	An Evaluation –ID/IQ Contracts for Services
N002441010035	Naval Postgraduate School	\$349,947.00	Improving the Process for the Acquisition of Defense Information Systems

FISCAL YEAR 2009

Federal grant(s) / contracts	federal agency	dollar value	subject(s) of contract or grant
N002440810011	Naval Postgraduate School	\$199,986.00	Bid Protests
N002440810040	Naval Postgraduate School	\$97,514.00	Other Transaction Authorities – Injecting New Ideas in Defense Systems
N00244-09-1-0014	Naval Postgraduate School	\$110,000.00	Contracting for Performance Based Services
N002440910041	Naval Postgraduate School	\$110,000.00	Impact of Continuous Competition on Operations and Support Costs
N002440910044	Naval Postgraduate School	\$97,514.00	Contractors on the Battlefield: Resolving Policy Issues
N002440910043	Naval Postgraduate School	\$110,000.00	Developing the Required Acquisition Workforce
N002440910045	Naval Postgraduate School	\$110,000.00	Procurement of MRAP
N002440910042	Naval Postgraduate School	\$110,000.00	Impact of Nunn-McCurdy on DOD Acquisitions

Federal Contract Information: If you or the entity you represent before the Committee on Armed Services has contracts (including subcontracts) with the federal government, please provide the following information:

Number of contracts (including subcontracts) with the federal government:

Current fiscal year (2011): 3;
 Fiscal year 2010: 7;
 Fiscal year 2009: 8.

Federal agencies with which federal contracts are held:

Current fiscal year (2011): Army Research Laboratory (ARL), Naval Postgraduate School;
 Fiscal year 2010: ARL, Naval Postgraduate School;
 Fiscal year 2009: Naval Postgraduate School.

List of subjects of federal contract(s) (for example, ship construction, aircraft parts manufacturing, software design, force structure consultant, architecture & engineering services, etc.):

Current fiscal year (2011): Defense acquisition and logistics;
 Fiscal year 2010: Defense acquisition and logistics;
 Fiscal year 2009: Defense acquisition and logistics.

Aggregate dollar value of federal contracts held:

Current fiscal year (2011): \$1,639,046
 Fiscal year 2010: \$3,920,423
 Fiscal year 2009: \$945,014

Note: for all of the above contracts, I am the “Principal Investigator,” but the contracts are with the University of Maryland; and many others (both Research Scholars and Graduate Students) associated with my Research Center assist on these studies.

Federal Grant Information: If you or the entity you represent before the Committee on Armed Services has grants (including subgrants) with the federal government, please provide the following information: **N/A**

Number of grants (including subgrants) with the federal government:

Current fiscal year (2011): _____;
 Fiscal year 2010: _____;
 Fiscal year 2009: _____.

Federal agencies with which federal grants are held:

Current fiscal year (2011): _____;
 Fiscal year 2010: _____;
 Fiscal year 2009: _____.

List of subjects of federal grants(s) (for example, materials research, sociological study, software design, etc.):

Current fiscal year (2011): _____;
 Fiscal year 2010: _____;
 Fiscal year 2009: _____.

Aggregate dollar value of federal grants held:

Current fiscal year (2011): _____;
 Fiscal year 2010: _____;
 Fiscal year 2009: _____.

**Statement before the House Armed Services Committee
Panel on Business Challenges within the Defense Industry**

***CREATING A 21ST CENTURY DEFENSE
INDUSTRY***

Written Statement by

David J. Berteau

Senior Vice President and
Director, International Security Program
Center for Strategic and International Studies (CSIS)

November 18, 2011

**Room 2118, Rayburn House Office Building
Washington DC 20515**



CREATING A 21ST CENTURY DEFENSE INDUSTRY

Statement Before the House Armed Services Committee
Panel on Business Challenges within the Defense Industry

David J. Berteau
Senior Vice President and
Director, International Security Program
Center for Strategic and International Studies

November 18, 2011

Chairman Shuster, Congressman Larsen, and Members of the Panel: I appreciate the opportunity to appear before you this morning to offer my views on creating a defense industry for the 21st century. I should note that the data I use in this statement are from the work of the Defense-Industrial Initiatives Group at the Center for Strategic and International Studies (CSIS), but the views and comments are my own.

