Planning and Budgeting DoD's Weapons Systems

Dr. Nancy Spruill,
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We will start programs right, execute programs properly, and improve program management and oversight.

How does DoD create a system to track its total net worth of equipment? What is the real cost of a heavily used F/A-18 versus a sparingly used one? How does DoD standardize acquisition data across the enterprise and ensure that information is shared with those who need it? These are just a few of the types of questions Dr. Nancy Spruill is answering in her position as director of acquisition resources and analysis in the Office of the Under Secretary of Defense for Acquisition, Technology and Logistics (OUSD[AT&L]). In June, she took the time to discuss several acquisition improvement initiatives with *Defense AT&L*: the recent changes implemented for the business, cost estimating, and financial management career field; developing better cost-growth tracking methodologies; and other topics.

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Can you give an overview of your responsibilities as director of acquisition resources and analysis in the OUSD(AT&L)?

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As director for acquisition resources and analysis, I report directly to the under secretary of defense for acquisition, technology and logistics, Dr. Ashton B. Carter. I've held this position since February 2000.

The three most important jobs I do for the USD(AT&L) are: one, I am the executive secretary for the Defense Acquisition Board; two, I manage all aspects of the under secretary's interaction in the planning, programming, budgeting, and execution (PPBE) system; and three, I manage many of the important aspects of the OUSD(AT&L)'s interaction with Congress—such as rollout of the president's budget—in the investment areas, including funding of the major defense acquisition programs (MDAPs), funding for spending in science and technology, funding for logistics support, and funding for installations support and construction.

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You manage the acquisition workforce's participation in the PPBE system. Can you discuss how you are working across the acquisition workforce to ensure all operations are aligned with the PPBE system?

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I see effective interaction between the PPBE system and the defense acquisition management process as essential. Unfortunately, the PPBE system is a calendar-driven process, while the defense acquisition management process is focused on events, phases, and milestones. This disconnect creates significant challenges. Nevertheless, I constantly strive to ensure the acquisition workforce is meeting the PPBE system requirements without impeding the advancement of our acquisition programs. Often, this requires significant hands-on effort and a willingness by all parties to give a little for the betterment of the Department of Defense. I try very hard to make sure the PPBE system supports the acquisition process by fully funding MDAPs and the associated operating and support needs. Programs can't be executed effectively unless the program manager gets the resources he or she needs to do the job.

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Can you talk about the recent changes in the business, cost estimating, and financial management (BCEFM) career field and what spurred the need to restructure?

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The new business career field has two distinct tracks to recognize differences that have existed since the beginning of the Defense Acquisition Workforce Improvement Act of 1990. Cost estimating and financial management really do involve different but related disciplines. When we did a review of the training pipeline, we discovered that the cost estimating folks were getting training on only about half of the key things they needed to learn. It was very clear that a one-size-fits-all approach to training was not good enough—and we needed to change that. I also felt strongly that we needed to enhance the professionalism of the community and acknowledge that we need our people to have a lot more seasoning and experience to achieve the various levels of certification. That's why we increased the experience needed for certification with all three levels.

Another issue we were trying to tackle was the identification of key leadership positions for the lead cost estimator in major program offices. There's a statutory requirement to identify those positions, and we needed a way to cleanly identify them as cost estimating positions rather than using a more general BCEFM label.

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Can you discuss the training changes that professionals in the newly created business career field can expect? What do those changes mean for people who are already certified?

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Training for the financial management track within the career field should not see major changes. The implementation guidance I signed on April 1 doesn't impose an additional training requirement for people currently certified in the financial management part of the career field. [*The guidance is available at <https://acc.dau.mil/GetAttachment.aspx?id=277653&pname=file&aid=42718&lang=en-US>*.]

There is a training impact to those in the cost estimating part of the community. That was purposeful and intended to address shortcomings to current training and the need to provide more cost-focused training to professionals in the cost estimating discipline. We need people who know more about what they're doing and to have considerable specialized experience in this domain. The implementation guidance gives people a couple of years to satisfy the new requirements, so I think we're giving them enough time to

Dr. Nancy Spruill

Director, Acquisition Resources & Analysis, OUSD(AT&L)

Dr. Nancy Spruill received her Bachelor of Science degree in mathematics in 1971. She earned her Master of Arts in mathematical statistics in 1975, followed by her doctorate in 1980.

