

**PREPARED STATEMENT**  
**OF**  
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**BEFORE THE**  
**HOUSE ARMED SERVICES COMMITTEE**

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Chairman Thornberry, Representative Smith, and distinguished members of this Committee, I appreciate the opportunity to speak with you today about acquisition reform. During my tenure in the Department of Defense, my colleagues and I spent considerable energy to improve the affordability and feasibility of the major defense acquisition programs. In my current position at the Johns Hopkins University Applied Physics Lab I have the pleasure of working closely with scientists and engineers who are innovating with new technologies. From observing the need for innovation within the DoD to witnessing the opportunities that I encounter at JHU-APL, it is clear to me that seeking new approaches for acquiring systems is as important as ever. Thank you for the opportunity to share my observations and current thinking on these issues.

### **Getting programs on track—the importance of independent cost estimates**

I came to Cost Assessment Program Evaluation (CAPE) soon after enactment of the Weapon System Acquisition Reform Act (WSARA) of 2009. While this law has its critics and could always stand improvement, it represented important progress in one respect central to the subject of this hearing: it helped to ‘start programs well.’ I saw this first hand after becoming Director of CAPE in November 2009, just a few months after WSARA was enacted.

At that time many programs were in the ‘red’ for both cost and schedule, some of which eventually breached Nunn-McCurdy thresholds. The cost group in CAPE has used a solid process for predicting cost and schedule for years, dating back to when they were called the Cost Analysis Improvement Group (CAIG) and were part of CAPE’s predecessor organization, PA&E. Then, as now, they projected costs and schedule based on information collected from ongoing and historical programs. Then, as now, they continually updated projections based on actual performance data and with the benefit of spending considerable time with industry partners to collect data and discuss programs. As a result of their rigorous methodology, the cost group’s estimates were consistently more right than wrong.

While these cost estimates had been available for years, programs continued to be in the red – over cost and behind schedule. The reasons are varied and unique to each program, but a common factor was a strong want and need for the program coupled with institutional incentives to be overly optimistic when it came to development and manufacturing timeframes and, with those, cost. Too many defense leaders, in and out of uniform, wanted to believe that the hard data and analysis derived from prior programs simply did not apply to their favored weapons systems, or that they had the proverbial “secret sauce” to overcome the results of the past. In short, they thought: “this time will be different.” And, because there was no requirement to honor the CAIG’s estimates, programs of record moved ahead based on hopes that were seldom realized.

The 2009 WSARA changed all that. For all major defense acquisition programs under the purview of the Under Secretary of Defense for Acquisition, Technology and Logistics, the law forced the Department to have an independent cost estimate developed by CAPE for all major program milestones and at certifications for programs experiencing cost overruns. No longer could the Department base program decisions just on the projections of a program's most ardent advocates. Cost estimates were forced to become more realistic, including Service estimates.

Since the enactment of WSARA, the Services have largely adopted the CAPE cost estimating methodology. As a result, the difference between CAPE and the service estimates is small and getting smaller – shrinking by nearly 60 percent since WSARA was enacted.

Beyond better estimates, the CAPE approach has also helped the Services push costs down. Now that program managers have a better understanding of the areas where costs have grown, or the drivers behind the cost of a multi-year procurement, they have the ammunition they need to negotiate better prices.

As I mentioned earlier, WSARA's power was that it required the Department to become realistic in its cost estimating processes. As our former Comptroller, The Honorable Robert Hale, will tell you, to scale that across a number of programs requires a dependable top-line defense budget. And, despite the best efforts of this committee, the defense budget has been increasingly uncertain over the last 5 years, making it nearly impossible to plan in the way that WSARA intended. When budgets are cut precipitously and change year to year, the Department will respond by slipping and sliding schedule and costs further into the future – the most inefficient way possible to manage a program. All of the realistic cost and schedule estimates in the world will not substitute for predictable budgets and consistency in program execution. Recent efforts by the Congress to restore the budgeting process to regular order and to provide some certainty to DoD is a great help, but much more is needed.

## **Requirements**

Beyond good cost estimating and budgeting, the other key factor in starting programs well is collaboration among the Joint Staff, CAPE, and AT&L at the requirements stage, the first step in a program's life cycle. My colleague, ADM Sandy Winnefeld, when he was the Vice Chairman of the Joint Chiefs of Staff, took significant steps to ensure that CAPE and AT&L had a voice as requirements were debated at the Joint Requirements Oversight Council. As a result, the Department was able to make smarter choices on requirements and acquisition approaches that help control cost and schedule growth in programs. For example, technology maturity is now as much a part of the requirements discussion early in a program's life cycle as is cost and schedule realism.

This early dialogue is critical to enabling smart choices but it cannot stop there. To be successful, the Joint Staff, AT&L and CAPE, in conjunction with the Services, need continual discussions of the interrelationship between requirements, cost, and schedule throughout a program's life cycle.

This progress of recent years – whether on cost estimates or requirements – will be all the more important as the Department implements the acquisition reform provisions of the FY 2016 NDAA. One recommendation I can offer this committee is to amend the law to ensure that CAPE continues to provide independent cost estimates for all programs for which they currently have responsibility, regardless of where the milestone decision authority resides.

### **The acquisition workforce**

In addition to good cost and schedule estimates and realistic requirements, we need people with the experience and confidence to stand up to industry when necessary, and also to internal advocates who want more than they can reasonably achieve. Both Secretary Carter and Secretary Kendall have pushed for a larger defense acquisition workforce and since 2009 the force has grown, and grown better educated as well.