Mr. Chairman, it is well known to this committee that the U.S. depends on the defense industry for national security. I will focus this morning on the following:

- How we define and measure the U.S. defense industry
- The challenges facing industry today
- What is needed to sustain and retain a healthy industry

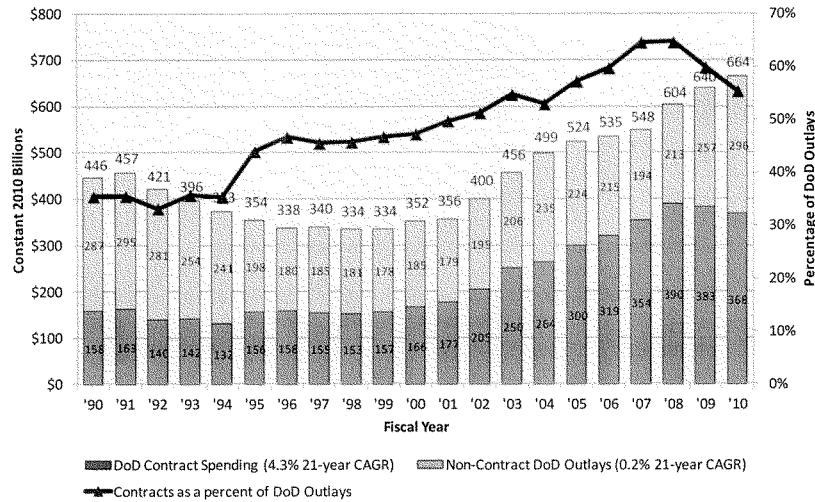
Defining the U.S. Defense Industrial Base

Chart 1 provides an overview of defense spending for the past 20 years, in constant FY 2010 dollars. Spending is divided into two categories: contract outlays at the bottom of each column and non-contract outlays at the top.

Non-contract outlays are mostly pay and benefits for active, reserve, and retired military personnel and pay and benefits for government civilian workers. You can see from the chart that the total outlays for non-contract expenses was almost identical in real terms for FY 2010 as it was for FY 1990, even though the size of the force is one third smaller. We are spending as much today as we were 20 years ago for two thirds of the people, which is a concern but not the subject of today's hearing.

Today's focus is on the bottom part of each column, on contract outlays. All of these expenditures are for contractors, and our definition of the U.S. defense industrial base is the companies that receive funds and deliver performance on these contracts.

Chart 1: Top Line DoD Contract Spending, 1990-2010 (in Constant FY2010 Dollars)



Note: Dollar figures may not sum due to rounding.

Source: DD350 and FPDS; CSIS analysis.

When we speak of the U.S. defense industrial base generally, it often means the subset of companies that produce weapon systems, but CSIS takes that definition more broadly and breaks down the data by contract spending on products, R&D (research and development), and services. Because it includes only data on prime contracts and not subcontracts, not all tiers of suppliers are visible.

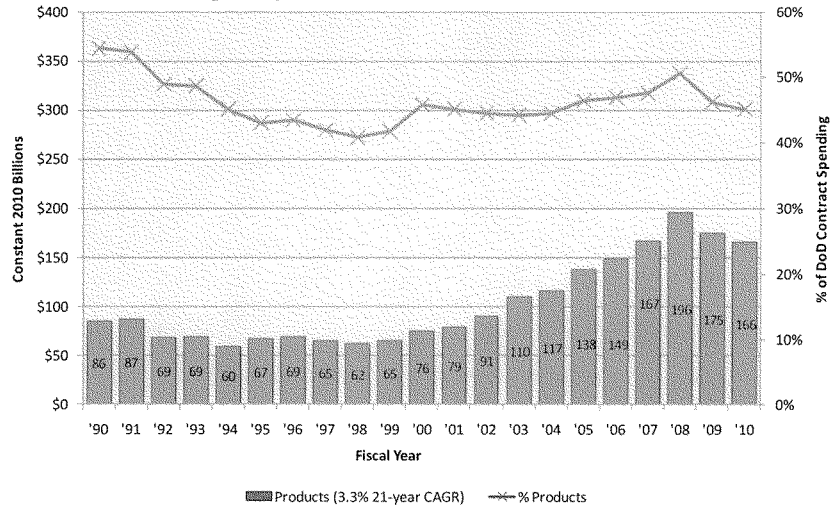
The data come from the government's own reports of contract spending in a public data base called the Federal Procurement Data System, or FPDS. This data base was directed by Congress in the 1974 act which created the Office of the Administrator of Federal Procurement Policy, and it is a rich source of necessary information for the public.