From 1971 to 1983, she held a variety of positions with the Center for Naval Analyses, including technical staff analyst, professional staff analyst, and project director. Dr. Spruill served on the staff of the Office of the Secretary of Defense from 1983 to 1993. Initially, she was the senior planning, programming, and budget analyst in the Manpower, Reserve Affairs and Logistics Secretariat. Later, she served as the director for support and liaison for the Office of the Assistant Secretary of Defense for Force Management and Personnel. She then served as the senior operations research analyst in the Office of the Assistant Secretary of Defense for Program Analysis and Evaluation.

In 1993, she joined the staff of the Defense Mapping Agency, serving as the chief of programs and analysis division for the DMA comptroller. Subsequently, she served as acting deputy comptroller and was a member of the Reinvention Task Force for the vice president's National Performance Review.

In 1995, she was selected as the deputy director for acquisition resources for the Office of the Under Secretary of Defense for Acquisition, Technology and Logistics. In 1999, she was appointed director, acquisition resources and analysis for the OUSD(AT&L). In this capacity, she is responsible for the coordination of all defense acquisition and technology planning, programming, and budgeting process activities, as well as funds control, congressional actions in the authorization and appropriations processes, and special analyses for the OUSD(AT&L). She also manages the studies program for the Office of the Secretary of Defense, and oversees the OUSD(AT&L)'s office automation system and manages its information system network.

Dr. Spruill has been a member of the Senior Executive Service since 1995. She is a certified acquisition professional and an active member of the American Statistical Association. Her many honors and awards include the Defense Medal for Exceptional Civilian Service, the Defense Medal for Meritorious Civilian Service, and the Hammer Award.

get caught up. Also, there is the fulfillment process that allows people to request, through their supervisory channels, equivalency for a course if they have sufficient justification for not taking the formal training from the Defense Acquisition University.

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A major part of improving the mechanisms for the management of DoD acquisition programs is developing new DoD-wide software-intensive systems and programs. Can you discuss the new acquisition systems being developed across DoD? How are you ensuring the security/privacy of such systems?

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We are taking a wholly different approach to improving our acquisition management systems rather than just trying to impose yet another set of system tools and technologies. The real problem in our acquisition management systems is the lack of timeliness, consistency, and coherence in the data that drive those systems, and we are addressing those lacks directly.

Specifically, we are establishing formal governance for acquisition data that will regulate the definitions, technical standards, and authoritative source for the data elements used in acquisition decision making. You would be surprised how often we see different authoritative information associated with a program.

I talked earlier about working to ensure program managers get the funding they need from the PPBE process, but you'd be surprised how many different stories I've seen about funding or how much a program thinks it has. Nothing drives me crazier than arguing over what are supposed to be facts. So we are working very hard on separating data availability—which will be provided via a service-oriented architecture data bus—from the management tools that use the data. I see two major benefits from this:

- We'll be assured that data elements appearing in one business intelligence system are consistent with the same data displayed in another tool.
- We really facilitate the implementation of new data analysis and mining tools by having a reliable one-stop shop for acquisition data.

A final side benefit—but not inconsequential—is that data governance assures, for the first time, data presented to the under secretary have a clear, defined, and governed provenance.

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The Defense Acquisition Management Information Retrieval (DAMIR) System is a tool used to identify various data sources the acquisition community uses to manage MDAP and major automated information systems programs. Can you discuss how acquisition workforce members should integrate the tool into their activities? What are the benefits of using this tool?

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Our vision is that DAMIR is the system of record for the programs and systems that it covers. It is, for example, how DoD fulfills its statutory reporting requirements to Congress for the selected acquisition reports on MDAPs. It also collects and provides routine information needed for oversight and visibility into program execution status. The system has more than 3,000 users in DoD, Congress, the Congressional Budget Office, the Government Accountability Office, and other agencies. So, in a very real sense, DAMIR is the public face of programs to the governmental community.

In view of that role, acquisition workforce personnel should have two relationships with DAMIR: firstly, assuring that DAMIR accurately portrays their respective programs; and secondly, using DAMIR as a source for data that may be used in shaping expectations for new programs as well as assessing the performance of their own programs. Let me give you an example of the latter use (and these numbers are from a real example). Suppose you were looking at starting a new program, and both government engineers and your prospective contractors assured you that development would only take 24 months. Ten or 20 minutes in DAMIR may tell you that DoD had done half a dozen roughly similar programs in the past 20 years, and none took less than 60 months to bring to a production milestone. Is that information relevant to shaping your expectations and plans for the new program? I believe it almost certainly is, even if it is not used to establish the initial plan. At least you know what sort of risks the program is running.