More and better professionals are an important part of improving DoD's acquisitions, but we also need incentives for program managers to stand up and tell hard truths: that "it's not ready to go to the next milestone," or maybe "it's never going to be ready," or even "we don't need it anymore." No one wants to throw up bureaucratic roadblocks and unnecessary delays; however, currently the incentives are for program managers to get their program to the next milestone, regardless of whether it *should* go forward. More is needed to encourage our acquisition professionals to provide candid assessments of their programs.

### **Rapid Prototyping**

While more improvements can be made, it is clear that aspects of WSARA and other process improvements led by AT&L and the Joint Staff are allowing us to design and field programs more efficiently and effectively. But it still takes time. For platforms that last 50 years, that time is probably warranted, but, increasingly, and thanks to our potential adversaries, we simply don't have the time to wait.

To speed things up during the wars in Iraq and Afghanistan, the Department reaped huge advantages from collaborations with innovative industry partners. As we shift into a peacetime setting, we have to think of creative ways to enable the Department to gain better access to non-traditional and commercial contractors, to lower the barriers to these new partnerships, and to increase the Department's access to innovative solutions at a faster pace.

But working with commercial firms won't address every Department need. We must consider ways to develop DoD-unique technologies and keep them at the ready – on the shelf – for the day when the nation has an immediate need and/or when the budget environment changes, as it certainly will. By developing technologies to the prototype phase and holding them on the shelf, the Department has the opportunity to experiment with them and develop new concepts of operation so that the operators and the technology are ready to go when needed. It also enables continual upgrades of these programs without the expense of upgrading an entire production line.

For this to work, the Department would have to be able to go from shelved prototype to production in short order. In addition to working with industry to prepare for these transitions, the promise of advances in manufacturing would give us the ability to take a technology from design to prototype to production on demand in the future.

Successfully putting technology on the shelf, maintaining it there, and then subsequently taking it off the shelf and rapidly manufacturing it will require a commitment of resources to preserve hardware, software, information, and expertise. It will also require investments in the new technologies and advanced manufacturing techniques needed to produce them, but the payoffs in these investments in the future could be enormous and I believe it is worth trying.

By experimenting with these types of ideas we can develop better criteria where we can distinguish those problems better suited to a rapid prototyping, tech-on-the-shelf approach from those requiring a more traditional approach. For example, we certainly wouldn't accept a rapid prototyping, tech-on-the-shelf approach for our strategic submarine force. But without a process for or incentives to put technology on the shelf, we risk losing good ideas and prolonging the time it will take to field new technologies when we need them.

### **Accepting Prudent Risk**

Rapid prototyping and tech-on-the-shelf hold the promise of getting rapidly advancing technology in the hands of the warfighter when needed. But as we have already discussed, these approaches, however, are not appropriate for our large acquisitions. For those large programs, we are pushing out risk and are increasingly following a realistic and achievable path to procurement.

But what if we are not taking enough risk in our technology development?

Our potential adversaries are rapidly fielding new technologies that might require us to push ourselves in select areas. Perhaps it is time to knowingly take risk in select, critically important larger programs.

This could be a new category of acquisition programs in which we push the boundaries on our technologies, with full awareness and acceptance of the inherent cost and schedule risk. In my view, this is an acceptable approach only if there is an agreed upon need and we are candid in our assessments of the risk.

The Global Positioning System (GPS) offers an example of what I mean. Initially, we had a satellite-based navigation system called Transit that was great at providing accurate latitude and longitude measurements. We could have chosen to continue to evolve the Transit program but, almost from its inception, people realized we needed three-dimensional navigation for greater accuracy and additional military utility.

The Department jumped into the GPS program with a number of technical features still needing to be matured. The program did eventually deliver, but not before it experienced cost growth and schedule delays which nearly led to the cancellation of the program. But once it was fielded, the warfighting benefits were immediately apparent. And beyond warfighting, GPS has had enormous impacts on our every day lives, so much so that it is difficult to remember a time when we did not have it.

I argue we need to continue to take such risks. Unlike the GPS case, however, DoD and Congress should be partners on these risky adventures. To go forward, DoD should be required to fully share its assessments of the needs and the risks. We should demand a proactive approach to bounding the risks, including mitigation plans and off ramps where it is prudent to do so. In return, Congress may have to adjust the rules for these programs, such as the rules governing the Nunn-McCurdy thresholds.

The worst outcome of an approach like this would be for the Department to be allowed to go back to the days of believing in magic with regard to cost and schedule. If Congress was to elect to go down this path, that outcome must studiously be avoided. With proper controls, however, we have shown that we can do amazing things as a nation when we have taken risk and I believe that we must continue to do so.

## **Summary**

In summary, DoD has made progress in reducing the cost and schedule overruns of major defense acquisition programs by leveraging authorities granted through WSARA; increasing teamwork and collaboration beginning with the establishment of requirements; and taking a more realistic and informed approach to reduce technological risk. In the future, in addition to sustaining these gains, we need to adopt new methods to more rapidly develop and field new technologies through rapid prototyping, concepts like technology-on-the-shelf, and, in the future, advanced manufacturing techniques. Finally, there may be some large programs where it makes sense to take additional risk and accept the corresponding impact on the Department's ability to reliably predict cost and schedule. In these select cases, it will be critical for that acceptance to be explicit and for the Department and Congress to agree in advance

that they are jointly taking a risk and that the risk is warranted. Most importantly, we should continue to work to include measures in our acquisition processes that prevent us from committing resources based only on hopes and dreams.

Thank you again for the opportunity to testify before you on these important issues.