FPDS breaks down all contracts into two broad categories: products and services. Under FPDS guidelines, R&D is classified as a "service". Under that definition, the largest "services" contract in the federal government would be for the F-35 Joint Strike Fighter. Because most R&D in DoD is an investment, not a service, it is better to track contracts in three categories rather than two:

- products,
- R&D (research and development), and
- services

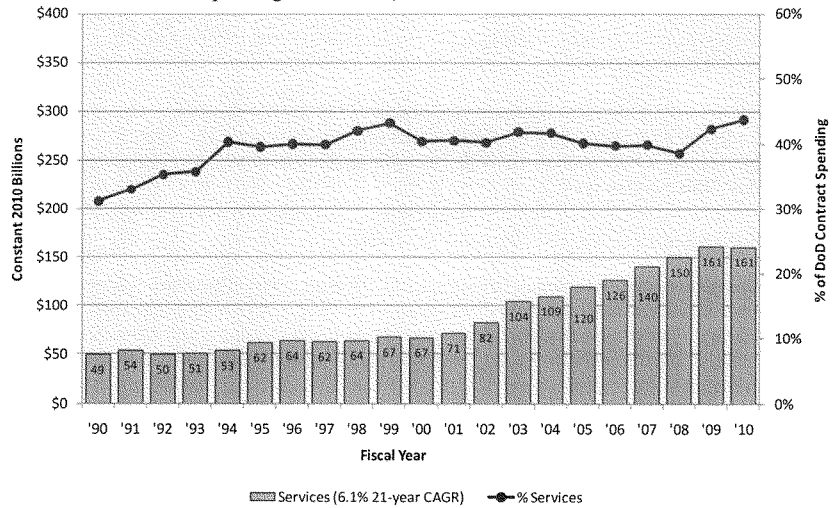
Charts 2, 3, and 4 show the trends for defense contracts in these three categories.

Chart 2. DoD Contract Spending for Products, 1990-2010



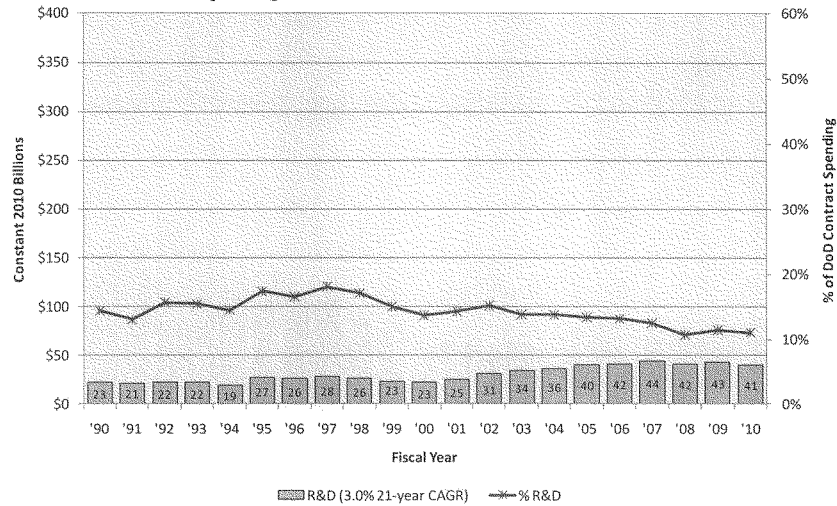
Source: DD350 and FPDS; CSIS analysis.

Chart 3. DoD Contract Spending for Services, 1990-2010



Source: DD350 and FPDS; CSIS analysis.

Chart 4. DoD Contract Spending for R&D, 1990-2010



Source: DD350 and FPDS; CSIS analysis.

You can see from the charts that in FY 2010 roughly equal amounts of funds are spent on products and services. This means that the U.S. defense industrial base includes a large services industry sector, which is a broader definition than simply those firms involved in the manufacture of weapon systems.