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You've done a lot of work on the controversy over cost growth in weapons systems. Can you discuss your work related to the Government Accountability Office's Assessments of Selected Weapon Programs *report and explain the $296 billion they describe as cost growth?*

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Has there been cost growth? Yes; but the OUSD(AT&L) simply does not agree with the GAO's methodology or that the cost growth they cite says anything about the amount of cost growth in the acquisition process today. There are two major problems, in my view, with GAO's estimate of acquisition cost growth. The first is their view that acquisition cost growth is a DoD-wide crisis of today. In fact, cost growth is concentrated in a few programs out of a total of 96, the majority of which experienced their cost growth in the 1980s and 1990s. According to OUSD(AT&L) calculations, the top eight highest cost-growth programs account for 80 percent of the total cost growth, and six of the eight were initiated before 2000.

The second problem is GAO's view that any increase in program cost is bad. But they count increases in quantity or capability as cost growth. A great example is the DDG-51 program. In that program, we were originally going to buy 23 ships; the program currently is at 62 ships, and we are now planning to buy more. Surely this isn't cost growth, but $48 billion of the GAO's $296 billion was attributed to the DDG-51 program alone. In addition, some older acquisition programs had early problems but have since been set right, and they are important parts of today's weapons. Two examples that jump to mind are the V-22 and the C-17. Of the GAO's $296 billion, $39 billion was attributed to those two programs. Cost growth, by the GAO definition, simply measures the difference in the program's first estimate—which could be more than 20 years old—against the current estimate. It is neither a measure of program success nor of the health of today's acquisition process.

We have agreed to work with GAO to get more relevant measures of cost growth because, although $296 billion is too big, we can't yet claim the number should be $0. So there is room for improvement, and we need measures that are relevant so they can help us see if the new initiatives we have begun—such as those outlined in the December 2008 version of DoD 5000 policies—are showing success. DoD hopes GAO will use some of the more relevant measures in their next report so our dialogue can be on improving the acquisition process, not disagreeing with cost growth statistics.

A wonderful analysis on bad data is useless. We need to start looking at our data and valuing them as the important resource they are.

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What is being done to help cost growth for those programs in which it is a real problem, or to make sure we don't have such growth in future programs?

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We have found that funding and requirements stability and greater technology maturity drive successful programs. As a result, we are taking a three-pronged approach in the areas of acquisition workforce reform, tactical acquisition reform, and strategic acquisition reform. For acquisition workforce reform, we will add 20,000 people to the acquisition workforce between now and 2015; and we will better train them and reinvigorate and raise their certification standards. We will also develop tenure agreements with program managers.

For tactical acquisition reform, we will start programs right, execute programs properly, and improve program management and oversight. That includes ensuring configuration steering boards for all major programs, early milestone reviews, competitive prototyping, and increased technology readiness levels for new programs.

For strategic acquisition reform, we will align strategy, budget, and governance. That includes aligning investment priorities to strategic priorities; balancing existing and future investments to provide the right mix of capabilities at the right time; and establishing a fixed, stable investment budget

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Can you discuss the Office of the Secretary of Defense Studies and Federally Funded Research and Development Centers (FFRDC) programs? What are some of the benefits of having such a program? How can a DoD agency or organization apply for it?

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DoD FFRDCs occupy a special place in law and our industrial infrastructure; they are true national assets and the means by which DoD may gain cost-effective access to human capital that we would not otherwise have available on an independent, non-profit basis. My office directly sponsors two FFRDCs: the Rand National Defense Research Institute and the Institute for Defense Analysis. In addition, my office sets management policy for FFRDCs; and it is also responsible to Congress for administering statutory resource constraints for those FFRDCs as well as the rest of Rand (Project Air Force and the Arroyo Center) and the MITRE Corporation, the Aerospace Corporation, the Software Engineering Institution, the Center for Naval Analyses, and Lincoln Labs. Those institutions have customers throughout DoD and other government agencies.