In addition, it is worth noting that contracts reported in FPDS are not required to include classified contracts. As a result, data for R&D (Chart 4) are significantly less than appropriated funds would indicate. Other sources show that roughly an additional \$22-25 billion is spent on classified DoD R&D contracts.

The Challenges Facing the U.S. Defense Industrial Base Today

The U.S. defense industrial base today faces three critical challenges. The chief challenge is one with which we are all familiar, and that is the impact of planned and potential reductions in defense spending. The second challenge is the need for industry to remain competitive in global financial markets. The third challenge is in retaining technical and innovative leadership. Let's look at each in turn.

Budget reductions are not new for defense industry – we have been through four of them in the past 65 years, and we are entering the fifth. There are some significant differences this time, though, that warrant your awareness.

There are fewer tools available today to DoD and the industry. Industry survived the last budget drawdown in part by consolidation. For example, in the mid-1980s, there were seven manufacturers of military aircraft. By 2000, there were two or three, depending on your definition. There were six shipyard companies in 1990 and two in 2000. Few factories were shut, but the corporate structure was consolidated. That is less of an option today, and in fact the Under Secretary of Defense for Acquisition, Technology, and Logistics has publicly stated that DoD would not support consolidation among the top defense firms.

The second challenge has to do with the operating climate for defense companies. For decades, defense companies were somewhat insulated from global financial markets. The U.S. government provided financing for contracts through prompt payment of invoices and through a mechanism known as progress payments, whereby firms could invoice on work done even before the product was delivered. Today, though, any firm of substantial size depends on the global financial markets, which base their judgments on return on investment, not on national security. Many of our government policies, though, have yet to recognize this changing reality.

The third challenge is in innovation and the advancement of technology. For decades, most good new defense technology was developed first in the United States, usually for defense purposes by defense companies. That is no longer true, both for platforms like rotary wing aircraft and for systems in communications, sensors, data fusion, etc. Technology with value for defense is just as likely to be developed for global commercial markets as it is for U.S. national security, yet our policies on issues ranging from foreign ownership of defense firms, to security of supply, to national export controls have not recognized this reality nor kept up with its implications.

What Is Needed To Sustain and Retain a Healthy Industry

There are no easy solutions to the challenges facing defense industry, but there are a number of key steps that can be taken. First, we need a clearer articulation of our future national security strategy, one that can permit better prioritization of budget and force structure needs and guide reductions. Absent a clear statement of strategic priorities, industry is looking to DoD for signals. What are we going to need? What are we going to develop and procure and deploy, and where? Without these demand signals, it is hard for industry to know where to invest. Those signals, however, have yet to be communicated.

Second, we need a change in incentives, both in DoD and in industry. Requirements need to reflect tradeoffs of engineering, cost, and performance in use. Today, they often do not. Budgets need to reward those who control costs. Today, cost control is punished by smaller budgets. Companies need to gain from reducing costs, not end up with less revenue and lower margins.

Third, the government needs to have a better idea of which elements of the industrial base are most vulnerable and a better way of including that information in budget decisions.

Finally, as technology development continues to occur outside the U.S., we need an export control regime that recognizes the global origin of innovation.

Conclusion

Chairman Shuster, Congressman Larsen, and Members of the Panel, that concludes my remarks, and I look forward to your questions and our discussion.

DAVID J. BERTEAU

David J. Berteau is the Director of the International Security Program (ISP) and a Senior Vice President at the Center for Strategic and International Studies (CSIS). The principal issues addressed in ISP include defense and national security policy and policy formation, homeland security, defense resource allocation and reform, nuclear strategy and policy, the development-security interface, and defense industry. Mr. Berteau is also an adjunct professor at Georgetown University, a director of the Procurement Round Table, and a fellow at both the National Academy of Public Administration and the Robert S. Strauss Center at the University of Texas. Prior to joining CSIS, he was director of national defense and homeland security for Clark & Weinstock, director of Syracuse University's National Security Studies Program, and a senior vice president at Science Applications International Corporation (SAIC). He served in the Defense Department under four defense secretaries, including four years as principal deputy assistant secretary of defense for production and logistics. Mr. Berteau graduated with a B.A. from Tulane University in 1971 and received his master's degree in 1981 from the LBJ School of Public Affairs at the University of Texas.

**DISCLOSURE FORM FOR WITNESSES
CONCERNING FEDERAL CONTRACT AND GRANT INFORMATION**

INSTRUCTION TO WITNESSES: Rule 11, clause 2(g)(4), of the Rules of the U.S. House of Representatives for the 112th Congress requires nongovernmental witnesses appearing before House committees to include in their written statements a curriculum vitae and a disclosure of the amount and source of any federal contracts or grants (including subcontracts and subgrants) received during the current and two previous fiscal years either by the witness or by an entity represented by the witness. This form is intended to assist witnesses appearing before the House Armed Services Committee in complying with the House rule.

Witness name: David J. Berteau

Capacity in which appearing: (check one)

☒ Individual

☐ Representative

If appearing in a representative capacity, name of the company, association or other entity being represented: N/A

FISCAL YEAR 2011

federal grant(s) / contracts	federal agency	dollar value	subject(s) of contract or grant
NONE			

FISCAL YEAR 2010

federal grant(s) / contracts	federal agency	dollar value	subject(s) of contract or grant
NONE			

FISCAL YEAR 2009

Federal grant(s) / contracts	federal agency	dollar value	subject(s) of contract or grant
<i>No NE</i>			

Federal Contract Information: If you or the entity you represent before the Committee on Armed Services has contracts (including subcontracts) with the federal government, please provide the following information:

Number of contracts (including subcontracts) with the federal government:

Current fiscal year (2011): *N/A*;
 Fiscal year 2010: *N/A*;
 Fiscal year 2009: *N/A*.

Federal agencies with which federal contracts are held:

Current fiscal year (2011): *N/A*;
 Fiscal year 2010: *N/A*;
 Fiscal year 2009: *N/A*.

List of subjects of federal contract(s) (for example, ship construction, aircraft parts manufacturing, software design, force structure consultant, architecture & engineering services, etc.):

Current fiscal year (2011): *N/A*;
 Fiscal year 2010: *N/A*;
 Fiscal year 2009: *N/A*.

Aggregate dollar value of federal contracts held:

Current fiscal year (2011): *N/A*;
 Fiscal year 2010: *N/A*;
 Fiscal year 2009: *N/A*.

Federal Grant Information: If you or the entity you represent before the Committee on Armed Services has grants (including subgrants) with the federal government, please provide the following information:

Number of grants (including subgrants) with the federal government:

Current fiscal year (2011): N/A ;
 Fiscal year 2010: N/A ;
 Fiscal year 2009: N/A .

Federal agencies with which federal grants are held:

Current fiscal year (2011): N/A ;
 Fiscal year 2010: N/A ;
 Fiscal year 2009: N/A .

List of subjects of federal grants(s) (for example, materials research, sociological study, software design, etc.):

Current fiscal year (2011): N/A ;
 Fiscal year 2010: N/A ;
 Fiscal year 2009: N/A .

Aggregate dollar value of federal grants held:

Current fiscal year (2011): N/A ;
 Fiscal year 2010: N/A ;
 Fiscal year 2009: N/A .

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November 2, 2011

MEMORANDUM FOR PANEL ON BUSINESS CHALLENGES IN THE DEFENSE INDUSTRY

FROM: HASC Staff

RE: Summary from Industry Roundtable – Akron, Ohio

On October 28, 2011, Members of the Panel of Business Challenges in the Defense Industry traveled to Akron, OH to meet with members of the local defense industry.

The Panel held a roundtable discussion at the University of Akron with representatives from the local defense industry (see Appendix A for a list of participants). The University of Akron is a public, co-ed university and has over 24,400 undergraduate students, 4,650 postgraduate students, and operates with an \$133 million endowment. The University is most widely known for its research programs in polymers and advanced materials – both of which have significant implications for the defense industry. In April 2011, the University of Akron partnered with the Department of Defense (DOD) and the Department of Energy (DOE) to build a \$14.8 million research facility. The facility will link Akron faculty and students with the needs of private industry, DOD, and DOE. The facility will house the National Center for Education and Research in Corrosion and Materials Reliability, which was provided \$8 million from DOD. Following the discussion with local defense industry, the delegation met with University leadership, including the President, Dr. Luis Proenza, as well as officials from Wright-Patterson Air Force Base, the DOD Office of Corrosion Policy and Oversight, and industry (see Appendix B for a list of participants) to discuss research conducted at the University to assist DOD in corrosion prevention and mitigation.