DoD agencies may avail themselves of the expertise in those enterprises simply by funding and placing tasks with them, but there is a hitch: Congress constrains the headcounts in the FFRDCs, and we generally have more willing DoD (and other) customers than heads within the congressional constraint. The FFRDCs triage and prioritize the tasks available with an eye to preserving and exploiting their corporate core competencies for the best use by DoD, so new tasks

often are favorably considered when they directly relate to FFRDC core competencies or new needs, such as ways to support current operation—for example, the best way to search for improvised explosive devices. The system isn't perfect because of the constraints on FFRDCs, but it seems to work well enough, and our FFRDCs have proven to be a key enabler in rapidly adapting DoD assets to new missions and challenges.

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You are responsible for ensuring the department improves its accountability for property, plants, and equipment. Can you discuss the strategic plan/systems architecture in place for property accountability systems across DoD?

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First, let me tell you what accountability for property, plants, and equipment means to me. It means that DoD needs to know how many ships and missiles and how much test equipment it owns and how much the equipment is worth in terms of its value on DoD's financial statement. For financial reporting, we're treated as if we are a business, like a car rental company—but instead of cars, we are talking about military equipment. And like a business, knowing what equipment we have and how much it is worth today helps us make better decisions and helps us win the public's trust.

Our initial efforts focused on valuing military equipment in compliance with the Federal Accounting Standards. We had to determine, from an accounting perspective, how much an F/A-18, a tank, or an aircraft carrier is worth. It starts with how much we paid for the military equipment—but we don't know that exactly, as our records aren't that good. So we created business processes to estimate values and an IT system (the Capital Asset Management System–Military Equipment) to track values for our military equipment. As a result of this work, at the end of fiscal year 2006—for the first time ever—we were able to report a $344 billion baseline of military equipment on DoD's financial statements. For example, through this process, we determined that an average F/A-18 aircraft was valued, at the end of fiscal year 2006, at about $66 million.

Now we are improving the reporting process. We know that an F/A-18 flown in peacetime doesn't have the same wear and tear as an F/A-18 flown in wartime—and today, we have lots of equipment used in overseas contingency operations. So we felt it was important to use metrics such as flight hours or miles driven rather than years since delivery to estimate when equipment might need to be replaced. We also know that the real cost of an F/A-18 includes not just the airframe but also engines and other costs, so we are working to find ways to add those costs to the purchase price.

The other thing we are working hard to do is to make sure we capture all the equipment on our property books. I'm not implying that we can't account for our equipment, but often, we keep track of that equipment on spreadsheets and homegrown systems. We need to have a true enterprise capability to know what equipment we have and where it is so we can manage it better in support of our warfighters.

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You have a great deal of expertise in statistics, having written numerous articles on how statistics can be used—or abused—in the federal government. Is there any advice you would provide to readers on the best way to use statistics?

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Being a statistician, I am a fan of data and of objective quantitative methods of analyzing problems. Far too often, folks don't look at or value their data. A wonderful analysis on bad data is useless. We need to start looking at our data and valuing them as the important resource they are. Further, through my statistician eyes, I'm suspicious when I see things subjectively portrayed, using display techniques like stoplight charts or cloud/lightning bolts or flowery words, but with no data. In my experience, the most convincing arguments to senior decision makers are based on well-understood data and an objective, analytically honest statistical presentation of just the facts. I've seen senior leaders visibly pleased to be shown some factual data and analysis in decision meetings, so I encourage everyone to do more of that.

I've also seen statistics used inappropriately or in ways that obfuscate rather than clarify. The average temperature in Washington, D.C., over a year is about 54 degrees Fahrenheit. We all know, however, that's not really useful for deciding what to wear. You have to use statistics that are relevant and meaningful to the circumstances. Not everyone is trained in those techniques, so my advice to the readers is to seek out some expertise from statisticians, mathematicians, operations research analysts, and so on. They really do love helping!

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One of the USD(AT&L)'s strategic thrusts is to "responsibly spend every single tax dollar." As the person in charge of ensuring that DoD obtains unqualified audit opinions on DoD financial statements, as mandated by the Chief Financial Officers Act, can you discuss plans for fiscal responsibility in the acquisition community?

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Fiscal responsibility starts with you—whether you are at the lowest levels of DoD or at the very top. I've learned a lot from every boss I've had, and one thing I learned from [*former USD(AT&L)*] Mr. John Young is that we are not victims of the process—we can make a difference. If every one of us took that attitude, we would responsibly spend every single tax dollar.

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Thank you for your time, Dr. Spruill.