Members in Attendance

Chairman Bill Shuster
Ranking Member Rick Larsen
Ms. Betty Sutton
Ms. Colleen Hanabusa

POINTS OF DISCUSSION

- **Export Controls** – a participant indicated that recent changes in the process for obtaining an export control license are causing delays that are making it difficult for US industries to compete in a global marketplace. It was stated that licensing would previously take one or two weeks and now it routinely takes more than six weeks to obtain a license for the same type product. The participant felt strongly that although foreign/NATO partners would prefer American-made products due to the quality, delays in licensing are driving these customers to contract with non-US manufacturers. Additionally, some foreign sales require that the customer places the money for a sale in an escrow-like account until full delivery of the product is achieved. If delays in the delivery occur for any reason, a penalty is applied. One Akron performer, who has been waiting for more than six weeks for an approval from the Department of Commerce is losing money as a result of this type of delay.
- **International Trafficking of Arms Regulations (ITAR) Issues** – a participant expressed frustration that there is no discernment of product in the current implementation of ITAR controls. Furthermore, he felt there seems to be no sense of urgency by those responsible for making decisions/determinations and many businesses do not have the capital to sustain their program/technology and make it through the process.
- **Defense Contract Audit Agency (DCAA) Issues** – general concern expressed about DCAA processes and conduct of audits:
 - One participant cited an example of their company still working with DCAA to try to close out an audit from 2006. He mentioned that the environment with DCAA is very hostile and it appears as if they simply do not want any more suppliers. He went on to reference a 2007 DOD Directive that gave DCAA authority to subpoena information if a contractor failed to respond to a request in less than 3 days. {Note: DODI 7600.2 provides authority for subpoena but does not specify a timeline. It can be reviewed at <http://www.dtic.mil/whs/directives/corres/pdf/760002p.pdf>. Additionally, a DCAA memo (<http://www.dcaa.mil/mmr/08-PAS-042.pdf>) dated December 2008 gives guidance to DCAA officials regarding use of subpoena authority. Section 6 of the memo lays out a specific procedure for access to records, and only specifies that a timely due date should be set, and that extenuating circumstances should be taken into account.}
 - Another participant felt that DCAA is not satisfied when provided sufficient documentation – they want to know “why” a decision was made even when it was in scope of the contract and fully justifiable. He claimed that if one tried to question DCAA or otherwise disagree with their findings, the auditors threaten to broaden the scope of the audit to other contracts.
 - It was also stated that DCAA auditors used to sit down at the table with the business and go over the books, allowing for a dialogue and exchange of

information that would not only clear up any audit concerns quickly, but would also help the business to learn the audit process so that they could do better in the future. It was noted that auditors seem to no longer do that and instead appear to be solely on a search for any bit of information that might cast a negative light on the business.

- A participant felt strongly that DCAA needs to exist and plays an important role in oversight, “even as much as we [industry] hate spending 3 days to find \$58 from 4 years ago.”
- **Overly Burdensome Practices** – one participant believed that DOD was applying a manufacturing mindset to the acquisition processes and stated that in acquisition “better planning does not necessarily drive better performance”. He noted that the pace of business is picking up but DOD contracting is not responding due to increased oversight, mandated disclosures of proprietary information, long contracting periods, etc.
- **Need for Better Access to the Customer** – it was stated that the acquisition process at DOD is extremely complicated and industry has little direct access to the customer to find out what the true requirement is. A participant stated that support contractors (not government research and development (R&D) personnel) are usually all they [industry] have access to and stovepipes in the DOD R&D portfolio make it very difficult for industry to find out what solutions/technology DOD is interested in. He believes that stove-piping in the R&D portfolio is a result of many different government research entities competing for a limited amount of funding. It was also stated that in order to gain any access to DOD officials, interested businesses are forced to pay high (>\$2000) conference fees to attend annual conferences just find out about areas DOD is interested in. Another participant articulated the frustration by saying, “We need to have meetings with the people we’re dealing with to remove roadblocks.”
- **Changes to Rules of Engagement** – a participant expressed frustration that during the course of a solicitation, DOD will often change the requirements and will provide industry little time to respond. In one case, a company was notified 7 days before the solicitation closed that they would need to be a “cleared facility” {approved for work on classified or sensitive programs by the Defense Security Services}. The clearance process is lengthy and they were unable to compete as a result of the last-minute change.
- **Small Business Innovative Research (SBIR) Program** – comments were made that (SBIR) Program is transparent, but no other Science & Technology (S&T) efforts are visible to industry.
 - Regardless of transparency, one participant noted that “SBIR transition is horrible” and claimed that the Air Force gave their data package {resulting from an SBIR effort} to a large business.
 - This was followed by a comment that intellectual property rights protections need to be built into the SBIR program.

- Another participant commented that there is {seemingly} no coordination between the DOD Office of Small Business Programs and the SBIR Program.
 - A participant felt that Phase III is not clear and that there is no way for small business to secure funding to get through testing. It was felt that limitations on small businesses to complete testing, coupled with DOD's risk aversion, would drive DOD to go to the large primes.
- **Mentor-Protégé Program/Industry Partnering** - many stated that the Mentor-Protégé program worked well, but it needed to be broadened so more could benefit from it. Small businesses may be able to create a technology/solution but many do not have the resources to manufacture and field. It was stated that they need protection of their intellectual property in order to confidently partner with a larger firm that is equipped and resourced to handle production. It was also suggested that some type of a program to provide secured capital to small business to enable them to reach production would be beneficial.
 - **Small Business Collaboration** - Another participant noted that most small businesses do not have all the answers, yet they could be successful if they were encouraged to collaborate with other small business. It was suggested that small business collaboration should be allowed to meet the 51% minimum participation for set-aside contracts.
 - **Small Business Participation Reporting**- many of the participants felt that DOD needs to do a better job of monitoring small business participation post award and below the first-tier contract. It was suggested that large contractors needed to be incentivized in some way, perhaps financially, to subcontract with small businesses.
 - **Contracting with Labs/Research Facilities** – while programs such as the SBIR programs aid in technology development, participants felt that much of their work with labs and research entities such as Defense Advanced Research Projects Agency (DARPA) goes nowhere because there are no customers for a follow-on program. It was noted that DARPA and the labs are not chartered to manufacture an end-product and therefore their focus is on research. As noted by one participant, “They just want to keep studying with no plan to field.” There was a feeling that this leaves small businesses at risk because their technology never moves out of the lab.
 - **Large Business Influence** – one participant stated that large businesses do not like the entrepreneurial nature of small business and take steps to eliminate competition by buying technology from the small business and then shelving it so it cannot be advanced.

Appendix A***Industry Roundtable Participants*****Advance Materials Products , Inc (ADMA)**

Georg I. Abakumov, Esq., General Counsel and Director of Business Development.

ADMA works with every branch of the armed forces and aerospace making products and components from titanium, niobium, zirconium, nickel, and other advanced materials. ADMA is the world leader in the powder metallurgy production of advanced material products.

Armor Source, LLC

Yoav Kapah, President & Chief Product Development Engineer
Paul Garcia, Contracting Officer & Government Liaison

Armor Source is a leading manufacturer of ballistic helmets and Advanced Head protection products and accessories. Armor Source LLC was formed in 2005 and employs 250 people. Armor Source is the largest combat helmet manufacturer in the United States with an annual capacity to deliver over 500,000 helmets of various styles.

Artisan Industries, Inc.

Mark A. Price, Ownership Group

Artisan Industries utilizes the latest state-of-the-art laser cutting equipment, providing armor processing, large table, proto-typing and automated material. Other services include heavy/light material welding, fabrication, stamping, machining, and punching and product development. Based out of Streetsboro, Ohio, Artisan employs over 110 people in 3 locations.

Fireline TCON, Inc.

Klaus-Markus Peters, General Manager & Director of Engineering
Rich Lonardo from Defense & Energy Systems

Fireline TCON, Inc. is a 45 year old company that specializes in high-performance ceramic refractory shapes for molten metal processing. Fireline TCON, Inc. subsidiary is developing and commercializing a unique ceramic-metallic composite material, including for defense applications. Defense & Energy Systems is helping Fireline TCON, Inc. manage the transition of their technology into defense applications and procurement contracts.

Midwest Industrial Supply

Bob Vitale, CEO

Midwest Industrial Supply provides innovative dust control and stabilization products to domestic training facilities and installations for open areas, helipads, and tank trails. Mr. Vitale founded the company 1975. Midwest Industrial Supply employees 65 personnel.

Ohio Aerospace Institute

Don Majcher, Vice President of Technology and Innovation Partnerships

The Ohio Aerospace Institute is a membership organization comprised of numerous Ohio aerospace companies. OAI's mission is to enhance its partners' aerospace competitiveness through research and technology development, workforce preparedness, and engagement with global networks for innovation and advocacy.

Orbital Research

Fred Lisy, President

Orbital Research is a high technology company dedicated to developing and commercializing innovative solutions for the military, transportation, controls, and medical industries through leveraging core technology areas of micro-electromechanical systems (MEMS) and advanced aerodynamic control systems. Orbital Research was founded in 1991.

Powdermet

Andrew Sherman, President & CEO

Powdermet is a nationally recognized nanotechnology and advanced materials research and development organization. This 20+ firm was established in 1996, and is recognized as one of the leading research institutes in nanomaterials, metal formulation, and advanced metal composites.

Team Wendy LLC

Daniel E. Gibbens, Director of Finance & Contract Administration

Team Wendy currently has contracts including a BAA (Broad Area Announcement) and a SBIR (Small Business Innovation Research) with the US Army Research Laboratory. Team Wendy also provides product as a contractor to the National Industries for the Blind for the US Military. The company is located in Cleveland, OH, and has a team of 67 employees.

Tencate Advanced Armor

Mark Edwards, President

TenCate Advanced Armor's composite armor systems are on the forefront of IED, bullet, and fragment protection. TenCate also supplies Small Arms Protective Insert (SAPI) plates and components worn by both U.S. and Foreign Military Services (FMS).

TeraPhysics Corporation

Gerry Mearini, President

TeraPhysics Corporation was founded the company in 2004. The company's objective is to develop and commercialize, on a global basis, practical THz systems for high value applications with high volume demand in the areas of security, life sciences (cosmetic surgery, cancer detection, wound healing and real-time remote detection and identification of pathogens.

The Company's predecessor, GENVAC AeroSpace Inc is a military qualified developer and manufacturer of precision optical elements for operation in the mid-wave and far infrared (IR) frequency ranges of the electromagnetic spectrum.

Will-Burt

Jeffery Evans, Chairman CEO & President
Dave Harpley, Head of Government Relations

Will-Burt is a premier manufacturer of military telescoping mast elevation solutions for surveillance and communication antenna systems in addition to mast and towers for the television broadcast, fire/rescue and cellular industries. The Will-Burt Company is located in Orrville, Ohio, and employs over 360 people.

Appendix B***Corrosion Discussion Participants*****MesoCoat Inc.**

Andrew Sherman, President & CEO

MesoCoat Inc. is a venture-backed nanotechnology materials science company fast becoming a world leader in metal protection and repair through their revolutionary “long life” coating and “high speed” cladding technologies. MesoCoat employs around 24 personnel.

PPG Industries, Inc.

Robert C. Schmeltzer, Technology Platform Manager

Phillip C. Yu, Director of Corporate Science & Technology Initiatives

Terence J. Hart, Market Manager of Funded Technology Programs

PPG Industries, Inc., is a global supplier of paints, coatings, optical products, specialty materials, chemicals, glass and fiber glass. Founded in 1883, the company serves customers in industrial, transportation, consumer products, and construction markets and aftermarkets.

TESLA NanoCoatings

Todd Hawkins, Managing Director

Tesla NanoCoatings Ltd. of Massillon, Ohio. Tesla is a promising start-up providing corrosion control coatings with fullerene carbon based cathodic protection of metal to the aerospace/military, petrochemical, transportation, marine and industrial markets. Tesla NanoCoatings Ltd. will employ 6 new hires in 2011 anticipating 20-30 jobs created in the next year.

Air Force Attendees

Carol White, Air Force Material Command Small Business Director

Pat Krabacher, Procurement Analyst

Ed Hermes, Air Force Research Lab Corrosion Control Expert

Brian Strizak, Air Force Material Command Corrosion Control Expert

Office of the Secretary of Defense Attendees

Dick Kinzie, Chief Engineer, DOD Corrosion Policy and Oversight Office